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Dynamic Perspectives on Language Anxiety, Psychological Adjustment, and Personality

– A Systematic Review and Multi-Method Longitudinal Study

Qian Sun

A thesis submitted for the degree of Doctor of Philosophy

School of Education

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Dynamic Perspectives on Language Anxiety, Psychological Adjustment, and Personality

– A Systematic Review and Multi-Method Longitudinal Study

Abstract

This thesis examines the dynamic nature of language-related anxiety, psychological adjustment (psychological well-being & life satisfaction), and personality through two complementary studies. Study 1, a systematic review of 49 longitudinal studies, examined how foreign language anxiety (FLA) has been conceptualised and measured across time. The synthesis revealed that FLA is not a fixed trait but a malleable construct, with variability documented at macro-, meso-, and micro-level timescales. Importantly, it highlighted that methodological and temporal choices shape how change is represented, underscoring the need for integrative, multi-method designs to capture both long-term trajectories and short-term fluctuations.

Study 2, conducted with over 400 international students in the United Kingdom, employed a multi-method longitudinal design combining repeated trait-level questionnaires, weekly state assessments, a seven-day intensive experience-sampling protocol, and semi-structured interviews. Trait-level analyses revealed declines in both classroom and outside-classroom English-speaking anxiety, relative stability in psychological well-being, and a modest increase in life satisfaction, with some personality traits moderating these trajectories. State-level analyses captured short-term variability: weekly assessments indicated within-person fluctuations alongside broader developmental trends, while the daily sampling revealed momentary shifts in affective states and sensitivity of personality states to language-use contexts. Interviews complemented these findings by identifying context-specific triggers of English-speaking anxiety and a repertoire of coping strategies ranging from preparation to mindset adjustment.

Together, the two studies provide a dynamic, multi-timescale account of language-related anxiety and psychological adjustment. The findings highlight that stability and variability coexist, that personality shapes both starting points and pathways of change, and that methodological pluralism is essential for capturing the evolving experiences of students in immersion contexts.

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Declaration

I declare that this thesis is my own work. No material contained in this thesis has previously been submitted for a degree in this or any other institution.

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Chapter 1. Introduction

1.1 Background and Context

Language is central to human life. It enables us to express emotion, pursue goals, finding pleasures or meaning, plan for the future, recall the past, share experiences, and shape both social and personal identities (Cook, 2016). A very large number of people worldwide are currently involved in learning foreign languages. Language is not only a cognitive system but also a medium through which individuals build relationships, pursue opportunities, and navigate new environments (Johnson, 2017). There is growing consensus that the acquisition of a foreign or second language is a complex process shaped by the interaction of biological, cognitive, psychological/affective, and environmental factors (Norris & Ortega, 2003). Acquiring a new language is therefore far more than the mastery of grammar and vocabulary. It is a complex process that requires sustained cognitive effort, while also involving emotional experiences such as confidence, motivation and anxiety (Castro & Shelton-Strong, 2024; Horwitz et al., 1986; Plonsky et al., 2022). Thus, learning another language represents a demanding process that extends well beyond linguistic knowledge.

Beyond the process of language learning itself, a growing number of learners are choosing to pursue their studies abroad. In an increasingly interconnected world, mobility for education has expanded rapidly, with international students following steadily across many countries. With the rapid expansion of global economies, an increasing number of people are pursuing education abroad (OECD, 2023b). The increase in the number of international students is a significant phenomenon for researchers, educators, and policymakers worldwide (Schartner, 2014). International students are defined as those “who left their country of origin and moved to another country for the purpose of study” (OECD, 2023a, p. 220). English-speaking countries remain the leading destinations for international students, with Australia, Canada, the United Kingdom, and the United States together hosting nearly half of all

internationally mobile students worldwide (OECD, 2025). This global trend is also evident in the United Kingdom, where higher education institutions have witnessed a marked increase in international student enrolments. According to the HESA data, 554,375 entrants were enrolled in UK higher education institutions during the 2019-2020 academic year based on their permanent address, compared to 732,285 entrants in the 2023-2024 academic year (HESA, 2025).

Beyond its numerical growth, international student mobility is now recognised as a defining feature of globalisation, contributing to the internationalisation of higher education, the circulation of knowledge, and the negotiation of identities across cultural boundaries (Altbach & Knight, 2007). As such, it has become a focal point of research across disciplines, from applied linguistics and education to psychology, sociology, and policy studies, reflecting its multifaceted significance for individuals and societies. For students, studying abroad provides opportunities to engage with the linguistic and cultural community of the target language, to foster intercultural competence, and to promote personal growth (Dewaele et al., 2015; Krishnan et al., 2017; Maharaja, 2018). At the same time, immersion in new academic and social environments is not without challenges, as linguistic barriers, academic demands, and psychological pressures can shape how students adapt and succeed (Cadd, 2015; Freed, 1998; Smith & Khawaja, 2011; Woodrow, 2006). These dynamics underscore that study abroad should be understood not only as an education opportunity but also as a complex process of adjustment. Within the UK context, higher education institutions have widely adopted intensive pre-sessional English programmes, which provide English for academic purposes instruction and academic preparation for students whose English proficiency does not yet meet direct entry requirement. These programmes serve as an important preparatory stage that supports students' linguistic and academic transition before commencing their degree studies (Green, 2007; Pearson, 2020). The prominence of such programmes reflects

broader developments in the internationalisation of higher education. Taken together, these developments highlight the centrality of study abroad in today's world, where the movement of students across borders embodies globalisation in practice and raises important questions about how individuals navigate new educational and cultural context.

1.2 Key Psychological Constructs in Language Learning and Study Abroad

Anxiety has long been recognised as a major affective factor in the process of language learning (Dewaele et al., 2008). Within this domain, foreign language anxiety (FLA) has been defined as the apprehension and negative emotional reactions that arise in the process of learning or using a second/foreign language (Horwitz et al., 1986; MacIntyre, 1999). Since the mid-1980s (Horwitz et al., 1986), FLA has become one of the most widely investigated constructs in applied linguistics and psychology of language learning, generating a substantial body of empirical research. Research has explored its prevalence across different learner populations, its associations with individual differences such as motivation, personality, and self-perceptions, as well as its role in shaping learners' classroom engagement and language use (e.g. Babakhouya, 2019; Bensalem, 2018; Erzhanova & Kharkhurin, 2022; Kleinmann, 2006; Liu & Huang, 2011; Luo et al., 2020; Takahashi, 2008). Despite the richness of this literature, much of the early work has relied on cross-sectional designs, providing valuable insights of prevalence and correlates but offering limited understanding of how anxiety develops or changes during the learning process. More recently, scholars have increasingly recognised FLA as a dynamic construct, one that may change across different timeframes and learning context (Gregersen, 2020), ranging from moment-to-moment classroom interactions to longer-term education trajectories (e.g. Aubrey, 2022; Boudreau et al., 2018; Dewaele et al., 2023; Huynh, 2021; Veenstra & Weaver, 2022). This recognition has prompted a methodological shift toward longitudinal and time-sensitive approaches, aimed at capturing the complexity of FLA as it unfolds in learners' lives. Such

concern form the basis for Study 1 of this thesis, which systematically reviews empirical research examining changes in FLA across time (Sun et al., 2025)¹.

While Study 1 focuses specifically on FLA as it has been conceptualised and examined in classroom-based settings, it is important to note that learners' experiences of anxiety are not confined to the classroom (Woodrow, 2006). Research has further distinguished between learning a foreign language and learning a second language, suggesting that when the target language also serves as the medium of everyday interaction, the surrounding environment itself may play a role in shaping learners' anxiety (Woodrow, 2006). This distinction is particularly relevant in the context of studying abroad, where learners immersed in environments that require them to use the target language not only in formal classroom instruction but also in daily communication and social interaction. Such circumstances make the study-abroad setting a unique and significant context for investigating how language anxiety manifests and develops.

Beyond linguistic challenges and the experience of anxiety, international students also face the broader task of adjustment. Adjustment is a complex concept related to the dynamic process of matching between the individual and the environment (Ramsay et al., 2006). International students have to cope with new life and study in an unfamiliar environment and face differences between their expectations and reality. They often encounter stressful situations as they adapt to unfamiliar cultural norms and values while simultaneously managing academic demands. Compared with domestic students, international students are likely to face additional challenges because they need to modify their behaviours and coping strategies to function effectively in the host environment (Li & Gasser, 2005). This process of

¹ Study 1 has been published as: Sun, Q., Alhowail, A., & Beckmann, N. (2025). Is foreign language anxiety malleable? A systematic review of longitudinal observation studies. *System*, 133. <https://doi.org/10.1016/j.system.2025.103782>. The published article is reproduced in Appendix K.

adjustment has been examined from multiple perspectives, with particular attention to international students' psychological adjustment. In particular, psychological adjustment reflects international students' emotional response to this new environment, encompassing dimensions such as psychological well-being and life satisfaction (Ward et al., 2001). These dimensions, in turn, provide important perspectives for understanding how students manage the demands of studying and living abroad (Schartner & Young, 2020).

While language learning, anxiety, and adjustment highlight the situational and psychological demands that international students encounter, these experiences do not occur in isolation from individual characteristics. Personality, in particular, has long been regarded as a central construct in psychology for explaining relatively stable patterns of thought, emotion, and behaviour across contexts (Burger & Reevy, 2022; Costa & McCrae, 1992). It is closely related to the ways individuals perceive and approach different situations, as well as how they navigate the challenges of unfamiliar environments (Furr & Funder, 2021; Magnus et al., 1993; Strutton et al., 1995). Based on the above, this thesis takes language anxiety, psychological adjustment (psychological well-being & life satisfaction), and personality as its focal constructs, examining how they interrelate and evolve within the context of international students' language learning and study abroad experiences.

1.3 Structure of the Thesis

This thesis is organised into seven chapters. Chapter 1 introduces the background and context of the research, outlining the significance of affective and psychological dimension in language learning and study-abroad settings. It also introduces the key constructs that provide the conceptual foundation for the research. Chapter 2 provides a comprehensive literature review, outlining the theoretical perspectives that inform the empirical work and situating the study existing research on language anxiety, psychological adjustment, and personality. Chapter 3 articulates the rationale for the research and presents the research questions that

guide the thesis, explaining how the interrelated studies collectively address the identified gap. Chapter 4 presents Study 1, a systematic review of empirical studies that have investigated change in foreign language anxiety over time, synthesising how such change has been conceptualised, measured, and interpreted. Chapter 5 reports Study 2, an empirical longitudinal investigation of international students in the United Kingdom, focusing on the dynamics of English-speaking anxiety, psychological well-being, and life satisfaction, and exploring how these affective and psychological experiences are associated with personality from both trait and state perspective. Chapter 6 provides a general discussion of the findings, highlighting their theoretical and methodological implications. Chapter 7 summarises the thesis, sets out its contributions, and outlines its limitations and directions for future research.

Chapter 2. Literature Review

2.1 Introduction

This chapter reviews the theoretical and empirical foundations of the present research. It first introduces the theoretical framework that underpins the empirical work, drawing on perspectives from trait-state dynamics and dynamic system theory to conceptualise psychological change and variability. These perspectives provide the foundation for understanding how affective and psychological experiences evolve across different timescales and contexts. Building on this framework, the review turns to foreign language anxiety, the core construct of this thesis, by examining how it has been conceptualised, the mechanisms underlying it, and empirical evidence concerning its variability. It further considers speaking anxiety, a specific and particularly salient manifestation of FLA, highlighting research on anxiety-triggering situations and coping strategies. Beyond classroom contexts, studies have also explored second language anxiety in target-language environments, where study-abroad settings offer especially relevant conditions for understanding how learners experience and regulate anxiety in everyday communication. The review then moves to psychological adjustment, focusing on indicators such as psychological well-being and life satisfaction, which capture students' subjective experiences and adaptation during study abroad. Finally, the chapter considers the role of personality, both as a set of enduring traits linked to adjustment and as states that may shift across languages and contexts. Together, these perspectives provide the conceptual foundation for the studies presented in this thesis.

2.2 Trait - State Dynamics and Dynamic Systems Theory: A Conceptual Overview

2.2.1 *Trait - State Dynamics and Temporal Variability*

To understand how learners experience and adapt to studying abroad over time, this thesis is grounded in a theoretical framework that integrates *Trait-State Dynamics* and *Dynamic Systems Theory* (DST). This framework provides a basis for interpreting individual

difference, moment-to-moment fluctuation, and longer-term developmental trajectories, which are central concerns of the present study (Study 2). The following sections elaborate on the conceptual distinction between trait and states and discuss how DST offers a complementary perspective on variability and change.

2.2.1.1 Conceptualising Traits and States.

In psychological research, traits refer to enduring patterns of thoughts, emotions, and behaviours that exhibit relative stability across time and contexts (Fleeson & Jayawickreme, 2025; McCrae & Costa, 1999). This view can be traced back to Allport's (1937) classical definition of traits as generalised and lasting predispositions to respond in consistent ways across a range of situations. While contemporary trait theorists recognise that absolute consistency is unrealistic, they emphasise relative consistency. Individuals tend to maintain their rank order on trait dimensions even if their actual behaviour or experiences vary across different situation (Endler & Kocovski, 2001).

However, a key issue that has emerged in longitudinal research is the realisation that traits are less stable than previously believed, both over time and across different situations (Hamaker et al., 2007). This has led to increased attention to the role of momentary experiences in shaping human behaviour. The concept of state has long been applied in the study of emotions and anxiety, offering a framework for understanding temporary affective changes in response to situational factors (Fleeson & Jayawickreme, 2015). An individual's present condition, including their thoughts, emotions, and behaviours, is shaped by the situation or context they are in. States refer to temporary or short-lived actions or experiences that may last only a few hours, such as occasional feelings of joy or anger (Chamorro-Premuzic, 2016; Csizér & Albert, 2021). The distinction between trait and state lies in the idea that a trait represents a consistent personal characteristic across time and contexts, while

a state reflects an individual's temporary response or adjustment to a specific situation (Hamaker et al., 2007).

2.2.1.2 Integrating Trait and State Perspectives.

In response to the recognition that traits are not entirely fixed, recent theories have proposed ways to integrate trait and state perspective. One influential model is Fleeson's (2001) *Density Distribution Approach*, which conceptualises traits not as static entities but as patterns in the distribution of momentary states over time. According to this model, traits reflect the average tendency of an individual to display certain states, while allowing for variability due to situational influences. For example, a person who is generally considered extraverted may still experience moments of introversion, depending on the context.

Building on this idea, *Whole Trait Theory* (Fleeson & Jayawickreme, 2015, 2021, 2025) advances the integration further by proposing that traits comprise both descriptive summaries of state patterns and explanatory mechanisms that give rise to those states. In this view, traits are not merely aggregate patterns of behaviours but are underpinned by psychological processes that interact with external situations. This theoretical shift supports the idea that traits and states are interconnected rather than opposing concepts, and that understanding psychological functioning requires examining both the stable dispositions individuals carry and the moment-to-moment variation that emerges in response to contextual cues.

2.2.2 A Dynamic Systems Perspective on Psychological Experiences

While the trait-state framework provides a conceptual basis for examining both stability and variability in psychological functioning, it does not fully account for the complexity and interdependence of factors involved in individual development. Recent developments in personality research, such as *Density Distribution Model* (Fleeson, 2001)

and Whole Trait theory (Fleeson & Jayawickreme, 2015), have highlighted the dynamic interplay between traits and states. These approaches recognise that stable tendencies emerge from patterns of momentary experiences that are shaped by contextual input. Such perspectives align with the broader assumption of *Dynamic Systems Theory* (DST), which offers a comprehensive theoretical foundation for understanding the fluid, context-sensitive, and emergent nature of psychological change. For this reason, the present study also draws on DST as a complementary framework.

In development psychology, DST was introduced by Thelen and Smith (1994) as a framework for understanding how cognition and behaviour emerge from recursive, time-sensitive interactions among multiple internal and external systems. Instead of viewing development as a linear or additive process, DST provides important perspectives for understanding development, highlighting how change emerges from ongoing interactions among interconnected elements, the importance of variability within individuals, and the way changes occur across overlapping timescales and related systems (Newman & Newman, 2020). Thelen and Smith (1994) drew on insights from complex physical systems, including fluid dynamics, oscillating movement, and crystal formation, to illustrate how stable patterns can emerge from the continuous interplay of components rather than from isolated parts. They also responded to emerging debates in developmental psychology, where traditional sensorimotor views of infant cognition (e.g. understanding and learning through actions such as grasping or reaching) were being challenged by claims of early conceptual competence. Thelen and Smith (1994) responded to these developments by introducing a dynamic framework that offered a more integrated and context-sensitive account of how development emerged through the interplay of multiple factors over time.

Dynamic Systems Theory provides a valuable lens for conceptualising change across multiple timescales, from momentary experiences to long-term development trajectories. As

Thelen (2005) noted, a central concern is how short-term fluctuations, such as second-by-second behaviour or daily changes, may accumulate and interact to shape more enduring psychological patterns. This emphasis on recursive, time-sensitive interactions makes DST particularly well suited to research examining how psychological experiences evolve in real-time, transitional context such as studying abroad. Since the late 1990s, DST has been extended to second language acquisition research, where it is referred to as *Complex Dynamic Systems Theory* (CDST) (De Bot et al., 2007; Larsen-Freeman, 1997). CDST applies systems thinking specifically to language learning and use, viewing linguistic and affective phenomena as dynamic, adaptive, and context-dependent. This framework has been influential in applied linguistics, where systems thinking has been used to explore the dynamic nature of second language learning processes (e.g. Dong, 2016; Papi & Hiver, 2020; Waning et al., 2014). Within the present thesis, DST provides the overarching conceptual framework for examining changes in psychological well-being and life satisfaction, while CDST is used to interpret English-speaking anxiety as a dynamic process that emerges through continuous interactions between the learner and the surrounding linguistic environment.

2.2.3 Implication for the Empirical Study (Study 2)

Taken together, the *Trait-State Framework* and *Dynamic Systems Theory* jointly inform the theoretical foundation of the present study. While trait-state perspectives highlight the potential for both stability and variability in psychological constructs, DST adds a systems-level understanding of how such patterns may emerge from ongoing interactions among personal, social, and environmental influences. These perspectives together provide a conceptual basis for examining both enduring developmental change and moment-to-moment transient fluctuations in student's psychological functioning over time.

Ground in this framework, the present research (Study 2) explores how international students adjust over the time of their study abroad experience. Specially, it explores how trait-level constructs (English-speaking anxiety, psychological well-being, and life satisfaction) may change over multiple timepoints, and how momentary expressions of these experiences unfold in daily life. These perspectives support the possibility that psychological experiences are not entirely stable but may shift in response to dynamic interactions between individual dispositions and situation demands. Attending to both longer-term trajectories and shorter-term variability enables a more nuanced exploration of changes in emotional and personality-related experiences during the study abroad process. Building on this theoretical foundation, the following sections introduce the key constructs examined in the research.

2.3 Language-Related Anxiety

2.3.1 Conceptualising Foreign Language Anxiety: Definitions, Dimensions, and Types

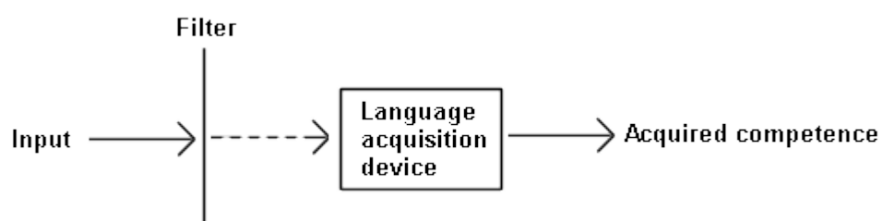
Spielberger (1972, p. 482) defines anxiety as “an unpleasant emotional state or condition which is characterised by subjective feelings of tension, apprehension, nervousness, and worry”. Anxiety has been a focus of research in foreign language acquisition since early 1970s (e.g. Horwitz et al., 1986; Scovel, 1978). Scholars in the field of second or foreign language acquisition have become increasingly aware that anxiety is a relatively widespread experience among learners (Horwitz, 2001; Saito & Samimy, 2008).

Building on this general understanding of anxiety, recognising that anxiety is often associated with language learning (Horwitz et al., 1986), researchers have developed more specific conceptualisations tailored to the context of language learning. For instance, MacIntyre (1999) defines foreign language anxiety (FLA) as “the worry and negative emotional reaction aroused when learning or using a second language” (p. 27). Similarly, Horwitz et al. (1986) define FLA as “a distinct complex of self-perception, beliefs, feelings

and behaviours related to classroom language learning arising from the uniqueness of the language learning process” (p. 128). In order to better understand how anxiety functions in the language learning process, scholars have further investigated the distinct components underlying foreign language anxiety. Horwitz et al. (1986) identified three interrelated components: communication apprehension, fear of negative evaluation, and test anxiety. Communication apprehension refers to a type of shyness characterized by fear or anxiety about communicating with others, particularly in speaking situations. Fear of negative evaluation involves concern about being judged unfavourably by peers or instructors, which can lead to reluctance in participating in classroom activities. Test anxiety, on the other hand, relates to performance-related stress in evaluative contexts, where learners may worry about their ability to perform well in language assessments (Horwitz et al., 1986).

The potential impact of such affective factors on language learning is further emphasised in Krashen’s *Affective Filter Hypothesis* (see Figure 1), which forms part of his broader theory of second language acquisition (Krashen, 1982). Krashen (1982) suggests that variables such as motivation, self-confidence, and anxiety are closely related to the degree to which comprehensible input is able to reach the *Language Acquisition Device* (LAD) in the brain (Chomsky, 1965). When learners experience high levels of anxiety, the affective filter may become elevated and act as a psychological barrier, making it more difficult for input to be fully processed. In contrast, when anxiety levels are low, input is more likely to pass through the filter, allowing learners to better engage with and internalise the target language.

Figure 1. Operation of the “affective filter” (Krashen, 1982, p. 32)



Krashen's (1982) *Affective Filter Hypothesis* provides a valuable theoretical account of how anxiety can interfere with language input and acquisition, emphasising its potential role as an emotional barrier in the language learning process. Building on this perspective, researchers have also examined the nature of anxiety itself, particularly drawing on the distinction between trait anxiety and state anxiety in psychology (Spielberger, 1983). Trait anxiety reflects a relatively enduring personality characteristic, representing an individual's general tendency to experience anxiety across a wide range of situations. People with high trait anxiety are more likely to feel anxious frequently and intensely, regardless of the specific context. In contrast, state anxiety is a temporary emotional condition that fluctuates depending on situational demands or perceived threats (Spielberger, 1983). For instance, a language learner may temporarily feel anxious when required to speak publicly, but this anxiety typically subsides once the task is completed. In addition, researchers in the field of second language acquisition have identified another category – situation-specific anxiety – which draws from both trait and state perspectives (Horwitz et al., 1986; Wan, 2012). This form refers to anxiety that consistently arises in particular situations, without necessarily extending to other areas of an individual's life (MacIntyre & Gardner, 1991). This type of anxiety is understood as a trait-like tendency limited to a well-defined situation, such as public speaking, test-taking, or participating in a language class. Compared to the broader trait and transient state anxiety framework, the situation-specific perspective offers a more targeted lens, as different domains often studied independently (MacIntyre & Gardner, 1991).

2.3.2 Research on Foreign Language Anxiety

Research on foreign language anxiety has previously focused on identifying its associations with individual learner's characteristics, such as motivation (e.g. Liu & Huang, 2011; Luo et al., 2020), personality traits (e.g. Babakhouya, 2019; Botes et al., 2024; Vural, 2019), self-efficacy (e.g. Mede & Kararmak, 2017; Torres & Turner, 2016), and self-

perceived competence (e.g. Bensalem, 2018; Szyszka, 2011). Additionally, demographic factors such as gender (e.g. Abdullah Ayash Ezzi, 2012; Mahmoodzadeh, 2012), age (e.g. Tosun, 2018; Tuncel et al., 2020), prior language learning experience (e.g. Erzhanova & Kharkhurin, 2022; Matsuda & Gobel, 2004), and language proficiency level (e.g. Debreli & Demirkan, 2015; Thompson & Lee, 2014) have also been explored. More recently, research on individual differences in foreign language learning has continued to expand, with increasing attention paid to the role of affective and psychological factors in shaping language learning experiences (e.g. Botes et al., 2025; Lou et al., 2025), see the *Special Issue on Individual Differences in Foreign Language Learning, Learning and Individual Differences*, (2025).

Another major line of inquiry has focused on the impact of FLA on language learning outcomes. Given the large body of research in this area, several meta-analyses have synthesised the overall effects of FLA on language performance (e.g. Botes et al., 2020; Teimouri et al., 2019). These syntheses consistently indicate that higher levels of anxiety are associated with lower levels of language achievement and reduced classroom engagement (e.g. Horwitz, 2001; Hu et al., 2021; O'Reilly & García-Castro, 2022; Tsang & Dewaele, 2024). Moreover, the relationship between FLA and communication behaviours has received considerable attention, particularly in oral language use contexts, such as avoidance, hesitation, reduced fluency, or reluctance to speak (e.g. Kleinmann, 2006; Lileikienė & Danilevičienė, 2016; Würde, 2003).

In terms of learning environments, scholars have examined how instructional methods (e.g. Dolean, 2016; Galante, 2018), teacher behaviours (e.g. Alrabai, 2014; Dewaele et al., 2025), peer dynamics (e.g. Bekleyen, 2004; Kadir et al., 2018), and classroom climate (e.g. Li et al., 2021; Young, 1991) may shape learners' language anxiety experience. Intervention studies have also attempted to reduce anxiety through techniques such as feedback

(Zarrinabadi & Rezazadeh, 2020), contemplative practice (Scida & Jones, 2017), positive psychology-based classroom interventions (Jin et al., 2021), and dynamic assessment (Rahmaty & Zarei, 2021), among others. Beyond individual differences and classroom factors, researchers have also sought to identify the specific sources of foreign language anxiety (e.g. Chan & Wu, 2004; Tran et al., 2013). In response, a growing body of research has explored the strategies learners employ to cope with language anxiety (e.g. Abdurahman & Rizqi, 2020; Mohammadi et al., 2013).

While existing studies have substantially advanced our understanding of FLA across different individual and contextual factors, much of this research remains cross-sectional in design (e.g. Alghazo, 2023; Baroi et al., 2020; Chen & Chang, 2008; Elyildirim, 2017; Karagöl & Başbay, 2018), relying predominantly on single-point self-report measures to assess learners' anxiety levels. These cross-sectional approaches tend to treat FLA as a fixed individual difference, offering limited insight into how learners' anxiety levels may fluctuate across different phases of the learning process or in response to varying classroom demands. However, there is growing recognition that FLA is not a static trait but a dynamic experience that unfolds across time. For instance, Gregersen (2020) points out that language anxiety can emerge at different temporal levels. It may appear as a relatively stable personality tendency, as a context-dependent response, or as an emotional shift that occurs from moment to moment. She also stresses that FLA is part of a constantly evolving network of psychological factors, including self-perception, motivation, and willingness to communicate. These variables interact with one another over time and influence how anxiety is experienced. In addition, she notes that seemingly contradictory emotional states, such as anxiety and enjoyment, can coexist during the process of language use, further challenging any fixed or uniform conceptualisation of FLA.

When addressing the concept of change, the Oxford English Dictionary (2024) provides the following definition: “to make or become different, to undergo alteration, modification or transformation”. This definition suggests that change can involve differences in form, intensity, or frequency and may occur in various ways across time. In the FLA context, rather than assuming that FLA remains stable, researchers have become increasingly interested in whether and how it varies over time. In recently years, a growing number of studies have begun to investigate the variability of language anxiety through repeated assessments and longitudinal approaches (e.g. Derakhshan & Fathi, 2024; Elahi Shirvan et al., 2018; Gkonou, 2013; Huynh, 2021; Kruk, 2018). These studies offer valuable insights into how learners’ language anxiety may increase (e.g. Jee, 2014), decrease (e.g. Elahi Shirvan et al., 2018; Koga, 2010; Liu & Xiangming, 2019), fluctuating (e.g. Aubrey, 2022; Boudreau et al., 2018; He et al., 2021) over time, rather than remaining constant. While these studies mark an important step toward recognising the fluid nature of language anxiety, research explicitly focusing on temporal change still constitutes a relatively limited strand within the broader literature.

2.3.3 Speaking Anxiety

In addition to its temporal variation, FLA has also been explored in relation to specific language skills. A growing body of research has examined skill-specific forms of anxiety, such as listening anxiety (e.g. Serraj & Bt. Noordin, 2013; Zhang, 2013), reading anxiety (e.g. Saito et al., 1999; Zhao et al., 2013; Zhou, 2017), writing anxiety (e.g. Cheng, 2008; Rasool et al., 2022), and speaking anxiety (e.g. Hakan et al., 2016; Tsiplakides & Keramida, 2009; Woodrow, 2006). Among these, speaking anxiety has consistently been identified as the most prominent and intense (Melouah, 2013). Anxious foreign language learners are frequently reported to experience high levels of stress and may even freeze when required to perform role-plays or give speeches (Yalçın & İnceçay, 2014). Speaking is such an integral

part of everyday life that we often overlook its significance. In general terms, it can be seen as serving two broad purposes: to exchange information or accomplish tasks (transactional), and to build or maintain social connections (interpersonal) (Thornbury, 2008). Unlike receptive skills like reading or listening, which allow for delayed, private, and self-paced engagement, speaking demands real-time language production in front of others (Zhang, 2009). When students have only a single opportunity to comprehend or respond accurately, the pressure they experience intensifies (MacIntyre & Gardner, 1991).

These challenges have prompted many researchers to investigate the issue and seek solutions. Foreign language speaking anxiety has been widely investigated from various perspectives. For example, the level and gender differences in speaking anxiety have been examined, with Çağatay (2015) reporting that Turkish EFL students experience moderate levels of anxiety, which were more pronounced among females and in interaction with native speakers. A recent meta-analysis by Piniel and Zólyomi (2022) synthesised findings from 48 studies using the foreign language classroom anxiety scale (Horwitz et al., 1986) and found that, although females tended to report slightly higher levels of anxiety than males, the difference was not statistically significant. Apart from gender, researchers have examined various other demographic variables, such as age (e.g. GÜRsoy, 2018), prior language learning experience (e.g. Baker & MacIntyre, 2008), and educational background (e.g. Ibrahim & Hamad, 2021), among others. Moreover, individual differences such as language learning motivation (e.g. Öztürk, 2012; Wu & Lin, 2014), perfectionism (e.g. Sönmez & Kurtoğlu, 2021), willingness to communicate (e.g. Alghali, 2016; Cindori et al., 2019), and perceived self-efficacy (e.g. Hermagustiana et al., 2021; Mede & Karairmak, 2017) have all been identified as influential factors contributing to variations in speaking anxiety. These variables not only reflect individual learner characteristics but also help explain why speaking anxiety may vary across learners. For instance, learners with higher levels of motivation or

greater willingness to communicate may demonstrate lower anxiety in certain contexts, while perfectionist tendencies and low self-efficacy may be associated with increased anxiety in speaking situations (e.g. Mede & Kararmak, 2017; Sönmez & Kurtoğlu, 2021). However, rather than treating these factors as static determinants, recent research has begun to view speaking anxiety as a dynamic construct, subject to fluctuation over time (e.g. Kasbi & Elahi Shirvan, 2017; MacIntyre & Gregersen, 2022).

In particular, scholars have begun to examine speaking anxiety within immersion environments, such as study-abroad programs or settings where the target language is used predominantly (e.g. Allen & Herron, 2003; Wang, 2009; Woodrow, 2006; Yu, 2010).

Woodrow (2006) suggests that classroom-based communication may be less anxiety-provoking than many of the spontaneous and unstructured interactions learners encounter in everyday life within a target language environment. At the same time, such environments may also provide opportunities for learners to engage in real-life interactions, potentially reshaping their emotional responses to speaking tasks. However, it is important to note that much of the existing research on speaking anxiety has been conducted within English as foreign language contexts, particularly in formal classroom settings in learners' home countries (e.g. Hakan et al., 2016; Luo, 2014; Yalçın & İnceçay, 2014). Studies situated in immersion or study-abroad contexts remain relatively limited, and the extent to which learners' speaking anxiety differs across these environments is still underexplored.

2.3.4 Anxiety-Triggering Situations

The process of learning a foreign language is distinctive because it requires learners to communicate in a language they have not yet fully mastered. Many learners are highly anxious with respect to participation in speaking activities (Tsiplakides & Keramida, 2009). Since most previous studies in this field concentrate on classroom-related anxiety (e.g. Horwitz et al., 1986; Williams & Andrade, 2008), several specific classroom situations have

been consistently identified as particularly anxiety-inducing for language learners. For example, Koch and Terrell (1991) noted that the activities most likely to provoke anxiety include speaking tasks such as giving oral presentations, participating in role-plays, and explaining word meanings. Based on open-ended questions, Williams and Andrade (2008) found that learners' anxiety mainly arose from processing and output-related tasks, especially the fear of negative evaluation when speaking in front of others. Commonly mentioned situational triggers included self-introductions, delivering speeches, difficulty expressing ideas clearly, and teachers' calling procedures. Moreover, Ay (2010) found that learners feel most anxious when they are asked to speak without prior preparation. According to Price (1991), her students identified speaking the foreign language in front of peers as the most anxiety-inducing aspect of language learning, largely due to concern about making mistakes. Similarly, in Suleimenova's (2013) research identified multiple types of situations that triggered anxiety, with the most frequently reported being called to the board and having to perform in front of others. Furthermore, students experienced anxiety when called to the board via random selection, though predictable order also caused rising anxiety as their turn neared (Suleimenova, 2013). These findings suggest that the social and evaluative aspects of speaking situations are often associated with heightened anxiety. The fear of evaluation, as highlighted in Horwitz et al.'s (1986) components of FLA, is a recurring theme in the literature. A number of studies have indicated that situations involving limited preparation time or reduced learner control – such as being randomly called upon – can contribute to increased anxiety. While the examples mentioned above represent some of the commonly reported classroom scenarios, they do not capture the full range of situations that may provoke speaking anxiety. In fact, a wide range of classroom-based interaction and activities can elicit anxiety, and the situations discussed here should be seen as illustrative rather than exhaustive.

While most previous studies have drawn attention to several commonly reported classroom scenarios, they likely represent only a subset of the many situations that learners may find anxiety-inducing. Language Anxiety “should be expanded to reflect potential situations beyond the classroom that could trigger language anxiety” (Woodrow, 2006, p. 311). Following this line of thought, research on FLA has expanded to include second language anxiety (SLA), suggesting that residing in a context where the target language is used for daily communication can lead to anxiety that extends beyond the classroom setting (Marta et al., 2015). For instance, Woodrow (2006) found that talking to native speakers was the most commonly reported out-of-class anxiety trigger, such as interaction with school personnel or out of school (see also Pappamihiel, 2001; Wan, 2012). This may reflect learners’ concerns about making mistakes or falling short of native-like proficiency during real life communication (Wan, 2012). Moreover, phone conversation have also been reported as another situation that can trigger anxiety among bilinguals, as they require immediate, unprepared responses and offer no access to facial expressions or gestures that could support comprehension in the second language (Marta et al., 2015). According to Wan (2012), Chinese students in the UK reported higher levels of anxiety outside the classroom, in situations such as ordering meals in restaurants, making an oral request at a bank, or having conversations with strangers. This elevated anxiety was partly attributed to the greater difficulty of speaking with unfamiliar individuals compared to familiar interlocutors. Overall, these studies underscore that speaking-related anxiety is not confined to formal classroom environments but can also be elicited by a variety of everyday communication situations in the outside world. Such situations often lack the structure, predictability, and support typically found in instructional settings, making learners feel more vulnerable and less in control. As the boundaries between classroom-based and real-life language use become increasingly intertwined – particularly in immersion contexts – it becomes increasingly

important for researchers to account for the broader range of speaking situations that can provoke anxiety. Recognising the significance of out-of-class speaking experiences enriches our understanding of how language anxiety is experienced, managed, and potentially mitigated in learners' daily lives.

2.3.5 Coping Strategies of Speaking Anxiety

Given the relevance of speaking anxiety to learner's experiences, it is important to examine practical strategies for managing it. Coping strategies refer to the cognitive and behavioural efforts individuals employ to handle the psychological and situational pressures associated with stressful events (Stephenson & DeLongis, 2020). Coping strategies can be classified based on which aspect of a stressful situation they address. Problem-focused coping aims to modify the external conditions or challenges that cause stress or negative emotions. In contrast, emotion-focused coping targets internal responses by attempting to reduce emotional distress or by reinterpreting the situation in a less threatening way (Lazarus & Folkman, 1984).

In the field of language learning, one of the most influential framework for understanding learner learning strategies is Oxford's (1990) taxonomy, which classified strategies into two major strategies, direct and indirect, which are then sub-divided into six sub-groups: memory, cognitive, compensation, metacognitive, affective and social. Although originally developed to describe how learners facilitate second language acquisition, this framework has also informed research on how learners cope with the emotional and psychological challenges of language learning, including anxiety. Of particular relevance are affective strategies (e.g. using relaxation technique, positive self-talk) and social strategies (e.g. asking for help, cooperating with others), which overlap conceptually with coping behaviours aimed at managing language-related stress.

Building on this perspective, the current study draws more directly on Kondo and Ying-Ling's (2004) typology of coping strategies for foreign language anxiety, which provides a more targeted framework for understanding how learners actively manage speaking-related anxiety in academic settings. Kondo and Ying-Ling (2004) identified 70 basic tactics for coping with foreign language anxiety in classroom settings, organising them into five main categories: preparation, relaxation, positive thinking, peer seeking, resignation. Specifically, according to Kondo and Ying-Ling (2004), preparation involves efforts to manage anticipated challenges by enhancing one's learning and study methods (such as studying diligently or seeking high-quality lecture summaries). Employing these strategies is likely to boost students' perceived understanding of the material, thereby helping to lower their anxiety in language classes. Relaxation includes strategies designed to ease physical symptoms of anxiety. Common examples are taking deep breaths and making a conscious effort to stay calm. Furthermore, positive thinking serves a soothing role by counteracting the negative thought patterns that contribute to students' anxiety. This includes techniques such as visualizing a successful performance or attempting to find enjoyment in the tension. Such strategies aim to shift focus away from the stressor and toward more uplifting and reassuring thoughts, offering emotional relief. The fourth category, peer seeking involves students actively reaching out to classmates who appear to struggle with understanding the material or managing their anxiety. For anxious learners, recognising that others face similar challenges can provide emotional comfort through social comparison, helping them feel less isolated in their experience. The last group of strategies is termed Resignation, marked by students' unwillingness to take action to reduce their language anxiety. For example, by giving up or sleeping during class. Those who adopt this approach appear to cope by avoiding the issue altogether, aiming to lessen the emotional burden through disengagement (Kondo & Ying-Ling, 2004).

Several studies have built on Kondo and Ying-Ling's (2004) typology to investigate how learners cope with foreign language anxiety. For instance, in a qualitative study, Putri et al. (2020) reported that 20 students primarily relied on preparation, positive thinking, and relaxation to manage their English-speaking anxiety. Marwan (2007) found that among 76 university students, four out of the five coping strategies proposed by Kondo and Ying-Ling (2004) were utilized in their foreign language learning, with resignation being the only strategy not adopted by the learners. In addition to Kondo and Ying-Ling's (2004) categories, other studies have reported that students cope with speaking anxiety by engaging with authentic materials, using social media, seeking feedback, and practicing (Quvanch et al., 2024). Beyond the typical foreign language learning environment, some studies conducted in immersive target-language contexts suggest a different pattern of coping. For example, Papanihiel (2002) investigated 178 middle school students living in a target language environment and found that avoidance was the most commonly used strategy. The constant exposure and pressure to use the target language in daily life may have heightened learners' anxiety, leading them to rely more on avoidance-based responses rather than proactive strategies (see also. Elyildirim, 2017). Another coping strategy identified by Papanihiel (2002) involves forming close friendships with peers who are more proficient in English and appear less anxious. These relationships offer a source of support, allowing students to seek help with language-related difficulties in class and, in turn, reduce their own anxiety.

Despite the valuable insights offered by Kondo and Ying-Ling's (2004) framework and subsequent studies, most existing research has focused on classroom-based foreign language learning in learners' home countries, where language use is confined to structured academic contexts. In contrast, study-abroad environments provide more naturalistic opportunities for communication, where target language use extends beyond the classroom and into everyday life. Immersive environments introduce qualitatively different demands

and pressures, which may demand different coping responses. This highlights a gap in the literature: existing coping categories may not fully capture how learners manage speaking anxiety in real life, immersion settings.

2.4 Psychological Adjustment

2.4.1 Overview

Studying abroad represents a major transition, often accompanied by various personal and situational challenges. These challenges highlight the importance of examining how students adjust across different domains during their time abroad (Nilsson & Stålnacke, 2019). The international students experience involves processes of adjustment across several domains. In Schartner and Young (2020) conceptual framework, three key dimensions are identified: academic adjustment, psychological adjustment, and sociocultural adjustment. Among these, psychological adjustment refers to emotional reactions to a new environment, encompassing aspects such as psychological well-being and life satisfaction (Ward et al., 2001).

This thesis focuses specifically on psychological adjustment, as it reflects students' internal, affective response to the stresses and demands of living and studying in a foreign country, defined as "the ability to feel happy and satisfied in the new environment" (Schartner & Young, 2020, p. 27). Compared to with academic or sociocultural adjustment, psychological adjustment more directly reflects students' internal sense of well-being, and is thus especially relevant for understanding their subjective experiences of adaptation. Ward et al. (2001) suggest that psychological adjustment is most effectively understood through a stress and coping framework, with the greatest emotional challenges typically arising during the initial phase of the sojourn, when individuals are confronted with major life transitions and have limited access to coping resources and social support in the host environment. In

particular, life satisfaction and psychological well-being are two key indicators of psychological adjustment. They offer important insights into how students evaluate their lives and maintain positive functioning during their sojourn. Examining both constructs together enables a more holistic understanding of international students' emotional adaptation to the host environment (Schartner & Young, 2020).

2.4.2 Psychological Well-being

Psychological well-being (PWB) refers to the extent to which individuals experience positive functioning and emotional health. Psychological well-being includes both hedonic aspects, which emphasize experiencing positive emotions and pleasure while minimising negative emotions or distress, and eudaimonic aspects, which highlight self-satisfaction and a sense of purpose or meaning in life (Houben et al., 2015). It encompasses perceptions of meaning and purpose, self-acceptance, optimism, competence, and social connectedness. PWB is distinct from the mere absence of distress or illness; rather, it reflects a positive state of flourishing and self-realisation (Ed Diener et al., 2009). In the context of international education, psychological well-being is especially relevant as it captures students' internal affective responses to the academic, social, and cultural challenges of studying abroad (Spencer-Oatey & Xiong, 2006).

Previous research has increasingly recognised psychological well-being as a key factor in international students' adjustment throughout their study abroad, typically focusing on their general emotional functioning during their time abroad. Some studies have explored how international students evaluate their own well-being, offering a snapshot of their perceived adjustment. For example, Susanti and Supradaniati (2018) found that 75 Indonesian students studying in the UK reported overall high levels of psychological well-being, suggesting that many students are able to maintain positive functioning despite the

challenges of living in a foreign environment. Similarly, Spencer-Oatey and Xiong (2006) found that, among 126 Chinese students studying at a British university, only a minority reported signs of lowered mood, while the majority showed no indication of poor psychological well-being, highlighting a more balanced picture of students' emotional experiences during study abroad.

In addition to examining overall psychological well-being levels, a growing number of studies have investigated the factors that shape psychological well-being among international students. These included both individual characteristics and situational experiences. On the individual level, research has consistently shown that personality traits are associated with psychological well-being during study abroad (e.g. Dewaele & Dewaele, 2021; Maulsby & Stutts, 2019). Other intrapersonal resources such as self-efficacy, self-esteem, optimism, and emotion regulation abilities have also been found to buffer against stress and enhance well-being outcomes (e.g. Sabouripour et al., 2021; Shafaei et al., 2017; Ward et al., 2001; Zhang & Goodson, 2011). At the situational level, contextual factors such as social support, language confidence, academic self-perception, and a sense of belonging to the host environment have been closely linked to international students' psychological well-being. Students who feel more connected to peers, host nationals, or academic communities tend to report more positive psychological experiences (e.g. Alshammari et al., 2023; Brunsting et al., 2019; Luo et al., 2019; O'Reilly et al., 2010; Zhang & Goodson, 2011). Together, these findings highlight that psychological well-being during study abroad is shaped by a dynamic interplay between internal dispositions and external environmental conditions.

While existing research has provided valuable insights into the levels and correlates of psychological well-being among international students, it has largely relied on cross-sectional

designs, capturing psychological functioning at a single point in time. This approach tends to treat psychological well-being as a relatively stable, trait-like construct, overlooking its potential to fluctuate across time and contexts. Such limitations are especially important in the context of study abroad, where students undergo continuous academic, social, and emotional transitions that may shape their well-being in complex and dynamic ways. A small number of longitudinal studies have begun to address this gap. For example, Schartner and Young (2020) examined the psychological well-being of 223 non-UK students enrolled in one-year taught master's programmes in the UK, and found that students' well-being levels remained largely stable across multiple measurement points throughout the academic year. Alharbi and Smith (2019) also found no significant change in 104 international students' well-being across three phases of measurement throughout an academic year. In contrast, Cemalcilar and Falbo (2008) observed a significant decline in psychological well-being among 90 international students during the initial phase of their cross-cultural transition at a U.S. university, suggesting that the emotional costs of adjustment may be most acute early in the sojourn. However, most longitudinal research still relies on widely spaced assessments (for example, once every few months or once per academic term) and trait-level instruments, which may fail to detect short-term variability in emotional experience. As a result, relatively little is known about how international students' psychological well-being fluctuates across days or moments, beyond what trait-level measures can capture.

2.4.3 Life Satisfaction

Alongside psychological well-being, life satisfaction is recognised as a core indicator of psychological adjustment, particularly in the context of cross-cultural transitions (Ward et al., 2001). Life satisfaction is a key psychological concept that offers insight into a person's well-being and their evaluation of their life (Boyce et al., 2012). Life satisfaction refers to a cognitive evaluation process in which people evaluate the quality of their lives based on their

own unique set of standards (Shin & Johnson, 1978). Rather than based on objective or universal benchmarks, life satisfaction is shaped by each person's subjective evaluation (Sam, 2001). In essence, it represents a deliberate cognitive judgement in which individuals determine for themselves what constitutes a satisfactory life (Diener et al., 1985).

Within the study abroad context, the life satisfaction of international students reflects the extent to which their experiences in the host country meet their expectations, particularly in terms of achieving personal goals and navigating cultural adaptation. It captures their subjective sense of satisfaction and adjustment within the new environment (Jiang et al., 2020). Studying abroad is often perceived as an opportunity to pursue new lifestyles and personal growth beyond what may be available in one's home country. However, it can also involve significant challenges, as students must navigate competitive, globalised environments while managing the emotional cost of separation from family and familiar social networks. These disruptions in place attachment and interpersonal relationships can lead to declines in perceived life satisfaction and contribute to mental health difficulties (Nilsson & Stålnacke, 2019). Despite these challenges, in a study involving 304 international students at the University of Bergen in Norway, Sam (2001) found that most participants reported being generally satisfied with their lives, with approximately one-third rating their life satisfaction as good to very good. Similarly, Sam et al. (2015) found that 151 international students at the University of Ghana reported relatively high levels of life satisfaction, suggesting that their psychological adjustment to the host environment was generally positive. Furthermore, the findings of the Nabavi and Bijandi (2018) study indicated that the 361 undergraduate participants reported a moderate level of satisfaction with their experience as overseas students.

Existing research on life satisfaction among international students has predominantly focused on identifying factors that contribute to higher or lower levels of life satisfaction

during the study abroad experience. These factors typical include the friendship, acculturation experiences, language proficiency, social support, self-efficacy, sense of belonging, adjustment attitude, and intercultural competence (e.g. Im & Basilisco, 2022; Jiang et al., 2020; Sam, 2001; Shafaei et al., 2017; Zhang & Goodson, 2011). While these studies have provided important insights into the antecedents of life satisfaction, they typically rely on assessments conducted at a single point in time, offering only a static view of students' subjective adjustment. A smaller number of longitudinal studies have attempted to examine how life satisfaction evolves across the study abroad journey. For instance, Schartner and Young (2020) reported that 223 international master's students in the UK maintained relatively stable levels of life satisfaction across measurement points. Similarly, Nissen et al. (2022) found no significant change in life satisfaction among 145 students who studied abroad for one month, suggesting that short-term programmes may not appear to lead meaningful and lasting psychological change.

While these longitudinal findings suggest relative stability in life satisfaction over time, they primarily rely on trait-level measures administered at long intervals, typically months or semesters apart. Such methods may overlook short-term variability in how students perceive their lives during the course of daily academic and social experiences. Although life satisfaction is usually viewed as a relatively stable construct, emerging evidence suggests it may vary across short time frames, such as days or weeks, particularly in response to daily stressors or emotional experiences (e.g. Choi et al., 2016; Kent et al., 2020; Shevchenko et al., 2023; Stieger et al., 2021). These studies demonstrate that individuals' evaluations of their lives are not entirely fixed, but may shift depending on recent events, perceived accomplishments, or interpersonal dynamics. However, such state-level variability has rarely been explored within the context of studying abroad, where students regularly face

transitions and challenges that may shape how satisfied they feel with their lives at finer temporal resolutions.

2.5 Personality

2.5.1 Overview

Personality has long been recognised as a key factor in understanding individual differences in thought, emotion, and behaviour. Usually viewed as a stable set of traits, personality has been linked to various psychological outcomes, including language anxiety, life satisfaction, and well-being (e.g. Hosseinkhanzadeh & Taher, 2013; James et al., 2012; Malvaso & Kang, 2022; Ruini et al., 2003; Vural, 2019). In language learning contexts, trait-level dispositions such as extraversion or neuroticism may shape how individuals experience and adapt to linguistic and cultural challenges. Building on the principles of *Whole Trait Theory* (Fleeson & Jayawickreme, 2015, 2021, 2025), the theory highlights that personality comprises both stable trait components and dynamic state manifestations that vary across situations. Emerging research suggests that individuals may exhibit different personality profiles depending on situational cues such as language use, particularly in bilingual or multilingual settings (e.g. Mijatović & Tytus, 2016; Pavlenko, 2006; Wedérus, 2017). This section outlines key perspectives on personality traits and states, with particular attention to the moderating role of personality traits in learners' emotional and psychological development over time. It also briefly introduces the concept of personality states and how they may vary across language-use contexts, providing the foundation for the exploratory aspects of the current study (Study 2).

2.5.2 Defining Personality: A Foundational Overview

Personality has been defined in various ways across psychological traditions, yet most definitions converge on the idea that it encompasses enduring patterns of thought, emotion, and

behaviour that distinguish one individual from another. According to the American Psychological Association (APA, 2025), personality refers to “the enduring characteristics and behaviour that comprise a person’s unique adjustment to life, including major traits, interests, drives, values, self-concept, abilities, and emotional patterns”. Burger (1997, p. 4) similarly defines personality as “consistent behaviour patterns and intrapersonal processes originating within the individual”, drawing attention to both observable regularities in behaviour and the internal psychological mechanisms behind them. Two major themes – human nature and individual differences – have consistently shaped personality theory (Buss, 1984; MacKinnon, 1944). The first focuses on how personality expresses universal aspects of human functioning, while the second highlights stable differences between individuals. MacKinnon (1944) and Burger (1997) both highlight that consistency and internal psychological process are key to understanding personality. These processes encompass motivations, emotions, and cognitions that shape an individual’s experience and behaviour.

Personality has been defined in various and sometimes conflicting ways; one key distinction lies between dispositional and situational perspectives (Chamorro-Premuzic, 2016). According to Chaplin et al. (1988), traits and states are prototype-based categories that people use to describe and understand themselves and other. Prototypical traits are described as stable, enduring, and internally driven, whereas prototypical states are seen as temporary, short-lived, and influenced by external circumstances. Building on this distinction, researchers have proposed the concepts of trait personality and state personality (Baumert et al., 2017; Diener & Lucas, 2020; Fleeson, 2001). Traits reflect implicit links between observable behaviours and internal dispositions, representing consistent behavioural patterns that differentiate individuals from one another. In contrast, personality states capture the momentary expressions of thought, feeling, and behaviour that fluctuate across situations (Kritzler et al., 2021). Conceptually, the two differ in that states involve the immediate

awareness of one's current thoughts, emotions, and behaviours, whereas traits involve reflecting on these experiences more broadly over time, representing how individuals perceive and define their overall self-identity (Beckmann & Wood, 2020). This distinction between stable traits and fluctuating states provides a comprehensive framework for understanding both consistent and context-dependent aspects of personality. Recognising this duality is crucial for examining how personality influences and interacts with human behaviour across time and situations.

2.5.3 The Five Factor Model (Big Five)

The Five Factor Model (FFM) has become the dominant framework in contemporary personality psychology, particularly within the field of differential psychology (Chamorro-Premuzic, 2016; Novikova & Vorobyeva, 2019). Among various trait models, the Big Five taxonomy proposed by Costa and McCrae (1985), is frequently cited as evidence supporting the universality of the Five Factor Model (Chamorro-Premuzic, 2016). It provides a reliable and parsimonious model that effectively captures the majority of observable individual differences (Wiggins, 1996). According to this model, personality is organised into five broad dimensions: namely, *Neuroticism*, *Extraversion*, *Openness*, *Agreeableness*, and *Conscientiousness*. Each of these domains encompasses a set of narrower personality characteristics, referred to as facets, which allow for more fine-grained assessments of individual differences (Costa & McCrae, 1988). These facets offer insight into the specific ways in which individuals differ within each broad trait category. Table 1 summarises the facets commonly associated with each of the five personality traits.

Table 1. Trait Facets Associated with the Five Factor Model of Personality (Costa & McCrae, 1992)

Domains	Facets
Neuroticism (N)	Anxiety, angry hostility, depression, self-consciousness, impulsive, vulnerability
Extraversion (E)	Warmth, gregariousness, assertiveness, activity, excitement-seeking, positive emotions
Openness (O)	Fantasy, aesthetics, feelings, actions, ideas, values
Agreeableness (A)	Trust, straightforwardness, altruism, compliance, modesty, tender-mindedness
Conscientiousness (C)	Competence, order, dutifulness, achievement-striving, self-discipline, deliberation

The first key personality dimension is *Neuroticism*, which refers to a person's tendency to experience negative emotions such as anxiety, sadness, and irritability. Individuals high in *Neuroticism* are more prone to emotional distress, whereas those low in this trait, often labelled as emotionally stable, tend to remain calm and composed. The second major personality dimension is *Extraversion*, which encompasses high energy levels, positive emotionality, spontaneity, assertiveness, and a strong inclination toward social interaction. In contrast, individuals low in *Extraversion*, often referred to as introverts, tend to exhibit quiet, reserved, and more solitary behaviour. The third dimension, *Openness to Experience* refers to a person's tendency to actively seek out and appreciate new experiences, as well as to tolerate and explore the unfamiliar. Individuals high in *Openness* are typically curious, creative, original, imaginative, untraditional, and have broad interests. Those low in *Openness* tend to

be conventional, practical, less artistic or analytical, and have narrower interests (Costa & McCrae, 1992).

The fourth personality trait, *Agreeableness*, refers to behaviour that is friendly, considerate, and modest. It reflects a general tendency toward kindness and nurturing others, and includes the key facets of trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness. Individuals high in *Agreeableness* are often described as warm, caring, tolerant, and supportive, with a strong inclination toward prosocial behaviour. The last dimension, *Conscientiousness* reflects how organised, persistent, and motivated an individual is when working toward goals. People with high levels of *Conscientiousness* are typically dependable, diligent, self-disciplined, punctual, meticulous, orderly, goal-oriented, and determined. In contrast, those with low levels often appear disorganised, inconsistent, unmotivated, careless, undisciplined, inattentive, and more focused on immediate pleasure than long-term achievement (Costa & McCrae, 1992).

2.5.4 Personality Traits: Direct Links and Potential Moderating Roles in Psychological Trajectories

Personality traits have been shown to be related meaningfully to a range of affective constructs relevant to language learning and psychological adjustment, including foreign language anxiety, psychological well-being, and life satisfaction. Among the Big Five traits, neuroticism has demonstrated the strongest and most consistent association with foreign language anxiety in previous studies. Individuals high in neuroticism tend to experience heightened emotional reactivity and are more susceptible to stress in evaluative settings, such as speaking a second language. Empirical studies have shown that neuroticism is positively correlated with higher levels of language anxiety (e.g. Abu-Rabia et al., 2014; Dewaele & Al-Saraj, 2015; Khouya, 2018). In contrast, extraversion, which is characterised by sociability

and assertiveness, has been associated with lower levels of language anxiety (e.g. Dewaele, 2013; Vaghei et al., 2025). Extraverted learners are often more confident in social interaction and more willing to participate in communicative activities, which may reduce their vulnerability to speaking-related anxiety (Hamed et al., 2015; Vural, 2019). Although evidence for openness, agreeableness, and conscientiousness is less consistent, some studies have reported associations. For instance, in Khouya's (2018) study involving 345 university students, both openness and agreeableness were negatively correlated with communication apprehension and classroom-related English anxiety, whereas no significant relationship was found between conscientiousness and language anxiety. By contrast, in a study by Özcanlı and Kozikoğlu (2024) involving 920 secondary school students, English-speaking anxiety was found to be negatively correlated with conscientiousness, but positively associated with openness to experience and agreeableness.

In addition to language-specific anxiety, personality traits have also been widely studied in relation to broader indicators of psychological functioning, such as life satisfaction and psychological well-being. At the global level of the Big Five, extraversion and neuroticism show the associations with life satisfaction, as evidenced by studies conducted primarily with university student samples (e.g. Chico Libran, 2006; Schimmack et al., 2004). Extraverted individuals tend to experience higher levels of positive affect and social engagement, both of which contribute to greater overall satisfaction with life. In contrast, those high in neuroticism are more prone to negative affect and emotional instability, which are consistently linked to lower life satisfaction and poorer psychological well-being. According to a relatively recent meta-analysis conducted by Anglim et al. (2020), individuals with higher levels of neuroticism tend to report lower psychological well-being, whereas the remaining personality traits demonstrate positive links with well-being (see also, Siegler & Brummett, 2000). In addition, adolescents high in conscientiousness tend to pursue goal-

oriented activities and regulate their behaviour and surroundings, which is associated with greater life satisfaction (Ho et al., 2008). Deneve and Cooper's (1998) meta-analysis also indicated that conscientiousness was strongly associated with life satisfaction among the Big Five traits (see also. Fagley, 2012). The results regarding agreeableness and openness to experience are less consistent. For instance, Garcia (2011) found no significant correlations between these traits and life satisfaction among a sample of 300 Swedish high school students. In contrast, Fors Connolly and Johansson Seva (2021) found a positive association between agreeableness and life satisfaction among 3780 participants from Australia, Denmark and Sweden. Moreover, Siegler and Brummett (2000) examined the link between personality and psychological well-being in a sample of 2739 middle-aged adults, finding a strong positive association with openness. Overall, previous research has provided substantial evidence for the association between personality traits, life satisfaction, and psychological well-being across diverse populations.

While previous research has predominantly focused on the direct associations between personality traits and affective constructs, less attention has been given to the potential role of personality in shaping affect trajectories over time. Nevertheless, a few studies have explicitly examined whether personality traits moderate changes in well-being over time (Hill et al., 2014). Hill et al. (2014) argued that personality traits are promising candidates for moderating changes in wellbeing over time, advancing four key arguments in support of this proposition. First, personality traits encompass affective components – particularly extraversion and neuroticism – that are conceptually linked to well-being. Second, both broad and specific traits have shown consistent empirical associations with happiness and well-being, Third, longitudinal evidence indicated that personality can predict age-related trends and long-term changes in well-being. Fourth, interventions targeting either state or trait aspects of personality have been found to induce changes in well-being.

Complementing these conceptual arguments, Mroczek and Spiro (2005) draw on Gray's (1991) theory of reward and punishment sensitivity to explain how certain traits may shape not only the level but also the rate and curvature of change in life satisfaction over time. In this account, extraversion, characterized by heightened sensitivity to rewards, is associated with stronger social connections and ongoing social engagement. These factors may interact with the environment in mutually reinforcing ways, supporting stable or increasing life satisfaction trajectories. In contrast, neuroticism, characterized by a biological tendency toward anxiety and fear, is related to negative interpretations of experiences, unhelpful attributional styles, and greater stress reactivity, which may lead to consistently low or declining life satisfaction trajectories. Building on these arguments, the present study (Study 2) considers personality traits as potential moderators of psychological trajectories, focusing on their role in shaping changes in language anxiety, psychological well-being, and life satisfaction over time.

2.5.5 Personality Expression Across Languages

Increasing empirical evidence has challenged the traditional view of personality as entirely stable, suggesting that personality may change across different situations and contexts (e.g. Beckmann et al., 2021; Boyce et al., 2015; Lindner et al., 2023). Fleeson (2001) proposed that personality might be better understood as a distribution of behavioural tendencies over time, rather than as a fixed, unchanging trait. This perspective highlights not only the stability of general patterns but also the fluctuations that occur within individuals across different situations and times. Within-person variability refers to the phenomenon that the same individual may act differently on different occasions, reflecting the dynamic nature of personality in daily life (Fleeson, 2001). The idea that personality may fluctuate across situation is particularly relevant in multilingual contexts.

“Changing languages is like imposing another role on oneself, like being someone else temporarily. My English-language persona is the one that superimposes itself on all previous others. In it are the seeds of Yiddish and Hebrew, but mostly Spanish...But is the person really the same?...You know, sometimes I have the feeling I’m not one but two, three, four people. Is there an original person? An essence? I’m not altogether sure, for without language I am nobody” (Stavans, 2001, p. 251)

This quote illustrates the commonly reported experience among multilingual individuals that different languages may evoke distinct versions of the self, suggesting potential variability in personality expression across languages. Although Fleeson and Jayawickreme (2025) and Fleeson’s (2001) conceptualisation of personality emphasises the importance of state-level variability across time and context empirical investigations into how personality states shift in response to language-related situational cues remain limited.

Much of the existing literature in multilingual contexts has instead focused on individuals’ subjective perception of trait-level changes when using different languages. For example, Wedérus’s (2017) study investigates how Swedish-English bilinguals perceive shifts within themselves, including overall personality changes and, more specifically, changes in extraversion. The participants were 12 Swedish native speakers living in Dublin who used English regularly for work and social interaction, while continuing to use Swedish in their everyday lives. Extraversion emerged as the most frequently mentioned trait within the Big Five framework when participants described perceived shifts in their personality. Many reported feeling more talkative and socially confident, noting that they found it easier to initiate conversations and interact with others when speaking English (Wedérus, 2017). Pavlenko (2006) suggests that switching between languages can lead speakers to experience

shifts in their sense of self, as each language may evoke a different way of perceiving and relating to the world. Language plays a role in shaping personality by influencing how individuals perceive themselves and the world. Recent research has further highlighted the role of emotional dispositions and language-related emotions in shaping learners' self-perceptions in the target language (Resnik et al., 2025). Pavlenko (2006) administered a questionnaire to 1,039 bilinguals, asking whether they ever felt like a different person when using different languages. Remarkably, 65% of participants responded affirmatively, indicating a perceived shift in identity linked to language use. However, Mijatović and Tytus (2016) conducted a mix-method study with 88 German-English bilinguals and found that only about one-third reported feeling different when switching languages. In addition, Ożańska-Ponikwia (2012) examined 102 Polish-English bilinguals and Polish L2 users of English who were immersed in a foreign language and culture environment, and found that personality traits such as extraversion, agreeableness and openness were associated with self-perceived behavioural and body language changes when using a foreign language. Similarly, in Dewaele and Nakano's (2013) study involved 106 multilinguals, mostly university students who had lived abroad and spoken two to five languages. Participants reported feeling less logical, less serious, less emotional, and more fake when using their second language, third language, fourth language, compared to their first language. These findings reflect how individuals may experience dissonance or discontinuity in personality expression across languages. Nevertheless, these studies are primarily based on retrospective self-report data, reflecting how participants think their personality shifts, rather than capturing personality expressions in the moment as they occur. As such, it remains unclear whether such self-perceived changes correspond to empirical observable, within-person variability in personality states across language-use contexts.

To date, no study in the field of bilingualism or language use has adopted experience sampling or other intensive longitudinal methods to capture state-level personality variation over short timeframes. While research specifically examining language use and personality states remains limited, studies in other domains have consistently demonstrated that personality expression varies across different situational contexts. For example, Lindner et al. (2023) conducted an ambulatory assessment study with 962 adults, collecting data four times per day over six days. They found that variation in daily activities, social partners, and environments was associated with changes in state personality. On days with more diverse activities, participants reported feeling less neurotic and conscientious, but more agreeable. These findings suggest that even subtle shifts in daily context can shape how personality is expressed. Similarly, numerous studies have also found substantial variation or fluctuations in the expression of personality states across repeated assessments in different situations (e.g. Beckmann et al., 2021; Church et al., 2013; Fleeson, 2001; Huang & Ryan, 2011), highlighting the inherently dynamic and context-sensitive nature of personality. Given that language use is a salient part of daily life for multilingual individuals, it may similarly function as a situational cue that triggers changes in personality expression. Despite this plausible connection, empirical investigation into how different language use may shape state-level personality expression remain scarce. While prior studies have documented self-perceived differences in trait expression across language-use contexts, little is known about whether such perceived shifts reflect “real” fluctuations in momentary personality states. This highlights an important gap in our understanding of the dynamic interplay between language use and personality expression in multilingual contexts.

Chapter 3. Research Rationales and Research Questions

3.1 Overview of the Research

This thesis investigates the dynamic nature of affective and psychological experiences in language learning, with particular attention on how these experiences evolve across time and context. It aims to examine how language related anxiety, psychological well-being, and life satisfaction change and interact across different timescales and contexts, and how personality may shape or accompany these changes. Through this focus, the thesis seeks to capture both interindividual differences and intraindividual variability that characterise learners' emotional and psychological experiences in language learning and study abroad. To achieve these aims, it adopts a two-part research design that combines a systematic synthesis of previous studies with an original empirical investigation.

Study 1 systematically reviews existing longitudinal studies to evaluate whether and how foreign language anxiety has been shown to be malleable. Study 2 builds on the insights of the review by empirically investigating the temporal dynamics of English-speaking anxiety, psychological well-being, and life satisfaction among international students in the United Kingdom. It also examines the role of personality, both as a trait-level moderator of long-term change and, in a separate component, as a state-level construct that may vary across different language-use contexts. Together, these studies form a coherent research programme that moves from synthesising existing evidence to generating new empirical insights, advancing a multilevel understanding of affective and psychological variability in language learning and studying abroad.

3.2 Rationale for Study 1: Systematic Review

As Singer and Willett (2003) discuss, understanding how individuals change over time necessitates taking repeated measurements to capture the dynamics of development. In response to such critiques, an increasing number of researchers have adopted time-sensitive approaches to exploring how FLA develops and fluctuates over time. Rather than simply asking whether learners experience FLA, scholars have begun to examine when and how their anxiety emerges, intensifies, or diminishes throughout different phases of foreign language learning, using a range of designs suited to tracing its dynamic course (e.g. Boudreau et al., 2018; Elahi Shirvan et al., 2025; Gkonou, 2013; Kruk, 2022; Pan & Zhang, 2021).

Numerous systematic reviews on FLA exist in the literature (e.g. Akkuş, 2021; Al-Shboul et al., 2013; Hsiao & Tseng, 2022; Ji et al., 2022; Teimouri et al., 2019; Toyama & Yamazaki, 2021; Xiong et al., 2024), including those that focused on skill-related anxiety. For instance, a recent review explored the conceptualisation and measurement of foreign language *listening anxiety* (Ji et al., 2022), while a meta-synthesis specifically examined qualitative studies on foreign language *speaking anxiety* in the twenty-first century within the Turkish context (Akkuş, 2021). Additionally, several studies have reviewed the literature or used meta-analysis techniques to explore FLA and its association with academic achievement (Al-Shboul et al., 2013; Teimouri et al., 2019). Several reviews have incorporated studies involving repeated measurements, thus engaging with the temporal dimension of FLA to some extent. For example, Toyama and Yamazaki (2021) synthesised numerous classroom interventions aimed at reducing FLA, focusing solely on experimental studies (typically with a pre/post-test design). These interventions were categorised as either individual or interactional, depending on whether they targeted learners' internal processes or classroom social dynamics in foreign language learning. Similarly, Xiong et al. (2024) conducted a

meta-analysis of experimental studies that used a pre/post-test design to evaluate the effectiveness of an FLA intervention, revealing an overall decrease in FLA. In another meta-analysis, Hsiao and Tseng (2022) investigated the stability of language anxiety over time by synthesising findings from test-retest studies that used existing FLA scales. Their results indicate that, although language anxiety is context-dependent, it demonstrates a level of temporal consistency comparable to that of broad personality traits. However, the authors emphasised that language anxiety is not a personality trait per se, arguing that current measures mainly reflect its stable, trait-like component. Consequently, they highlighted the need for new instruments that are capable of capturing its more dynamic, state-level variation.

While these reviews engaged with the temporal dimension of FLA to varying degrees, their primary aim was to evaluate the effectiveness of FLA interventions or the trait-like stability of FLA. As such, they did not systematically examine how change in FLA is operationalised, what temporal frameworks have been adopted, or how different studies captured and interpreted change, whether at the group or individual level. To address this gap, the present systematic review focuses specifically on empirical studies that tracked changes in FLA over time, regardless of whether the change was assessed through group-level comparisons (e.g. mean score differences across sessions) or intra-individual analyses (e.g. within-person fluctuations). Hence, this review synthesises research that incorporates repeated measurements of FLA across various timescales, from several months or weeks to shorter time intervals, including even real-time assessments. By emphasising how change has been measured and conceptualised, this review seeks to (1) clarify whether and how FLA has been treated as a dynamic construct and (2) map the temporal designs and analytical approaches employed in the field.

The present systematic review provides a narrative synthesis of empirical studies that have examined changes in FLA within the same individuals across different timescales. This review was inspired by Gregersen's (2020) view that FLA is dynamic and operates across multiple timescales and that since language learning also unfolds over overlapping timescales, conclusions about FLA need to be understood in relation to the timeframe in which they are drawn. Accordingly, this review focused on empirical studies incorporating a longitudinal component, either through repeated measurements of FLA or temporal coding designed to track changes in FLA over time. By synthesising the methodological characteristics of these studies, I aimed to explore how changes in FLA have been studied across various timescales. In addition, I examined how change has been measured and whether findings suggest that FLA is malleable. The overall goal of this review was to offer an integrative perspective on the temporal dynamics of FLA and inform future research on affective variables in language learning. Hence, the following research questions (RQs) were addressed:

- RQ1. What are the overall scope, theoretical frameworks, and methodological characteristics of existing empirical studies investigating foreign language anxiety across time?
- RQ2. How is change in foreign language anxiety identified and represented across empirical studies?
- RQ3. To what extent is foreign language anxiety shown to be malleable across different timeframes?

3.3 Rationale for Study 2: Empirical Study

Study 1 underscored that foreign language anxiety is not static trait but a dynamic construct that can fluctuate across multiple timescales. Building on this insight, Study 2 extends the investigation to encompass a broader range of affective and psychological

variables and to capture their temporal dynamic more directly through empirical data. Furthermore, Study 1 highlighted the need for empirical research that integrates different temporal levels and methodological approaches to capture the complexity of change in foreign language anxiety. Responding to this call, Study 2 adopts a multi-level and multi-method design to investigate the dynamics of affective and psychological experiences among international students in an immersion environment. This study was conducted with international students at UK universities, including those enrolled in a pre-sessional English and those who entered directly into the academic year. The research spanned approximately one academic year, allowing for the observation of students' affective and psychological experiences as they progressed through their study-abroad journey.

Speaking anxiety has received considerable attention in foreign language anxiety research. However, most studies have been conducted in classroom-based English as a foreign language context, offering limited understanding of how speaking anxiety develops and fluctuates in immersion settings. Building on these gaps, Study 2 focuses specifically on English-speaking anxiety as a core affective construct that reflects learners' real-time engagement with the target language in both academic and everyday settings, following a similar approach to Woodrow (2006). Understanding the situational conditions under which anxiety arises is therefore essential for capturing its dynamic and context-dependent nature. While understanding the situational conditions that give rise to speaking anxiety is essential, the strategies learners use to manage these emotions are equally important. Kondo and Ying-Ling's (2004) typology offers a useful framework for understanding how learners cope with foreign language anxiety, yet it was developed primarily within classroom-based contexts. Immersion environments may require different coping responses. Extending this framework to such context is therefore essential for capturing how learners regulate speaking anxiety in the realities of study-abroad life.

In addition to speaking anxiety, Study 2 focuses on psychological well-being and life satisfaction as key indicators of students' psychological adjustment during studying abroad. These constructs provide complementary perspectives on students' affective adaptation, reflecting both momentary emotional experiences and broader evaluations of life quality. Although well-being and life satisfaction have been widely studied among international students, existing research has largely relied on cross-sectional or widely spaced longitudinal designs, thereby treating these variables as relatively stable traits. Such approaches overlook their potential to fluctuate in response to ongoing academic, social, and linguistic experiences. To address these limitations, Study 2 adopts a multi-timescale framework that integrates both trait-level and state-level assessments of psychological well-being and life satisfaction. This design aims to examine both enduring individual characteristics and short-term fluctuation in psychological well-being and life satisfaction, providing a more dynamic understanding of international students' psychological adjustment over time.

Personality constitutes a key individual difference factor that may shape how students experience and adapt to affective and psychological challenges during studying abroad. Existing research has established associations between the Big Five personality traits and constructs such as language anxiety, psychological adjustment. However, relatively few studies have examined whether stable dispositions are associated with variations or individual-level trajectories in these constructs across time. Addressing this gap, Study 2 considers personality traits as potential moderators of emotional and psychological trajectories, exploring whether individual differences in personality correspond to distinct adjustment patterns during the study period. In addition to these stable dispositions, theoretical and empirical works suggest that personality expression can vary across situations (e.g. Beckmann et al., 2021; Boyce et al., 2015; Fleeson, 2001). The language used in social interactions may serve as a situational cue that corresponds with different momentary

expressions of personality. The aim of Study 2 is to explore whether personality states vary across different language-use contexts, thereby extending trait-state personality research to the study-abroad environment.

Drawing on the perspectives of trait-state dynamics and dynamic systems theory, Study 2 aims to explore how international students experience affective and psychological changes during their study abroad period, focusing on English-speaking anxiety, psychological well-being, life satisfaction, and personality. This study adopts a multi-timescale approach to capture both enduring patterns and momentary fluctuations, offering a more dynamic understanding of international students' adjustment in immersion environments. Guided by these frameworks and the overarching rationale, the following research questions were formulated:

- RQ1. How do trait English-speaking anxiety, psychological well-being, and life satisfaction change over time?
- RQ2. Does trait personality associate with the trajectory of changes in English-speaking anxiety, psychological well-being, and life satisfaction?
- RQ3. How do momentary experiences of anxiety, psychological well-being, and life satisfaction fluctuate in daily life?
- RQ4. Does speaking a different language associate with a change in personality states?
- RQ5. In what types of situations within target language settings do participants experience English-speaking anxiety?
- RQ6. What are the main coping strategies that participants report using to manage English-speaking anxiety?

In summary, this chapter has presented the overall rationale for the present research, explaining how the two studies were linked and how the research questions were formulated.

Chapter 4. Study 1 Systematic Review: Longitudinal Evidence on the Malleability of Foreign Language Anxiety

4.1 Introduction

This chapter presents Study 1, a systematic review that examines whether and how foreign language anxiety has been shown to be malleable. A systematic review approach was adopted to provide a comprehensive and transparent synthesis of existing empirical evidence on the development and variability of foreign language anxiety. Given the large and diverse body of research on foreign language anxiety, a systematic review approach allows for the structured identification, evaluation, and synthesis of relevant studies, thereby enabling a clearer understanding of how change in foreign language anxiety has been conceptualised, operationalised, and analysed across different timescales.

Specifically, this review synthesises empirical studies that incorporate repeated measurements of foreign language anxiety. In doing so, it aims to provide a comprehensive overview of the theoretical frameworks and methodological approaches that have been used to investigate changes in foreign language anxiety. By bringing together findings from studies conducted across different contexts and temporal frameworks, the review offers insights into how foreign language anxiety may develop, fluctuate, or decrease during the language learning process.

The following sections describe the review methodology, present the key findings, and discuss their implications for understanding the temporal dynamics of foreign language anxiety. The findings of this systematic review also provide an important foundation for the empirical investigation presented in Study 2, which further examines the dynamic nature of English-speaking anxiety using longitudinal and experience sampling approaches.

4.2 Methods

This systematic review followed established conventions for systematic evidence synthesis. The reporting and screening process was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Page et al., 2021). The methodological approach of the review was also informed by general guidance for systematic reviews provided in the JBI Manual for Evidence Synthesis (Aromataris & Munn, 2020).

4.2.1 Eligibility Criteria

Studies were included based on the eligibility criteria outlined in Table 2, which cover topic, context, publication date, study design, participants, language, and outcome reporting. Broadly, we included empirical, non-interventional, longitudinal studies published in peer-reviewed English-language journals from 1986 onwards, reflecting the emergence of systematic FLA research (Horwitz et al., 1986; Young, 1986). Participants were required to be academic learners aged six or above, aligning with the typical age at which formal education and structured language instruction begin. Eligible studies examined or reported changes in FLA through repeated measurements within a consistent academic setting. Studies that did not meet the publication or methodological criteria, were not fully accessible, or that were primarily designed to evaluate instructional effectiveness or the impact of pedagogical interventions were excluded,² as the aim of this review is to capture naturally occurring changes in FLA rather than treatment effects.

² The initial scope of this review included all longitudinal studies, both interventional and observational. Several intervention studies were identified during screening, but were excluded to reduce conceptual complexity and focus on naturally occurring changes in FLA. This refinement is documented in the registered protocol [https://osf.io/mfk9t/?view_only=e1be4485cd8245c5aabc3a03228489c2]. These studies have been retained for a planned meta-analysis of the longitudinal effects of instructional interventions on FLA.

Table 2. Eligibility Criteria

Included	Excluded
<p>Topic: Foreign language anxiety (FLA; in a language other than mother tongue), including general FLA, foreign language classroom anxiety, or skill-specific anxiety (i.e. speaking, writing, listening, reading).</p> <p>Context:</p> <ul style="list-style-type: none"> • Academic context (i.e. school, university, educational institution). • Repeated measurements must be within the same context. <p>Date: From 1986 onwards.</p> <p>Publication status: Peer-reviewed journal articles.</p> <p>Study design:</p> <ul style="list-style-type: none"> • Non-interventional empirical designs only. • Longitudinal designs with at least two timepoints for the same individuals. • Studies using repeated measurements to track change in FLA. <p>Participants: Academic learners only (school-age children \geq six years, adolescents, or adults).</p> <p>Language: English</p> <p>Outcomes: Studies that report on change in FLA across timepoints, irrespective of the type or outcome of the reported change.</p>	<p>Topic: Anxiety not related to FLA, anxiety not associated with language, anxiety in non-foreign language contexts (i.e. dialectal or heritage languages).</p> <p>Context:</p> <ul style="list-style-type: none"> • Non-academic context (i.e. immigration, workplace). • Studies comparing different contexts (e.g. classroom vs. outside class) are excluded. <p>Date: Before 1986.</p> <p>Publication status: Book chapters, dissertations, conference papers, and other grey literature. Non-peer-reviewed sources or publications not in the public domain.</p> <p>Study design:</p> <ul style="list-style-type: none"> • Single-measurement or cross-sectional designs. • Interventional studies aimed at reducing FLA. • Pseudo-longitudinal studies (i.e. repeated cross-sectional designs) • Review articles or theoretical pieces without empirical data. <p>Participants: Teachers, parents, non-learners, children below school age (< six years).</p> <p>Language: Any language other than English.</p> <p>Outcomes: Studies that do not report any evidence of change.</p>

4.2.2 Information Source

In November 2023, a comprehensive search was conducted of the ERIC, British Education Index, PsycINFO, Scopus, and Web of Science electronic databases, using keywords related to FLA and longitudinal components. An updated search was conducted in early April 2025 to ensure the inclusion of the most recent studies.

4.2.3 Search Strategy

The search strategy was developed in consultation with our institution's librarian to ensure comprehensiveness and relevance. Specifically, for the construct of FLA, we adopted a broader term "language anxiety" to ensure a more inclusive and comprehensive search. This decision was based on variations in terminology across the literature and aimed to capture relevant studies even if "foreign" was not explicitly mentioned. For the "longitudinal" component, we examined previous empirical studies and systematic reviews to identify how longitudinal designs were typically described in the literature. Drawing on these insights, we formulated the following search terms: "language anxiety" OR "language NEAR/15 (W/15; N15) anxiety" AND "longitudinal OR cohort OR repeat OR retest OR "re-test" OR varia* OR stab* OR "pre-post" OR "pre post" OR "over time" OR change* OR prospective OR "follow up" OR "follow-up" OR "multi-wave" OR "multi wave" OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*". The search was piloted in Scopus to evaluate its sensitivity and precision. To ensure consistency across platforms, the search terms were entered into relevant fields in each database, according to their specific search functionalities (the search strings are provided in Appendix A). To supplement the database searches, we also screened the reference lists of all included studies to identify further eligible studies.

4.2.4 Selection Process

The study selection process involved multiple stages; the initial and subsequent reviewers each conducted separate searches of the databases and then verified whether their search results aligned. All retrieved records were imported into Rayyan, where duplicates were removed automatically and manually verified.

Initially, two reviewers independently screened all the titles to eliminate clearly irrelevant records. In the second stage, both reviewers assessed the titles and abstracts of potentially eligible studies to determine their relevance. For studies that passed this stage, full-text articles were retrieved and examined to confirm eligibility. To ensure consistency in applying the inclusion and exclusion criteria, a random sample of 20 full-text studies was screened by both reviewers in the initial phase; instances of disagreement were discussed to reach a consensus on all inclusion decisions at this stage. Following this, the remaining full-text articles were screened independently by the first reviewer. In cases where eligibility was uncertain or the outcome data were ambiguous, the full text was reviewed jointly by both reviewers, and final decisions were made through discussion and consensus among three reviewers. Finally, the reference lists of all included studies and relevant reviews were manually screened to identify additional eligible studies.

4.2.5 Data collection process

Once the final set of studies was determined, data extraction was conducted by the first reviewer using a structured form designed to record key study characteristics, participant information, FLA measures, and reported changes over time. The extracted data were then independently checked for accuracy and consistency by the second reviewer. Any discrepancies were resolved through discussion.

4.2.6 Data Items

For each included study, we extracted information on (1) reference details, (2) theoretical framework of FLA change, (3) target language and country of study, (4) sample size, (5) research context, (6) type of FLA (e.g. general, or skill-specific), (7) methods for measuring FLA repeatedly, (8) instrument used, (9) number of timepoints, intervals, and study duration, (10) analytical methods used to indicate change, and (11) reported FLA change results. These data items were selected to address the review questions and to facilitate the narrative synthesis of how FLA change was measured and evidenced.

4.2.7 Study Risk of Bias Assessment

A crucial part of the review involved assessing the quality of each study to gauge the level of confidence in the results (El Soufi & See, 2019). The Mixed Methods Appraisal Tool (MMAT, 2018) was used to evaluate the quality of the included studies (Hong et al., 2018). This tool was selected due to its flexibility in appraising studies with diverse designs, including qualitative, quantitative, and mixed-methods approaches (Hong et al., 2018), which was appropriate for the range of methodologies represented in the included studies.

Each study was first screened using the two MMAT screening questions, which assess whether the study has clearly stated research questions and whether the data collected are appropriate to address those questions. Only studies rated “Yes” on both screening questions proceeded to full appraisal. Each study was then categorised into one of MMAT’s five methodological domains (qualitative, quantitative randomised controlled trials, quantitative non-randomised, quantitative descriptive, mixed methods) based on its design, stated aims, and data collection procedures.

For each study, the first reviewer independently assessed the five core MMAT criteria relevant to its category, assigning a rating of “Yes”, “No”, or “Can’t tell” to each item. These

judgements were based on explicit information in the published report, and justification for each item rated as “Can’t tell” or “No” was recorded in a structured coding table (see Appendix B). For mixed-methods studies, we followed MMAT guidelines by assessing both the integration of methods and the relevant qualitative and/or quantitative components separately, based on the study design. This enabled us to judge whether each component met the quality standards of its respective methodological tradition. To ensure consistency, a second reviewer independently assessed 25% of the studies. Disagreements were resolved through discussion and consensus.

Following MMAT guidance, we did not calculate total scores. However, we did record the number of criteria met by each study to offer a general sense of quality. Quality appraisal was not employed as an inclusion or exclusion criterion. Instead, the MMAT ratings were later used to contextualise the synthesis of findings, particularly when evaluating the credibility and relevance of evidence regarding the malleability of FLA. Full MMAT rating, category assignments, and justification notes are provided in Appendix B.

4.2.8 Synthesis Methods

Drawing upon our preliminary understanding of the literature and considering the specific nature of the research questions, we anticipated substantial heterogeneity among the eligible studies with respect to the study characteristics and the measurement approaches utilised. Hence, we prioritised understanding how FLA change was framed and investigated, rather than focusing on quantitative analysis, which led us to favour a narrative synthesis approach over a statistical approach, such as meta-analysis. To address RQ1, we extracted details from the included studies, such as the publication year, target language, country where the study was conducted, sample size, number of measurement time points, time intervals, and theoretical framework. In response to RQ2 and RQ3, we synthesised the research designs, methods, and findings from the included studies to understand how change in FLA

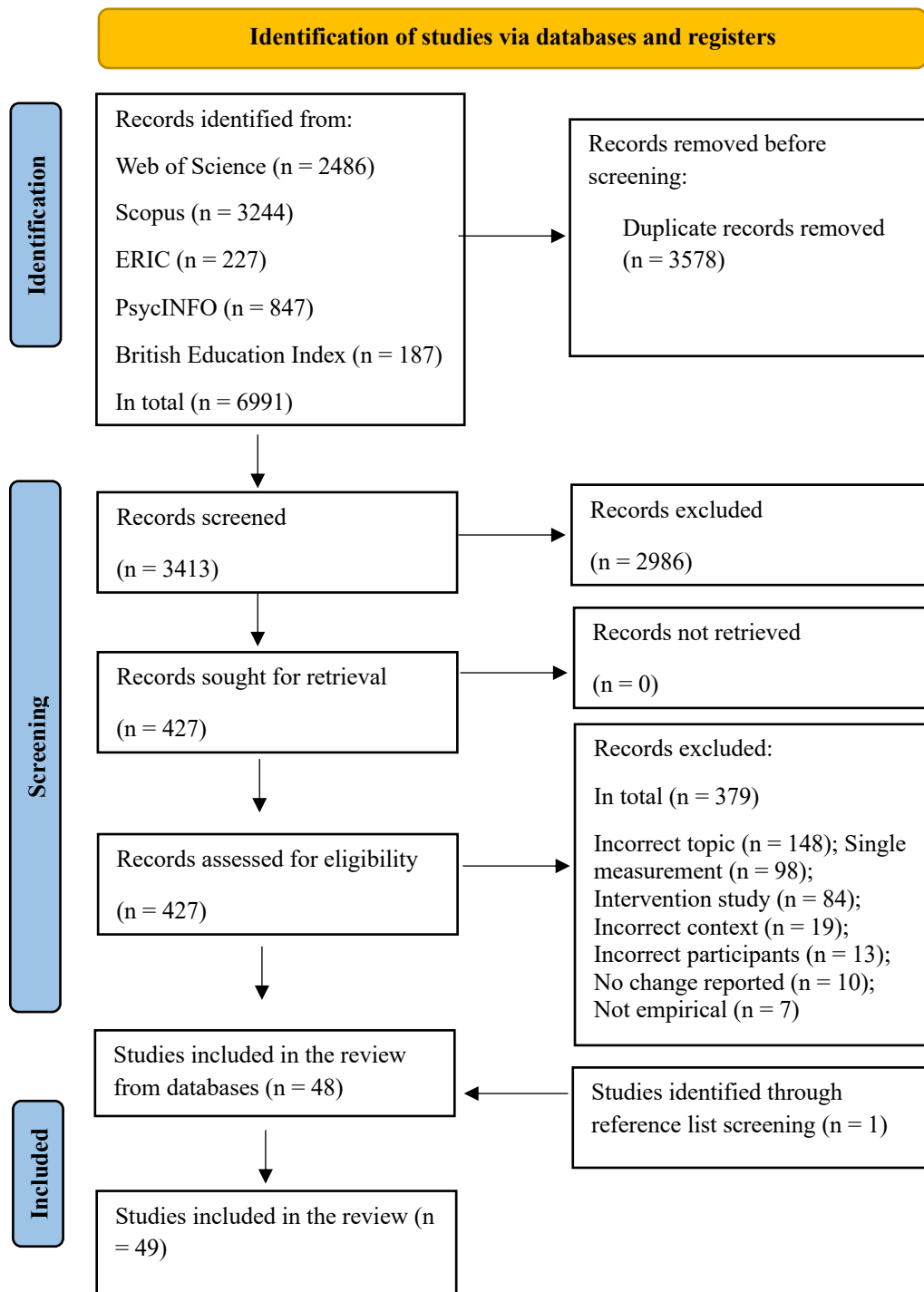
has been measured and empirically evidenced in prior research. Particular attention was given to the temporal structure of each study, such as the number of measurements and timescale involved (e.g. seconds, hours, days, weeks, months, or across academic terms). We recorded both the presence and direction of the reported change (e.g. increase, decrease, fluctuation). Where applicable, the methods used to assess and present change were noted, including the statistical procedures (e.g. paired samples t-tests, repeated-measures ANOVA [analysis of variance], latent growth curve modelling) and visual trajectories (i.e. graphs). Throughout the synthesis, the studies were compared on their timeframe, design type, and analytic strategy. These procedures provided a structured basis for interpreting how FLA change was approached and evidenced across the included studies.

4.3 Results

4.3.1 Study Selection

The initial database search yielded 6,991 records. After the removal of 3,578 duplicates, 3,413 records remained for title and abstract screening. Of these, 2,986 records were excluded based on irrelevance to the research questions (section 3.2), leaving 427 articles for full-text review. Following a detailed eligibility assessment and reviewer discussion, 48 studies were deemed to meet all the inclusion criteria; all these studies were retrieved and included in the final synthesis. In addition, one eligible study by Mahmoodzadeh (2015) was identified through reference list screening, bringing the total number of included studies to 49. The study selection process is illustrated in the PRISMA flowchart (Page et al., 2021), presented in Figure 2.

Figure 2. PRISMA 2020 Flow Diagram of Study Selection Process



4.3.2 Study Characteristics

4.3.2.1 Scope of the Included Studies.

The 49 studies included in the final synthesis were published between 2004 and 2025. While several earlier studies were identified, only eight were published between 2004 and 2014 (Gardner et al., 2004; Gkonou, 2013; Gregersen et al., 2014; Hurd, 2007; Jee, 2014; Koga, 2010; Liu, 2014; Wu, 2011). The majority appeared within the past decade (e.g. Alrabai & Moskovsky, 2016; Aubrey, 2022; Jin et al., 2015a; Liu & Dong, 2023; Liu & Xiangming, 2019; Pan & Zhang, 2021; Saghafi et al., 2017; Saghafi & Elahi Shirvan, 2020; Sun, 2024; Wilang & Vo, 2018), which indicates increasing scholarly attention to this topic in recent years.

Furthermore, the sample sizes across the 49 included studies varied considerably, reflecting differences in methodological orientation. Eighteen studies involved small samples of one to 10 participants, typically in qualitative or fine-grained design studies (e.g. Aubrey, 2022; Elahi Shirvan & Talebzadeh, 2017; Gkonou, 2013; Muftah & Alhazmi, 2024), 12 studies included 11 to 100 participants (e.g. Liu & Dong, 2023; Mahmoodzadeh, 2015; Pan & Zhang, 2021), while 11 studies featured medium-sized samples of 101 to 300 (e.g. Alamer & Lee, 2021; Liu & Yuan, 2021). Eight studies involved relatively larger samples exceeding 300 participants (e.g. Dewaele et al., 2022; Liu & Xiangming, 2019), with the largest sample comprising 879 (Derakhshan & Fathi, 2024) and 1115 (Peng & MacIntyre, 2025) participants.

In this review, the target language is defined as the language that participants were in the process of learning and on which their anxiety was measured. Accordingly, the FLA investigated in the included studies was directly associated with the learning of these languages, which varied. Of the 49 included studies, the majority ($n = 39$) focused

exclusively on English (e.g. De Ruiter et al., 2019; Huynh, 2021; Saito et al., 2025; Zhang & Wu, 2024), while a small number ($n = 5$) investigated English alongside another language (i.e. Dewaele et al., 2022, 2023; Jin et al., 2015a, 2015b; Jin et al., 2017). In addition, five studies examined languages other than English as the primary target, including French ($n = 3$; Boudreau et al., 2018; Gardner et al., 2004; Hurd, 2007), Spanish ($n = 1$; Gregersen et al., 2014), and Korean ($n = 1$; Jee, 2014). An overview of the included studies in terms of publication year, target language, and sample size is presented in Table 3.

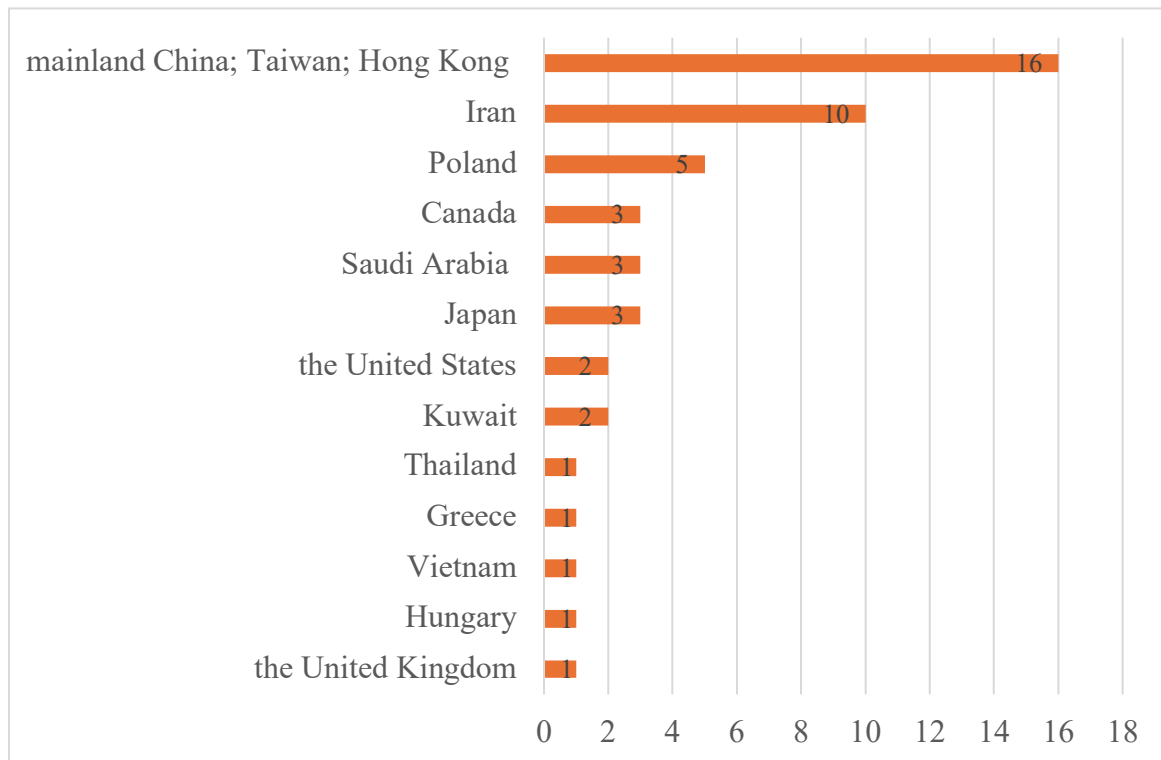
Table 3. Characteristics of the Included Studies (N = Number of Studies)

Category	N		N	
Publication year	2025	3	2016	2
	2024	7	2015	3
	2023	2	2014	3
	2022	6	2013	1
	2021	7	2011	1
	2020	1	2010	1
	2019	2	2007	1
	2018	4	2004	1
	2017	4		
	Sample size	1–10	18	101–300
11–100		12	> 300	8
Target language	English	39	Korean	1
	French	3	English, Japanese.	3
	Spanish	1	English, German, Spanish, French.	2

The studies included in this review were conducted in a variety of countries. As shown in Figure 3, the majority were conducted in East Asian contexts, particularly in China, including studies conducted in mainland China, Taiwan, and Hong Kong ($n = 16$), followed by Iran ($n = 10$) and Poland ($n = 5$). Other studies were conducted in countries such as

Canada, Saudi Arabia, Japan, the United States, and Kuwait, with fewer in locations like the United Kingdom, Thailand, Greece, Vietnam, and Hungary.

Figure 3. Country of Study Implementation ($N = 49$)



The included studies were conducted in a variety of instructional contexts. The majority took place in higher education settings, where participants were enrolled in formal language courses as part of their regular university programmes (e.g. Alrabai & Moskovsky, 2016; Liu & Dong, 2023; Liu & Xiangming, 2019). These language courses were typically embedded into the academic calendar and reflected naturalistic classroom conditions. In addition to these mainstream academic environments, several studies were situated in laboratory-based contexts (e.g. Aubrey, 2022; MacIntyre & Gregersen, 2022), where learners engaged in oral communication tasks such as dyadic conversations, monologues, or interviews, allowing for precise measurement of moment-to-moment fluctuations in FLA. Beyond higher education, a smaller number of studies were conducted in other types of

learning environments: high school settings ($n = 4$; Kruk, 2018; Peng & MacIntyre, 2025; Piniel & Albert, 2024; Saito et al., 2025), private language institutes or English centres catering to adolescent and adult learners ($n = 6$; e.g. Gkonou, 2013; Mahmoodzadeh, 2015; Saghafi & Elahi Shirvan, 2020), and virtual environments ($n = 3$; Kruk, 2016, 2021; Kruk, 2022) such as Second Life, which simulates language interaction through avatars. Two studies took place in online learning settings (Huynh, 2021; Liu & Yuan, 2021), which are often shaped by COVID-19 pandemic-related adaptations.

4.3.2.2 Theoretical Frameworks Informing the Study of FLA Change.

The theoretical grounding of the 49 studies included in this systematic review exhibited considerable variability in both presence and depth. While 21 studies explicitly referenced a theoretical framework related to the dynamics of FLA, the remaining 28 lacked such grounding. Among the most theoretically sophisticated approaches, a cluster of 21 studies adopted complex dynamic systems theory (CDST; Larsen-Freeman, 1997; Larsen-Freeman & Cameron, 2008) to conceptualise FLA as a nonlinear, context-sensitive, and emergent phenomenon (e.g. Aubrey, 2022; Kruk, 2022; MacIntyre & Gregersen, 2022; Piniel & Albert, 2024; Zhang & Wu, 2024). Some studies extended CDST with ecological perspectives. For instance, Kasbi and Elahi Shirvan (2017) integrated Bronfenbrenner's (1979, 1993) ecological systems theory, highlighting the influence of nested social systems on learners' emotional experiences, while Saghafi et al. (2017) explicitly adopted Bronfenbrenner's (1979, 1993) nested ecosystems model to examine writing anxiety among EFL learners, offering an ecological perspective on how such anxiety develops and fluctuates. The findings of these two studies provide compelling evidence for the fluctuating nature of writing anxiety, demonstrating how it is shaped by the dynamic interplay between individual characteristics and environmental influences.

Another group of seven studies (Alamer & Lee, 2021; Derakhshan & Fathi, 2024; Gardner et al., 2004; Hurd, 2007; Koga, 2010; Saito et al., 2025; Sun, 2024) approached FLA through broader motivational and emotional theories, treating it as one component within a larger network of affective and cognitive variables. These included motivational frameworks such as Gardner's socio-educational model (e.g. Gardner et al., 2004), positive psychology (e.g. Sun, 2024); the L2 Motivational Self System (e.g. Saito et al., 2025), and self-determination theory (e.g. Alamer & Lee, 2021), as well as emotional frameworks such as Fredrickson's (2001) broaden-and-build theory of positive emotions (e.g. Derakhshan & Fathi, 2024). Rather than focusing primarily on FLA, these studies explored its associations with constructs such as motivation, enjoyment, and academic performance.

A considerable number of studies ($n = 19$) in this review (Alrabai & Moskovsky, 2016; Jee, 2014; Liu & Xiangming, 2019) adopted established definitions of FLA to guide their investigation of change. These studies commonly referenced foundational concepts by Horwitz et al. (1986), MacIntyre and Gardner (1994), and MacIntyre (1999) and other related works, which describe FLA as a distinct type of anxiety arising in language learning contexts. Building on these definitions, subsequent researchers have implemented repeated-measures designs to observe whether levels of FLA shifted over time. These variations in theoretical grounding have shaped how researchers approach and frame the investigation of FLA change across time.

4.3.2.3 Methodological Characteristics.

All of the included studies employed observational, non-interventional research designs (see the Eligibility criteria, Table 2). While just over half adopted relatively longer-term longitudinal designs ($n = 27$), collecting data at two or more time points over extended periods (e.g. Gkonou, 2013; Jee, 2014; Jin et al., 2017; Pan & Zhang, 2021), 13 studies

focused on short-term fluctuations using real-time or high-frequency data collection methods (e.g. Boudreau et al., 2018; Saghafi & Elahi Shirvan, 2020; Wilang & Vo, 2018). Differences in data collection timeframes and intervals underpin the temporal classification adopted in this review. In reviewing the temporal designs of the included studies, this review adopts a three-tiered classification of macro-, meso-, and micro-timescales to describe the durations and granularity at which FLA was investigated. This classification was developed inductively based on the reported total study duration, the time spacing between measurement points, and the intended temporal resolution of each study.

Just over half of the studies ($n = 27$) employed a *macro-level* timeframe, focusing on changes in FLA over extended periods ranging from months to years. Most used two measurement points, typically before and after a certain period, making this the most common design (e.g. Derakhshan & Fathi, 2024; Liu, 2014; Liu & Yuan, 2021; Veenstra & Weaver, 2022). Some studies incorporated additional measurement occasions, with a modest number of time points spaced across a study period. For instance, data were collected on six occasions over one year (Yu et al., 2022) or four times during a single academic semester (Dewaele et al., 2022). Moreover, a smaller number of macro-level studies adopted a denser sampling design over a moderately extended period. For example, Gkonou (2013) measured anxiety weekly over eight consecutive weeks, allowing for a more nuanced understanding of affective trajectories without spanning an entire academic term. One particularly intensive longitudinal study (Elahi Shirvan et al., 2025) collected 264 daily measurements over a year, combining long-term tracking with high temporal resolution.

Only a small number of studies ($n = 4$) were categorised as employing a *meso-level* timescale (Kruk, 2016, 2021, 2022; Saghafi et al., 2017). These studies focused on FLA fluctuations across intermediate durations, which typically spanned several sessions. Rather than examining long-term trajectories, these meso-level designs emphasised the rhythmic

unfolding of FLA across short but structured intervals. For instance, in a virtual learning environment, two studies (Kruk, 2021, 2022) assessed FLA at every visit to the virtual world of Second Life (at the beginning, middle, and end of each session).

A distinct subset of studies ($n = 13$) operated at the *micro-level*, targeting moment-to-moment changes in anxiety within individual language-use episodes (e.g. He et al., 2021; Li et al., 2024; Zhang & Wu, 2024). These studies focused on how FLA fluctuated over an extremely short timeframe, often at the level of seconds or minutes. High temporal resolution data were collected through physiological monitoring methods or second-by-second ratings using the idiodynamic method, a technique that allows participants to self-assess their FLA continuously while reviewing recorded performance. For example, Saghafi and Elahi Shirvan (2020) and Boudreau et al. (2018) both used idiodynamic procedures to trace learners' FLA trajectories across the duration of a speaking task.

In addition to the studies classified under a single temporal level, five studies (Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021; Kasbi & Elahi Shirvan, 2017; Kruk, 2018; Mahmoodzadeh, 2015) incorporated more than one timeframe in their design. These studies typically employed different instruments to capture FLA across varying durations; for example, Elahi Shirvan and Taherian (2021) collected data across several weeks, interspersed with multiple intermediate observations and more frequent measurements during language learning activities, allowing for the examination of both general trends and situated fluctuations over time. Overall, the studies included in this review varied considerably in how they structured time, spanning macro-, meso-, micro-, and mixed timescales to capture different aspects of FLA malleability.

4.3.2.4 Measurement Instruments.

In addition to differences in timescale, the included studies also varied in how they assessed changes in FLA. Many studies relied on established self-report questionnaires administered at multiple time points; the most commonly used tool was the Foreign Language Classroom Anxiety Scale (FLCAS; Horwitz et al., 1986). A large proportion of studies (e.g. Elahi Shirvan et al., 2025; Huynh, 2021; Jin et al., 2017; Liu & Xiangming, 2019) employed the full-scale original (or slightly modified) FLCAS. For example, Jee (2014) used the full FLCAS (Horwitz et al., 1986) to assess FLA among 12 Korean language learners at two time points. Other studies (e.g. Dewaele et al., 2022; Dewaele et al., 2023) adapted the measure by selecting specific items to suit their research aims or practical constraints. For instance, Pan and Zhang (2021) repeatedly used selected FLCAS items to assess FLA among 55 Chinese EFL students.

Items from the Attitude / Motivation Test Battery (AMTB; Gardner, 2010; Gardner, 1985) were also adopted in some studies, such as Gardner et al. (2004) and Alamer and Lee (2021), while the Foreign Language Reading Anxiety Scale (Saito et al., 1999) was used in studies by Elahi Shirvan et al. (2018) and Liu and Dong (2023), and the Foreign Language Listening Anxiety Scale, adapted from Zhang (2013), was used by Liu and Yuan (2021). Beyond self-report questionnaires, some studies employed simplified numeric or visual tools to capture changes in FLA over time. For example, Kruk (2021, 2022) asked participants to self-assess their FLA three times during each language learning session using a 7-point scale ranging from 1 (lowest) to 7 (highest). Moreover, Elahi Shirvan et al. (2018) employed “motometers” – thermometer-shaped visual scales ranging from 0 to 100 – and asked learners to report their anxiety levels every 10 mins during 90-min classroom sessions. Similar visual rating tools were also employed by Elahi Shirvan and Taherian (2021), Saghafi et al. (2017), and Kasbi and Elahi Shirvan (2017).

Building on these simplified rating tools, some studies employed even more temporally sensitive and fine-grained techniques to capture FLA fluctuations within specific tasks or sessions, the most prominent of which was the idiodynamic method developed by Macintyre and Legatto (2010). This approach involves participants rating their emotional state on a second-by-second basis while viewing a video of their own language performance, typically using software such as Anion variable tester. This method has been widely used to investigate anxiety dynamics during speaking tasks or classroom episodes, as seen in studies by Saghafi and Elahi Shirvan (2020), Boudreau et al. (2018), MacIntyre and Gregersen (2022), Bielak and Mystkowska-Wiertelak (2024), Muftah and Alhazmi (2024), Elahi Shirvan and Talebzadeh (2017), Aubrey (2022), He et al. (2021), and Li et al. (2024).

Complementing the use of temporally sensitive self-report techniques, several studies also incorporated physiological indicators, such as heart rate monitoring (Gregersen et al., 2014; Wilang & Vo, 2018), to assess affective responses during language use. Although less frequently used, these physiological approaches provided complementary insights into the short-term dynamics of FLA. Moreover, Mahmoodzadeh (2015) employed an event-contingent tool to track real-time fluctuations in FLA; student participants were equipped with handheld mini-stopwatches and instructed to press a button whenever they experienced anxiety during classroom sessions.

In addition to structured and temporally sensitive instruments, several studies employed open-ended, interpretive tools to explore learners' experiences of FLA over time. These included learner diaries, as well as interviews and classroom observations used in a supplementary capacity, all of which were implemented at least twice in the studies reviewed, thereby enabling the examination of change across time. For instance, Sun (2024) and Gkonou (2013) asked participants to reflect regularly on their FLA experiences during the course of their language learning, providing time-linked qualitative diary data that revealed

individual variation in FLA. Interviews and classroom observations, by contrast, were typically used to support or elaborate on findings from other data sources. Studies such as those by Elahi Shirvan and Taherian (2021) and Kruk (2018) conducted interviews at multiple time points to gain a deeper understanding of learners' self-reported changes, while Kasbi and Elahi Shirvan (2017) incorporated repeated classroom observations to identify behavioural and non-verbal behaviours indicating the learner's FLA state. Overall, the instruments used across the included studies varied considerably in format, temporal sensitivity, and degree of structure, reflecting that a wide range of approaches are being used to examine how FLA changes over time.

4.3.2.5 Indications of Change in Foreign Language Anxiety.

The studies reviewed employed a variety of quantitative analytical techniques to examine changes in FLA, which were primarily based on repeated self-report questionnaire data. Most commonly, FLA change was assessed through traditional comparisons of FLA scores over time using descriptive statistics (e.g. Jin et al., 2017; Pan & Zhang, 2021), paired-sample *t*-tests (e.g. Liu & Xiangming, 2019; Liu & Yuan, 2021), and repeated-measures ANOVA (Dewaele et al., 2023; Kruk, 2018), among others. These methods primarily focused on detecting whether numerical differences occurred in participants' reported anxiety levels at different stages of learning. For example, Veenstra and Weaver (2022) applied Rasch modelling to track the variability in FLA across two time points using a shared logit scale, using a repeated-measures ANOVA to confirm the statistical significance of the observed change. To model change more systematically across multiple measurements, several studies (e.g. Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021) adopted latent growth curve modelling (LGCM), which allowed researchers to estimate initial levels and rates of change in anxiety across multiple time points. Peng and MacIntyre (2025) used a random intercept cross-lagged panel model (RI-CLPM) to examine within-person processes involving FLA at

three time points; although primarily designed to model the reciprocal relationships among variables over time, this model also captured the temporal stability of FLA through autoregressive paths, offering indirect evidence on whether and how FLA changed at the individual level. Furthermore, in an intensive longitudinal design, Elahi Shirvan et al. (2025) applied dynamic P-technique factor analysis to examine intra-individual emotional patterns and variability in FLA, based on data collected across 264 daily measurement points.

In studies using simplified rating tools such as emotion grids and motometers, change in FLA was typically indicated through visual and descriptive means rather than formal statistical modelling. Learners' repeated self-ratings were plotted across sessions or within-session intervals to illustrate fluctuations in FLA intensity (e.g. Kruk, 2018, 2021, 2022). In studies employing the idiodynamic method, dynamic FLA ratings were represented using bitmapped graphs (e.g. MacIntyre & Gregersen, 2022; Saghafi & Elahi Shirvan, 2020), which visually mapped second-by-second fluctuations in FLA intensity across the duration of a task. In one study, Kohonen's Self-organizing Maps (SOMs; Kohonen, 1982) were used to detect changes in FLA by clustering repeated emotional ratings into distinct states over time, offering another visual approach to indicating variations in FLA profiles (De Ruiter et al., 2019). Beyond self-reported visual ratings, a smaller number of studies utilised physiological data to more objectively capture real-time changes in FLA. In studies that incorporated physiological indicators, changes in FLA were indicated through shifts in biological responses that aligned with specific moments of language use. For example, heart rate data (Gregersen et al., 2014; Wilang & Vo, 2018) were recorded continuously during language use tasks, with real-time fluctuations in physiological signals used to indicate moment-by-moment changes in FLA.

In addition to numerical and physiological indicators, several studies drew on qualitative data to examine how FLA changed over time or across learning events. In studies

that used qualitative approaches such as interviews, learner diaries, and classroom observations, FLA change was indicated through participants' verbal or written reflections, as well as through observable classroom behaviours. These studies typically applied content (e.g. Gkonou, 2013; Saghafi et al., 2017) or thematic analysis (e.g. Sun, 2024), or grounded theory approaches (e.g. Elahi Shirvan & Taherian, 2021), to analyse recurring references to FLA and compare how it was expressed or described at different points in time. Together, these approaches illustrate the diverse ways in which changes in FLA have been identified, ranging from statistical comparisons and visual trajectories to physiological responses and narrative qualitative accounts. To provide a concise overview of the included studies, Table 4 presents a consolidated summary of their key characteristics. While the specific data items were detailed in the methods section, this table serves to visually integrate the studies' core features and support the presentation and interpretation of results throughout the paper.

Table 4. Characteristics of Included Studies

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/ Interval/ Duration	Analytical methods to indicate change	FLA change results
1	Alamer and Lee (2021)	Broader Affective-Motivational Frameworks	English/ Saudi Arabia	160	Higher Education	FLA	Questionnaire	10- item scale assessing language anxiety (Gardner, 2010)	3/ 10 weeks; 7 weeks/ 17 weeks	Descriptive statistics; a cross-lagged panel analysis	Stable
2	Alrabai and Moskovsky (2016)	Conceptualisation of FLA	English/ Saudi Arabia	252	Higher Education	FLA	Questionnaire	10 items (learner anxiety)	2/ 3 months/ One semester	Descriptive statistics; <i>t</i> -test	Stable
3	Aubrey (2022)	CDST	English/ China (Hong Kong)	4	University-level L2 learners performing a 3-minute monolog task(laboratory)	State FLA	Idiodynamic approach	Idiodynamic self-rating	Continuous during task (180)/ A second/ 3 mins	Idiodynamic self-rating score (graph)	Fluctuated
4	Bielak and Mystkowska-Wiertelak (2024)*	Conceptualisation of FLA (CDST-informed)	English/ Poland	10	Higher Education	State FLA	Idiodynamic approach	Idiodynamic self-rating (Anion Variable Tester V2 software)	272-600 times (M=479.4)/ 1 s/ 272-600 s	Idiodynamic self-rating score (graph)	Fluctuated FLA was highest in early weeks, reduced mid-semester, and re-emerged for some near exam time
5	Boudreau et al. (2018)	CDST	French/ Canada	10	Oral communication tasks (Higher Education) (Laboratory)	State FLA	Idiodynamic approach	Idiodynamic self-rating (software: Anion variable tester V2)	2 idiodynamic self -rating sets/ 1 s/ Each task: 3-5 mins	Idiodynamic self-rating score (graph)	Fluctuated
6	De Ruiter et al. (2019)	CDST + Ecological Psychology	English/ Iran	2	Higher Education (Conversation)	Foreign language classroom anxiety	Behavioral coding mapped to time series	Kohonen's Self-Organizing Maps (SOMs), Tanagra software	Continuous coding during 8-min interaction/ 1 s/ 8 mins	Kohonen's self-organizing Maps (SOM)	Fluctuated
7	Derakhshan and Fathi (2024)*	Broader Affective-Motivational Frameworks	English/ Iran	879	Higher Education	FLA	Questionnaire	8-item FLA scale adapted from Jiang and Dewaele (2019)	2/ 6 months/ 6 months	Cross-lagged panel analysis via SEM; Autoregressive path	Relatively stable

8	Dewaele et al. (2022)	Conceptualisation of FLA	English, German, Spanish and French/ Kuwait	360	Higher Education	FLA	Questionnaire	The 8-item scale extracted from FLCAS	4/ 2 weeks/ One semester	Descriptive statistics; Linear mixed-effects modelling	Stable
9	Dewaele et al. (2023)	Conceptualisation of FLA	English, German, Spanish and French/ Kuwait	360	Higher Education	FLA	Questionnaire	The 8-item scale extracted from FLCAS	4/ Follow the course calendar; approx. every 2-3 weeks/ 2 months	Descriptive statistics; repeated measures ANOVA; Linear mixed-effects modelling	Stable
10	Elahi Shirvan et al. (2018)	CDST	English/ Iran	367/4	Higher Education	FLA	Questionnaire ; motometer; journal	4 items from Saito, Garza, and Horwitz (1999) FLRAS	4 times (questionnaire); 9*4 (motometer); 4 times (interview)/ 2 weeks;10 mins;2 weeks/ 8 weeks	Descriptive statistics; latent growth curve modelling	Decrease; variance (across person)
11	Elahi Shirvan and Taherian (2021)	CDST	English/ Iran	367/4	Higher Education	Foreign language classroom anxiety	Questionnaires; motometer; interview	The 8 items from the well-established FLCAS; The motometer were adopted from Waning et al. (2014)	4 times (questionnaire); 9*4 (motometer); 4 times (interview)/ 2 weeks;10 mins;2 weeks/ 8 weeks	Latent growth curve modelling; qualitative analysis via grounded theory	Decrease; Significant variance (Qual)
12	Elahi Shirvan et al. (2025)*	CDST	English/ Iran	1	Private Institute	FLA	Questionnaires	Daily repeated FLCAS over 12 months	264/ A day/ 1 year	Dynamic P-technique factor analysis; autoregression; cross-lagged modelling	Fluctuated
13	Elahi Shirvan and Talebzadeh (2017)	CDST	English/ Iran	2	University EFL learners in recorded oral interview tasks (Laboratory)	State foreign language learning anxiety	Idiodynamic approach	Video-stimulated recall and real-time self-rating (-5 to +5 scale)	4 tasks * second-by-second measurements/ A second/ 4 tasks	Idiodynamic self-rating score (graph)	Fluctuated
14	Gardner et al. (2004)	Broader Affective-	French/ Canada	91/57	Higher Education	French class anxiety; use	Questionnaire; thermometer (state)	AMTB (Gardner, 1985) included French class	2;4/ 6 months; a month/	Single factor repeated-measures	Decrease (French class anxiety);

		Motivational Frameworks				anxiety; state anxiety		anxiety & French use anxiety; thermometer; state anxiety items	6 months	analyses of variance (ANOVA)	Stable (French use anxiety); some variation in state anxiety (the fluctuations are relatively subdued)
15	Gkonou (2013)	Conceptualisation of FLA	English/Greece	8	Private language school (adults)	FLA	Diaries	Diaries	8/ A week/ 8 weeks	Content analysis	Not remained constant (fluctuated)
16	Gregersen et al. (2014)	CDST	Spanish/USA	6	Higher Education	State FLA	Idiodynamic approach; heart rate monitor	Idiodynamic self-rating; wristwatch heart monitors with a chest strap	42 times/ 5 s/ 3.5 mins	Idiodynamic self-rating score (graph); heart rate in beats (graph)	Fluctuated
17	He et al. (2021)	CDST	English/China	4	Higher Education	State FLA	Idiodynamic approach	Idiodynamic self-rating (Anion Variable Tester V2 software)	Continuous during task/ A second/ 90 mins	Idiodynamic self-rating score (graph)	Fluctuated
18	Hurd (2007)	Broader Affective-Motivational Frameworks	French/ UK	145	Higher Education	FLA	Questionnaires	Researcher-designed questionnaire based on MacIntyre and Gardner (1994) FLCAS; journal	2/ 8 months/ 8 months	Descriptive Statistics (frequencies)	Directionally mixed change
19	Huynh (2021)	CDST	English/Vietnam	21	Higher Education (online; Covid-19)	FLA	Questionnaire; journal	FLCAS; journal	5/ A week/ 5 weeks	Descriptive statistics; Friedman test; thematic analysis	Stable (overall); fluctuate (individual)
20	Jee (2014)	Conceptualisation of FLA	Korean/USA	12	Higher Education	FLA	Questionnaire	FLCAS	2/ Around 2 semesters/ 2 semesters	Descriptive statistics; paired samples <i>t</i> -test	Increase (total)
21	Jin et al. (2015a)	Conceptualisation of FLA	English; Japanese/China	146	Higher Education	FLA	Questionnaire	FLCAS (English and Japanese)	2/ 2 months/ 2 months	Descriptive statistics; paired sample <i>t</i> tests	English (stable); Japanese (decrease)

22	Jin et al. (2015b)	Conceptualisation of FLA	English; Japanese/China	146	Higher Education	FLA	Questionnaire	FLCAS (English and Japanese)	2/ 2 months/ 2 months	Descriptive statistics	English (stable); Japanese (decrease)
23	Jin et al. (2017)	Conceptualisation of FLA	English; Japanese/China	146	Higher Education	FLA	Questionnaire	FLCAS (English/Japanese)	2/ 2 months/ 2 months	Descriptive statistics	English (stable); Japanese (decrease)
24	Kasbi and Elahi Shirvan (2017)	The Nested Ecosystems Model (Bronfenbrenner, 1979, 1993) & CDST	English/Iran	4	English Institute	FLSA (speaking)	Motometer; semi-structured interview; observation	Motometer; semi-structured interview; observe verbal and non-verbal behaviours	9 times * 5 (not all 9 times in each session); 5 times/ Every 10-min; every session/ From January to February 2016; during 5 sessions of 90-min	Graphs; ecosystem system; qualitative analysis	Fluctuated (different person)
25	Koga (2010)	Broader Affective-Motivational Frameworks	English/ Japan	93	Higher Education	FLA	Questionnaires	Items used in Schmidt and Watanabe (2001)	2/ 4 months/ 4 months	Descriptive statistics; paired <i>t</i> -tests	Decrease
26	Kruk (2016)	Conceptualisation of FLA	English/ Poland	16	Virtual world (second life); Higher Education	FLA	Grids	Grids (Self-rating scale)	3 for each session (3-8 sessions)/ 1/3 session/ A summer semester	Graphs; paired sample <i>t</i> -test	Stable
27	Kruk (2018)	Conceptualisation of FLA	English/ Poland	52/12	High School	FLA	Questionnaire; Grid; evaluation questionnaire; interview	FLCAS; a foreign language anxiety grid (a scale ranging from 1 to 7); evaluation questionnaire (indicated their feelings with regard to FLA that they experienced in each lesson)	FLCAS (3 times); Grid (4 times / each lesson; 30 lessons in G1; 26 in G2; 31 in G3; 34 in G4). An evaluation form (each lesson) interview (3 times)/ FLCAS (at the beginning, middle and end	Descriptive statistics; ANOVA with repeated measures; thematic analysis	Fluctuated across different group (G1; G2; G3; G4); decrease (from beginning of class to end, 10-min interval); fluctuated from one lesson to next (most conspicuous

									of the study); Grid (10 mins). Evaluation questionnaire (Each lesson); interview (at the beginning, middle and end of the study)/ A semester 3*14/ Each visit the virtual world (at the beginning, middle and the end of each session)/ 14 sessions over a period of one semester		patterns had been mentioned); fluctuate (interview)
28	Kruk (2021)	Conceptualisation of FLA	English/ Poland	1	Virtual world (second life); Higher Education	FLA	Grids	A self-rating scale range from 1 to 7	3*7;3*8/ Every visit the virtual world of second life (at the beginning, middle and the end of each session)/ 7 sessions; 8 sessions	Descriptive statistics	Some changes both during her visits to SL and from one session to the next
29	Kruk (2022)	CDST	English/ Poland	2	Virtual world; Higher Education	FLA	Grids	A self-rating scale range from 1 to 7	Continuous during task/ A second/ 300 s	Descriptive statistics	Fluctuated (changes in the levels of the variables in question both during single visits and from one visit to another) Fluctuated
30	Li (2024)*	CDST; Emotional dynamic modelling	English/ China	5	Higher Education	FLA	Repeated dynamic self- ratings via AVT software during video-recall Questionnaire	Anion Variable Tester (AVT) software	2/ One academic year/ One academic year	Emotional curves (graph)	Decrease
31	Liu (2014)	Conceptualisation of FLA	English/ China (Taiwan)	143	Higher Education	FLA	Questionnaire	FLCAS	2/ One academic year/ One academic year	Descriptive statistics; ANOVA repeated measure; multivariate analysis of variance (MANOVA) a paired-samples t test	Decrease

32	Liu and Dong (2023)	Conceptualisation of FLA & FLRA	English/ China	71	Higher Education	FLRA (reading)	Questionnaire	Foreign language reading anxiety scale (Saito et al., 1999)	3/ 4 weeks/ One semester	Descriptive statistics; parallel latent growth models; cross-lagged regression analyses.	Increase (T1-T2); Decrease (T2-T3)
33	Liu and Xiangming (2019)	Conceptualisation of FLA	English/ China	324	Higher Education	FLA	Questionnaire	ELCAS	2/ 10 weeks/ 10 weeks	Descriptive statistics; paired samples <i>t</i> -test results	Decrease
34	Liu and Yuan (2021)	Conceptualisation of FLA & FLLA	English/ China	182	Higher Education (Covid-19); (online teaching and learning environment)	FLA; FLLA (listening)	Questionnaire	FLCAS; 20-item foreign language listening anxiety scale (FLLAS) was adopted from that used in Zhang (2013)	2/ 13 weeks/ A semester	Descriptive statistics; paired sample <i>t</i> -test	Stable (no statistically significant differences occurred in any of the scales)
35	MacIntyre and Gregersen (2022)	CDST	English/ Canada	9 same-sex dyads (reported 2 dyads)	Higher Education (Conversation) (Laboratory)	State FLA (communication anxiety)	Idiodynamic approach	Idiodynamic self-rating (software)	One session per participant (3–4 mins); (180/181) / 1 s/ A conversation (3-4 mins) Ongoing; 18/ Ongoing; 15 mins/ A week; 270 mins	Idiodynamic self-rating score (bitmap graph)	Fluctuated
36	Mahmoodzadeh (2015)	CDST	English/ Iran	33	Language Institution	Foreign language classroom anxiety	Mini-stopwatches; Grids	Mini-stopwatches/ Grids	Continuous during task/ A second/ 4 mins	Temporal scattergram; Descriptive statistics	Fluctuated
37	Muftah and Alhazmi (2024)*	CDST	English/ Saudi Arabia	4	Higher Education	State FLA	Idiodynamic approach	Idiodynamic self-rating (software)	42/ Each session/ 14 weeks	Reported qualitatively without figures	Fluctuated
38	Pan and Zhang (2021)	Conceptualisation of FLA	English/ China	55	Higher Education	FLA	Questionnaire	8 items from FLCAS		Descriptive statistics	Fluctuate during the 42 times
39	Peng and MacIntyre (2025)*	CDST	English/ China	1115	High School	FLA	Questionnaires	The short-form foreign language classroom anxiety scale	3/ approx. 1 month (September, November, December)/ a semester	RI-CLPM (Random Intercept Cross-Lagged Panel Model)	Fluctuated (early) then stabilized

40	Piniel and Albert (2024)*	CDST	English/ Hungary	101	High School	FLA	Questionnaire	5-item FLA scale	4/ Each academic semester (approx.6 months)/ 2 years	Latent Growth Curve Modelling	No significant mean-level change; quadratic slope model fit best; significant individual variation in change trajectories
41	Saghafi et al. (2017)	The Nested Ecosystems Model (Bronfenbrenner, 1979, 1993)	English/ Iran	4	A Language Institute	FLWA (writing)	Journal; task-motometer; semi-structured stimulated recall interviews	Journal; task-motometer; interview	10/ One session/ 10 sessions	Qualitative content analysis; nested ecosystems model (analytical framework)	Fluctuated & dynamic
42	Saghafi and Elahi Shirvan (2020)	CDST	English/ Iran	4	Private Institute	State FLA	Idiodynamic approach	Idiodynamic self-rating (software: Anion variable tester)	4 idiodynamic self-rating sets/ 1 s/ 4 recordings	Idiodynamic self-rating score (graph)	Fluctuated (across different students and topic)
43	Saito et al. (2025)*	Broader Affective-Motivational Frameworks	English/ Japan	121	High School	Foreign language classroom anxiety	Questionnaire	8-item FLCA scale first used by Dewaele and MacIntyre (2014)	3/ Approx. 6 months/ 1.5 year	Descriptive statistics; repeated measures ANOVA	Stable
44	Sun (2024)*	Broader Affective-Motivational Frameworks	English/ China	12	Higher Education	FLA	Weekly reflection	Weekly reflective journals	14/ A week/ One semester	Thematic analysis	Change; Fluctuated and divergence (FLA decreased mid-semester for most students, then diverged by individual toward the end; change was clearly documented through participant narratives)

45	Veenstra and Weaver (2022)	Conceptualisation of FLA	English/Japan	341	Higher Education	FLSA (speaking)	Questionnaire	18 items were selected from PSCAS (Yaikhong & Usaha, 2012) and the FLCAS (Apple, 2013); a number of items are adaptations of items found in the FLCAS and the SLSAS (Cheng, 2017).	2/ 15 weeks/ 15 weeks	Descriptive statistics; a repeated measures ANOVA; Rasch Rating Scale Model	Decrease (overall); items (stable; varied)
46	Wilang and Vo (2018)	CDST	English/Thailand	6	Higher Education	State FLA (speaking)	Idiodynamic approach; heart rate monitor observation	Idiodynamic self-rating (software: Anion variable tester); heart rate monitor (wristwatch; Vivosmart HR 3.30)	Moment-by-moment during speaking tasks/ 5 s/ One speaking session	Idiodynamic self-rating score(graph); heart rate in beat (graph)	Fluctuated (across different person)
47	Wu (2011)	Conceptualisation of FLA	English/China (Taiwan)	91	Higher Education	FLA; FLRA (reading)	Questionnaire	FLCAS FLRAS (Saito et al., 1999) (Chinese version)	2/ 8 weeks/ 8 weeks	Descriptive statistics; two separate dependent <i>t</i> -tests	FLA (decrease); reading anxiety (stable)
48	Yu et al. (2022)	CDST	English/China	176	Higher Education	FLA	Questionnaire	8 items	6/ 2 months/ 12 months	Latent growth curve modelling; Growth mixture modelling	Decrease (overall); decrease. Increase, stable (across different classes)
49	Zhang and Wu (2024) *	CDST	English/China	5	University EFL listening tasks (Higher Education)	State FLLA (listening)	Idiodynamic approach	Idiodynamic self-rating (Anion Variable Tester V2 software)	Continuous during task/ A second/ 2 tasks	Idiodynamic self-rating score (graph)	Fluctuated

Note. Studies are numbered and listed in alphabetical order by first author's surname. An asterisk (*) indicates studies that were identified and included during the early April 2025 search update.

4.3.3 Risk of Bias in Studies

All included studies met the two MMAT screening criteria: they clearly stated their research questions and collected data appropriate to addressing those questions. This ensured a minimum level of conceptual and methodological coherence across the included studies. In terms of methodological classification, the included studies were distributed across four of the five MMAT categories. Specifically, eight studies were qualitative, 22 were quantitative non-randomised, two were quantitative descriptive, and 17 employed mixed methods. No studies fell into the randomised controlled trials category. This distribution reflects the eligibility criteria of the review, which focuses exclusively on observational studies examining changes in FLA. Regarding the number of MMAT criteria met, all included studies fulfilled at least three of the five quality indicators. Of these, 17 studies met five criteria, 21 met four, and 11 met three, which indicates that the overall methodological quality was moderate to high. Overall, the included studies were of adequate quality to inform the analysis of FLA change.

4.3.4 Understanding the Dynamic Nature of FLA: Timeframes and Quality Considerations

4.3.4.1 Variation Regarding Temporal Scope

In addition to the methodological characteristics and indicators of change previously described, this section focuses on the outcomes reported in the included studies. In relation to timescales, the included studies were previously categorised as adopting macro-, meso-, or micro-level temporal scopes, and the outcome patterns varied across these categories. Among the studies using macro-level timescales, such as semester- or programme-length designs, a majority reported gradual decreases in FLA (e.g. Liu & Xiangming, 2019; Yu et al., 2022), while some described stable levels of anxiety across the study period (e.g. Alamer & Lee, 2021; Dewaele et al., 2022; Dewaele et al., 2023), a smaller number noted increases (e.g. Jee, 2014). Studies employing meso-level timescales, such as those tracking changes across

sessions or days, more frequently identified fluctuating patterns of FLA (e.g. Kruk, 2021; Kruk, 2022). In the micro-level studies, which focused on within-task or moment-to-moment shifts, the most commonly reported outcome was fluctuation. These studies (e.g. Aubrey, 2022; He et al., 2021; Li, 2024; Zhang & Wu, 2024) often captured anxiety as varying in real time, in response to specific interactional or task-related features. Overall, changes in FLA were reported across all temporal scopes, although the forms and patterns of change differed according to the level of granularity afforded by the study design.

4.3.4.2 Variation Regarding Methodological Quality

This section further explores how reported changes in FLA may related to the methodological rigour of the included studies, as assessed using the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018). All studies addressed change in some form, but the ways in which FLA changed differed substantially across studies. To provide a more nuanced understanding, the reported changes in FLA are examined in relation to methodological quality. Specifically, studies that met four or five MMAT criteria ($n = 38$) consistently described some form of change in FLA. These changes included fluctuations during classroom interactions or tasks (e.g. Boudreau et al., 2018; Gregersen et al., 2014; Wilang & Vo, 2018), gradual decreases over time (e.g. Liu, 2014; Liu & Xiangming, 2019; Veenstra & Weaver, 2022), and patterns of relative stability across timepoints (e.g. Liu & Yuan, 2021; Saito et al., 2025). Several studies also revealed that trajectories of FLA varied considerably across individuals, which reflects the dynamic and person-specific nature of FLA development (e.g. Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021). Studies that met three MMAT criteria ($n = 11$) reported diverse trajectories in FLA, including stable levels across the study period (e.g. Alrabai & Moskovsky, 2016), decreases (e.g. Wu, 2011), or increases (e.g. Jee, 2014), or fluctuation (e.g. Pan & Zhang, 2021). Taken together, the included studies reported various outcomes related to FLA, including fluctuations, gradual

decreases or increases, relative stability, and mixed patterns. No obvious difference was observed between the outcomes of studies that met four or five versus fewer MMAT criteria.

Although study quality did not appear to predict the direction or presence of FLA change, the similar findings that emerged across studies of varying methodological quality strengthen confidence in the overall conclusions. Despite variation in research design and analytic approach, most studies characterised FLA as a construct that changes over time, rather than one that remains fixed. These results support a moderate level of certainty that FLA is malleable and responsive to temporal variation.

4.4 Discussion

This systematic review examined how FLA has been investigated as a dynamic construct, with particular attention paid to the research designs and methods used to capture variability. By synthesising the findings of empirical studies in this field, this review aimed to evaluate and elaborate on Gregersen's (2020) proposition that FLA unfolds across multiple timeframes and further investigate the view that FLA is malleable.

4.4.1 RQ1: What are the overall scope, theoretical frameworks, and methodological characteristics of existing empirical studies investigating foreign language anxiety across time?

4.4.1.1 Overall Scope.

Upon reviewing the 49 studies included in this review, it was clear that most focus on language anxiety related to English ^{1, 2, 3, 4, 6, 7, 10, 11, 12, 13, 15, 17, 19, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49},³ with a small number examining FLA changes in other target languages (i.e. Boudreau et al., 2018; Gardner et al., 2004; Gregersen et al., 2014;

³ Superscript numbers indicate the study IDs, which correspond to the full list of included studies provided in Table 4.

Hurd, 2007; Jee, 2014). This emphasis corresponds to the widespread role of English in global language education, yet it constrains our understanding of how FLA may evolve in the context of learning other languages. Only a few studies explicitly examined learners using more than one target language (i.e. Dewaele et al., 2022, 2023; Jin et al., 2015a, 2015b; Jin et al., 2017), and comparative approaches remain under-represented in the literature. The countries in which the studies were conducted spanned multiple continents, yet there was a clear concentration in East and West Asia, especially China^{3, 17, 21, 22, 23, 30, 31, 32, 33, 34, 38, 39, 44, 47, 48, 49} and Iran^{6, 7, 10, 11, 12, 13, 24, 36, 41, 42}. In contrast, contributions from North America (i.e. Boudreau et al., 2018; Gardner et al., 2004; Gregersen et al., 2014; Jee, 2014; MacIntyre & Gregersen, 2022) and Europe^{4, 15, 18, 26, 27, 28, 29, 40} were more limited. Notably, no studies were identified from African or Oceanic regions. This geographical distribution highlights the need for broader representation to examine how FLA develops in different instruction systems and research environments.

Most studies were situated in university classrooms, reflecting the dominance of higher education contexts in FLA research^{1, 2, 4, 6, 7, 8, 9, 10, 11, 14, 16, 17, 18, 19, 20, 21, 22, 23, 25, 30, 31, 32, 33, 34, 37, 38, 44, 45, 46, 47, 48, 49}. Although less common, studies conducted in laboratory settings (i.e. Aubrey, 2022; Boudreau et al., 2018; Elahi Shirvan & Talebzadeh, 2017; MacIntyre & Gregersen, 2022), language institutions (i.e. Elahi Shirvan et al., 2025; Gkonou, 2013; Kasbi & Elahi Shirvan, 2017; Mahmoodzadeh, 2015; Saghafi et al., 2017; Saghafi & Elahi Shirvan, 2020), virtual environments (i.e. Kruk, 2016, 2021, 2022), and high school (i.e. Kruk, 2018; Peng & MacIntyre, 2025; Piniel & Albert, 2024; Saito et al., 2025) point to a growing interest in examining FLA across more diverse educational contexts. However, research on FLA beyond higher education remains relatively limited, and future studies are needed to better understand how FLA unfolds in different learning contexts. At the same time, the sample sizes varied across the included studies, generally reflecting their methodological focus.

Smaller samples were typical of qualitative or fine-grained designs^{3, 4, 5, 6, 12, 13, 15, 16, 17, 24, 26, 28, 29, 30, 35, 37, 41, 42, 44, 46, 49}, while larger surveys were used to capture broader trends^{1, 2, 7, 8, 9, 10, 11, 14, 18, 21, 22, 23, 25, 31, 32, 33, 34, 39, 40, 43, 45, 47, 48}. However, including a longitudinal component in the study design posed a significant challenge in maintaining consistent participation across various testing phases (Abshire et al., 2017). Consequently, studies with relatively large sample sizes were rare (i.e. Derakhshan & Fathi, 2024; Peng & MacIntyre, 2025), which is likely due to the difficulties in ensuring continuous engagement over time (Maurice et al., 2017).

4.4.1.2 Theoretical Framework.

The reviewed studies demonstrated varied forms of theoretical and conceptual engagement with the dynamic nature of FLA. A large proportion were guided by conceptual understandings that framed FLA as a situation-specific and potentially variable emotional construct. These studies often referred to foundational definitions and early longitudinal research to support the idea that FLA can change over time. Although they did not always invoke formal theories or propose mechanisms of change, nonetheless, they reflect a growing empirical interest in capturing the temporal dynamics of anxiety and contribute to the field's shift away from static representations. Some studies^{1, 7, 14, 18, 25, 43, 44} approach FLA through broader affective or motivational frameworks, offering useful insights into how anxiety interacts with other psychological variables and how learners' emotions may evolve as part of their broader motivational and affective development. While these studies were not always primarily focused on FLA, they supported a view of it as a dynamic component of the learner's experience.

In the reviewed studies, the most common theoretical framing of FLA drew on CDST (complex dynamic systems theory), which emphasises the role of time, contextual interaction,

and systemic complexity in shaping emotional trajectories (Kruk, 2022; Larsen-Freeman & Cameron, 2008). CDST thus provides a valuable foundation for framing FLA as a temporally unfolding and systemically embedded phenomenon. Some studies further expand this perspective by incorporating ecological models (Bronfenbrenner, 1979, 1993), which makes visible the nested and interdependent nature of learners' environments. From this standpoint, changes in FLA are seen as co-constructed through interactions at multiple contextual levels, including classroom practices, institutional structures, and sociocultural settings (Saghafi et al., 2017). Collectively, these theoretical and conceptual orientations reflect an expanding recognition that FLA is not fixed, but varies across different times and contexts. Whether through formal theory or conceptual framing, the studies reviewed contribute to a more dynamic understanding of anxiety in language learning.

4.4.1.3 Methodological Characteristics.

The reviewed studies revealed a broad range of methodological strategies for examining the temporal dimension of FLA. This variation underscores the diverse ways in which researchers have approached the question of how FLA may evolve across different timeframes. While there is no single consensus on how FLA change should be studied, the diversity of designs suggests a growing methodological openness to capturing the dynamics of FLA.

Studies with macro-level timescale designs, which were the most common in this review, typically involved two or more measurement points spaced across several months or academic terms. These types of studies play an important role in challenging static conceptions of FLA by documenting longer-term changes, often in relation to broader educational or developmental experiences. Most of the macro-level studies ^{1, 2, 7, 8, 9, 12, 14, 18, 19, 20, 21, 22, 23, 25, 31, 32, 33, 34, 38, 39, 40, 43, 45, 47, 48} adopted self-report questionnaires administered at

relatively wide time intervals, a design choice that aligns with trait-oriented perspectives. As a result, while these studies provide valuable evidence of change, their relatively low measurement density limited the extent to which fluctuation, reversals, or nonlinearity could be observed and offered only a partial view of the temporal complexity involved in learners' affective experiences (Elahi Shirvan & Talebzadeh, 2017).

In contrast, studies situated within meso- or micro-level timescales adopted methods attuned to temporal dynamics; measuring anxiety either across several sessions or within discrete moments of language use, these studies captured shorter-term shifts that would be missed by macro-level timescale designs. A range of tools – including grid, motometer, and idiodynamic procedures – facilitated this higher temporal resolution^{3, 4, 5, 13, 16, 17, 26, 28, 29, 30, 35, 37, 41, 42, 46, 49}. In particular, the use of idiodynamic methods enabled researchers to detect highly individualised, moment-to-moment shifts in learners' FLA, revealing nuances that might be missed in broader temporal analyses (Elahi Shirvan & Talebzadeh, 2017). In addition, several studies employed physiological measures such as heart rate monitoring, offering alternative and non-verbal indicators of affective change (Wilang & Vo, 2018). While these approaches varied in intensity and scope, they collectively provide valuable insights into the short-term dynamics of FLA and expand the methodological repertoire available for capturing FLA at finer timescales.

A small number of studies combined multiple timeframes within a single study, capturing both longer-term trends and short-term fluctuations in FLA. By integrating tools such as questionnaires, repeated-session ratings, and journals, these studies (i.e. Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021; Kasbi & Elahi Shirvan, 2017; Kruk, 2018; Mahmoodzadeh, 2015) provide a more nuanced understanding of how anxiety changes over time. Although the instruments employed were not necessarily intended to produce consistent

or unified results in the ways that linear approaches might, the use of multiple data sources at the individual level, even within relatively brief time periods, enabled researchers to capture meaningful aspects of the dynamic nature of FLA (Wilang & Vo, 2018). For example, Kruk (2018) demonstrated that while FLA appeared to change gradually over the course of a semester, its patterns across and within individual lessons often diverged, highlighting the distinct insights offered by exploring different temporal frames. These approaches remain rare but illustrate the potential of viewing FLA as a multi-scale phenomenon rather than a single-track process.

In addition, qualitative methods, including interviews, learner diaries, and classroom observations, were featured in several studies. While often used to complement quantitative data, a smaller group of studies (i.e. Gkonou, 2013; Sun, 2024) employed them as the primary means of tracking changes in FLA over time. Temporally structured diaries and interviews offered insights into learners' emotional experiences that might not easily be accessed through structured instruments. However, qualitative research remains relatively limited in the domain, and its findings, while rich in contextual and individual detail, are typically drawn from small samples, which may limit their transferability to broader populations. Still, such studies contribute meaningfully to the literature by revealing the subjective and contextualised nature of FLA fluctuations, underscoring the need for more interpretive approaches alongside statistical ones.

Overall, the reviewed studies demonstrate increasing methodological sensitivity to the temporal dimension of FLA. The use of varied timeframes and a wider range of data collection tools have enabled more detailed observations of how FLA may shift over time. Nonetheless, relatively few studies have attempted to systematically connect changes occurring at different temporal levels or examine how patterns observed at one measurement

scale may relate to those at another. The following section explores how change has been operationalised, indicated, and interpreted across the reviewed studies.

4.4.2 RQ2: How is change in foreign language anxiety identified and represented across empirical studies?

Change in FLA is not simply observed, it is shaped by how researchers choose to define, measure, and represent it. In the reviewed studies, different approaches constructed change in different ways, reflecting varied assumptions about what counts as meaningful variation over time. Many studies indicated change through statistical comparisons across time points, typically using repeated-measures methods to assess whether FLA increased, decreased or remained stable ^{2, 8, 9, 14, 18, 19, 20, 21, 22, 23, 25, 27, 31, 33, 34, 38}. This approach provided clear evidence of whether change occurred but often treated change as linear, generalisable, and centred on group averages. Although these methods challenge the notion of FLA as a fixed trait, they tend to conceptualise change in a uniform and unidirectional manner, offering limited insight into fluctuation, instability, or non-normative developmental pathways. Traditional statistical methods are designed to capture overall group performance and offer a broad perspective, but gaining a more profound understanding of the language acquisition process requires paying close attention to the nuanced, often messy details of individual experiences (De Bot et al., 2007).

A smaller set of studies took a more process-oriented approach by applying techniques such as LGCM (latent growth curve modelling) (i.e. Elahi Shirvan & Taherian, 2021; Liu & Dong, 2023; Piniel & Albert, 2024; Yu et al., 2022) or dynamic P-technique factor analysis (Elahi Shirvan et al., 2025), which enabled them to trace intra-individual patterns of emotional variability across time. Similarly, several studies (i.e. Alamer & Lee, 2021; Derakhshan & Fathi, 2024; Peng & MacIntyre, 2025) applied cross-lagged panel

models, which inferred change in FLA through the strength and significance of autoregressive paths, offering insights into the degree of temporal stability or variability across measurement points. In light of this, employing a dynamic and nonlinear analytical approach is essential for gaining deeper insights and a more comprehensive understanding of the fluctuations in learners' FLA (He et al., 2021). However, while these models offer more nuanced insights into individual-level trajectories, much of the research continues to represent change in simplified terms, leaving limited space for capturing the full complexity, fluctuation, and diversity of learners' emotional experiences over time.

Graphical representations of change, such as emotion grids (i.e. Kruk, 2016, 2018, 2021; Kruk, 2022), motometers (i.e. Elahi Shirvan et al., 2018; Kasbi & Elahi Shirvan, 2017; Saghafi et al., 2017), and idiodynamic graphs^{3, 4, 5, 13, 16, 17, 30, 35, 42} offer another way of making change visible. These approaches emphasise moment-to-moment responsiveness, and in this context, they were often used to align changes in FLA with task-level events; but while they provided an intuitive sense of fluctuation, they were often descriptive and focused on individuals, offering valuable insights into within-person variability. However, the highly individualised nature of these approaches often limits the extent to which findings can be transferred to other learners or contexts. In many cases, they presented variation as evidence of dynamism without addressing how such variation relates to broader developmental patterns.

Physiological measures offered yet another way of indicating change, using real-time data such as heart rate (i.e. Gregersen et al., 2014; Wilang & Vo, 2018) to capture embodied responses during language use. These tools provide high temporal resolution and bypass self-report biases, but their interpretation remains challenging. In the included studies, without integration with subjective or contextual data, it was often unclear what the changes in FLA

represented. Additionally, promising physiological indicators were rarely linked to broader timescales, limiting their usefulness in understanding how FLA evolves across different temporal levels. Alongside these approaches, the qualitative studies introduced a different set of assumptions. Rather than measuring change, they traced how learners narrated, made sense of, and redefined their anxiety experiences across time. These approaches emphasised meaning and subjectivity, often revealing emotional shifts that would not necessarily appear in numeric trends. However, the lack of systematic temporal framing made it more difficult to integrate these findings with models that address how change unfolds over time.

In summary, these diverse strategies reveal that identifying change is not merely about detecting statistical differences, but is about shaping how change is conceptualised, measured, and evaluated. Whether derived from self-reported data, physiological recordings, visual materials, or narrative accounts, each type of data highlights certain dimensions of experience while leaving others less visible. Moving forward, more integrative approaches are needed. These should span timescales, attend to both individual-level variability and broader group-level patterns, and critically reflect on the assumptions embedded in how change is measured and represented.

4.4.3 RQ3: To what extent is foreign language anxiety shown to be malleable across different timeframes?

Although the reviewed studies document a wide range of change patterns, the malleability of FLA appears to be empirically supported. Evidence of change is observed across all timeframes, from longer-term developments captured through macro-level designs to momentary shifts revealed by dense, short-interval sampling. These findings underscore the temporal complexity of FLA, with changes unfolding over minutes, weeks, and months aligning with Gregersen's (2020) claim that FLA operates across multiple timescales and

reflects a fundamentally dynamic process. However, the nature of this change varied considerably in the included studies. Micro- and meso-level studies often emphasise dynamic, individualised trajectories that unfold across tasks or sessions, while macro-level studies tend to capture more gradual, directional patterns over weeks or months. Across these different designs, consistent evidence of change suggests that FLA is not a fixed construct but one that displays variability across time. Different timescales and methodological approaches illuminate distinct dimensions of this variability, highlighting the dynamic and multifaceted character of FLA.

Importantly, the observed patterns of change were not simply artefacts of measurement. The credibility of the observed changes in FLA is supported by the methodological adequacy of the included studies, nearly all of which met the two universal MMAT (Hong et al., 2018) screening criteria and at least three of the five quality indicators. Rather than producing change, methodological design shaped the types of change that became observable. As such, findings from diverse studies suggest that the malleability of FLA may not solely reflect the influence of specific instruments but could also be a feature of the construct itself, as observed across different methods, timeframes, and research designs. In the included studies, variability in FLA appeared to differ according to how it was operationalised. From this perspective, methodological diversity has the potential to enhance, rather than undermine, the field's understanding of FLA as a temporally sensitive and multidimensional phenomenon. At the same time, it is important to note that some studies reported little or no observable change in FLA ^{1, 2, 7, 8, 9, 19, 26, 34, 43}. However, such findings should not be taken as definitive evidence that FLA is inherently stable or unchanging. From a dynamic perspective, what appears to be stability may represent a particular phase in an ongoing, evolving process. Such moments of relative consistency might reflect temporary equilibrium, emotional self-regulation, or contextual alignment. Apparent stability, therefore,

does not necessarily contradict the potential for change; rather, it can be seen as one possible expression of affective behaviour within a broader landscape of fluctuation, adaptation, and transformation. Acknowledging both stability and variability as potentially meaningful dynamic states may offer a more nuanced understanding of how FLA can develop across different timescales.

In order to explore the potential impact of publication bias⁴ on these findings, in early April 2025, we searched for PhD dissertations in the ProQuest Dissertations & Theses database and reviewed five dissertations (Isselbaecher, 2004; Mihara, 2022; Pathan, 2012; Shinge, 2005; Siridetkoon, 2015) that met the same inclusion criteria as outlined in Table 2 (see Appendix C). While these dissertations were not formally incorporated into the synthesis, the PhD results closely aligned with those of the reviewed journal articles and revealed a similar range of FLA trajectories over time, including increases, decreases, fluctuations and periods of stability. The convergence of findings across both sources helps to reduce potential concerns regarding publication bias and further supports the review's overall conclusions.

In summary, the findings of the included studies indicate that FLA is not a fixed attribute but a dynamic construct that varies across different timescales. A more integrated approach that connects short-term fluctuations with long-term trajectories may be necessary to capture the full complexity of FLA development and further explore the underlying mechanisms of FLA change.

⁴ We thank the anonymous reviewer for encouraging us to give careful consideration to grey literature in this review. To maintain consistency in publication type and methodological reporting, this review mainly focused on peer-reviewed journal articles. However, we also reviewed five PhD dissertations that met our inclusion criteria. Although these were not incorporated into the formal synthesis, they are discussed in the main text to address potential concerns about publication bias.

4.5 Conclusion

This systematic review synthesised 49 empirical studies to examine how the potential malleability of FLA has been investigated over time. The findings provide empirical support for the view that FLA is a dynamic construct, with variability across multiple timescales. Different methodological approaches and temporal framings were found to shape how change is detected and interpreted. Macro-level designs typically used wide-interval self-report measures, while meso- and micro-level designs employed more temporally sensitive tools such as repeated-session ratings and idiodynamic tracking. While diverse approaches have advanced understanding, further methodological development is needed to fully capture the temporal complexity of FLA. Future studies should adopt integrative approaches that foreground time, process, and individual variation. Such designs would enable a more nuanced understanding of how and why FLA develops, fluctuates, and stabilises. The empirical investigation presented in Study 2 responds directly to this call by adopting a multi-timescale research design to examine both longer-term trajectories and short-term fluctuations in English-speaking anxiety among international students.

The patterns synthesised in this review lend support to Gregersen's (2020) claim that FLA operates as a dynamic construct across multiple timescales, with changes unfolding at varying levels of granularity depending on how research is temporally framed. Future research might aim to verify Gregersen's (2020) claims that FLA interacts dynamically with other individual difference variables and that opposing emotions can coexist.

Chapter 5. Study 2 Empirical Study: A Multi-Timescale Examination of English-speaking Anxiety, Psychological Adjustment, and Personality

5.1 Introduction

Responding to the methodological implications identified in the systematic review presented in Study 1 (chapter 4), this empirical study aims to investigate the dynamic changes in English-speaking anxiety, psychological well-being, and life satisfaction among international students studying in the UK. The systematic review primarily demonstrated that FLA varies across different timeframes and highlighted the methodological diversity used to capture such changes. In response to this need, the current study adopts a mixed-method, mixed-timeframe design that integrates longitudinal trait-level questionnaires, two sets of state-level repeated measures with different temporal resolution, and two rounds of semi-structured interviews. This multi-method approach enables the investigation of both gradual changes and momentary fluctuation in students' psychological experiences during their study abroad. In addition to examining temporal changes, the study also considers the role of trait personality and language use in shaping individual trajectories and momentary states. It also considers the type of situations that tend to elicit English-speaking anxiety in the immersion environment, and the strategies students use to manage such experiences. Through this integrated focus, the study aims to offer a comprehensive understanding of international students' emotional and psychological adjustment in an English-speaking environment. Building on the research questions outlined in Chapter 3 (section 3.3) and the empirical trends identified in the systematic review, four overarching hypotheses were formulated to guide the quantitative analyses, each comprising several specific sub-hypotheses, as summarised in Table 5.

Table 5. Overview of Study Hypotheses.

Main hypotheses	Sub-hypotheses
H1. English-speaking anxiety (in and outside the classroom) will decrease over time, while psychological well-being and life satisfaction will increase over time.	
H2. Personality traits will moderate the trajectories of English-speaking anxiety, psychological well-being, and life satisfaction changes over time.	<p>H2.1. Higher extraversion is expected to be associated with a faster decrease in English-speaking anxiety and greater increases in psychological well-being and life satisfaction over time.</p> <p>H2.2. Higher neuroticism is expected to be associated with a slower decrease in English-speaking anxiety and smaller increases in psychological well-being and life satisfaction over time.</p> <p>H2.3. Higher openness is expected to be associated with a faster decrease in English-speaking anxiety and greater increases in psychological well-being and life satisfaction over time.</p> <p>H2.4. Higher conscientiousness is expected to be associated with a faster decrease in English-speaking anxiety and greater increases in psychological well-being and life satisfaction over time.</p> <p>H2.5. Higher agreeableness is expected to be associated with a faster decrease in English-speaking anxiety and greater increases in psychological well-being and life satisfaction over time.</p>
H3. Individuals will show significant within-person variability in momentary English-speaking anxiety, psychological well-being, and life satisfaction across daily life assessments.	H3.1. Weekly assessments of English-speaking anxiety, psychological well-being, and life satisfaction are expected to show within-person variability, indicating that individuals' states fluctuate across weeks rather than remain constant.

	<p>H3.2. Experience sampling is expected to reveal moment-to-moment fluctuations in English-speaking anxiety, psychological well-being, and life satisfaction across one week in students' daily life at university.</p>
<p>H4. The use of different languages is associated with variations in individuals' momentary personality states, such that their personality profiles will be different when speaking different languages (native, foreign, and no-language).</p>	<p>H4.1. When speaking a foreign language, individuals are expected to report higher levels of conscientiousness and openness than when speaking their native language.</p> <p>H4.2. When speaking a foreign language, individuals are expected to report lower levels of extraversion, agreeableness, and emotional stability than when speaking their native language.</p> <p>H4.3. In no-language-use contexts, individuals are expected to report lower levels of extraversion, agreeableness, openness, and conscientiousness, and higher levels of emotional stability compared with language-use contexts.</p>

5.2 Methodology

5.2.1 Overview

This section outlines the approach utilised in the current study, which examines changes in English-speaking anxiety, psychological well-being, and life satisfaction among international students in the UK. In addition to examining longitudinal change in these constructs, the study explores how personality traits are associated with their trajectories. The study further considers personality states in relation to language use, as well as the situational triggers of English-speaking anxiety and the coping strategies that international students report. A mixed-method, mixed-timeframe longitudinal design was adopted to capture both between-person differences (i.e. how individuals differ from one another in the typical levels of anxiety, psychological well-being, and life satisfaction) and within-person variability (i.e. how the same individual's psychological experiences fluctuate over time and across situations). This approach enables a more nuanced examination of both stable individual characteristics and dynamic intraindividual processes. Combining qualitative and quantitative data within a longitudinal framework allows for the identification of broad patterns while also providing detailed insights into individual psychological change (Neves et al., 2018).

The study was conducted in two phases over a 14-month period (July 2023 – September 2024). The first phase spanned approximately three months and involved participants enrolled in pre-session programmes across UK universities. Trait-level questionnaires and a set of short-form questionnaires inspired by experience sampling methods (ESM) were administered repeatedly from July to September 2023. Unlike experience-sampling methods that usually involve multiple assessments per day over a few days (Verhagen et al., 2016), this repeated-measures method – implemented twice per week over a 10-week span – falls under the broader category of intensive longitudinal methods (Bolger & Laurenceau, 2013) and was intended to capture broader patterns of psychological

change over time. In this study, I refer to these repeated state-based measures as the **Weekly State Assessment (WSA)**. While not capturing momentary states in real time, the WSA offers a mid-frequency, ecologically valid approach to examining within-person variability across a meaningful period of adjustment, balancing temporal sensitivity with participant burden. The first phase also included a round of semi-structured interviews with 20 students from September to October 2023 at the end of the pre-sessional programmes.

The second phase extended over approximately one year and included a broader sample of international students, including both new participants and those continuing from phase one. These participants, enrolled in various academic programmes and were not necessarily involved in pre-sessional courses, completed the same trait-level questionnaires and a set of experience sampling methods (ESM) between October 2023 and June 2024. Another round of semi-structured interviews was conducted from July to September 2024 with 20 students, some of whom had participated in the first round. This methodological design allowed for multi-level data collection, integrating long-term trends and short-term fluctuations across study abroad contexts. All this underscores that “time is an important theme of investigation, as well as the framework through which a study unfolds” (Neale, 2021, p. 33). The following subsections detail the research context, sampling and recruitment strategies, ethics consideration, research design, procedure, response rates, sample characteristics, measures and instruments, and data analysis strategies.

5.2.2 Context

The study was conducted within a UK context. Specifically, the first phase of the study was conducted in the context of pre-sessional English courses at UK universities. UK universities require proof of sufficient English language proficiency before accepting international students into their programmes (Green, 2007). International students are usually required to provide an acceptable score on a recognised screening test, such as the IELTS

(International English Language Testing System) or its US equivalent, the TOEFL (Test of English as a Foreign Language, Educational Testing Service, Princeton, US) test, among others. If their scores are below the level required for entry, students can still be accepted if they have successfully completed a pre-session course offered by the university that will enable them to bring their skills up to the required level, thereby gaining unconditional admission (Green, 2007). Numerous universities already provide pre-session language courses designed to enhance students' language proficiency for study abroad programmes, at both undergraduate and postgraduate levels (Dewaele et al., 2015). Pre-session students often experience their initial introduction to a new academic environment and the social adjustments that come with starting life as an international student in a different environment (Consoli, 2022). An examination of various official UK university websites revealed that the length of pre-session courses offered to students is based on their current language proficiency scores and the specific language requirements of their department, which of course means that students with higher language scores are typically enrolled in shorter courses. This study involved students enrolled in 20-, 16-, 12-, 10-, 6-, 5- and 4-week pre-session courses from various universities. It is important to note that each university has different minimum language requirements for these courses.

The second phase of the study was conducted throughout a typical academic year at UK universities. UK universities commonly divide the academic year into three terms across two semesters. Semester One begins in September and concludes before the Christmas break. Semester Two starts in January and runs until the beginning of the summer break, generally in June. Most universities follow a term-based structure: Term One (autumn term) runs from September to mid-December; Term Two (spring term) spans from January to late March; and Term Three (summer term) extends from April to June. The participating universities'

institutional calendars guided the data collection during this phase, which took place across these academic periods.

5.2.3 Sampling and Recruitment Strategies

Recruitment for the first phase of the study spanned approximately 45 days and employed both formal and informal outreach methods. The process began with identifying the exact start dates of pre-sessional English courses across various UK universities by reviewing their official websites; this preparatory step was completed by the end of April 2023. Subsequently, I contacted the coordinators of these pre-sessional programmes via email to provide information about the study and to request either the opportunity to give a brief presentation at the beginning of the courses, or for the study invitation to be distributed to students. Several coordinators responded positively, enabling me to present the study in person at some institutions, while others agreed to circulate the invitation on my behalf.

To broaden the participant pool, additional recruitment strategies were employed. These included posting the study advertisement on university-affiliated research recruitment platforms such as Dialogue, as well as promoting the project on social media platforms, including Red Note, Instagram, and Facebook. Further outreach involved approaching students directly outside language centres at nearby universities and implementing snowball sampling techniques, whereby existing participants helped refer others to the study.

During the second phase, recruitment efforts continued using similar strategies. I maintained contact with university coordinators, some of whom assisted by distributing the study invitation to students. The same online platforms used in the first phase were also utilised to advertise the study more widely. In addition, I engaged directly with students

outside university libraries at nearby universities and continued to rely on snowball sampling to expand participation.

5.2.4 Ethics Consideration

An understanding of what constitutes ethical research is fundamental to the planning and conduct of any study (Cacciattolo, 2015). Educational researchers should conduct their work guided by an ethic of respect for everyone involved in or impacted by the research, including the researchers themselves ([BERA]. 2024). Ethical considerations for this study were guided by the Ethics Guidelines for Education Research (British Education Research Association, 2018). The application for ethical approval followed Durham University's ethics policy. Study 2 was reviewed and approved by the School of Education Ethics Subcommittee at Durham University (date of approval: 02 June 2023, reference number EDU-2023-04-21T19_38_49-xgdk84). Prior to data collection, the research design and instruments were also scrutinised and approved by the committee as part of the ethics application review process.

Participation in the study was entirely voluntary, and written informed consent was obtained from all participants. They were provided an information sheet detailing the purpose, procedures, and potential risks of the study, and were reminded of their right to withdraw at any stage without penalty. Particular attention was paid to potential burden given the relatively intensive nature of some of the data collection methods. Participants were reassured that occasional missed entries or partial participation would not affect their inclusion in the research. The interviews involved discussing personal experiences, which could be evoked discomfortable or emotional responses. To address this, participants were informed that they could decline to answer any question, pause, or terminate the interview at any point.

Given the longitudinal design of the study, anonymity and confidentiality were carefully managed. Participants created their own unique identification codes, which enabled responses across multiple time points to be linked without revealing personal identities. Consent forms and any identifying information were stored separately from the research data, and all materials were securely maintained. Attention was also given to issues of power and vulnerability. As the study involved international students, steps were taken to avoid any sense of obligation to participate, and participation was not linked in any way to students' academic evaluation. The design of research instruments and interview prompts was guided by cultural sensitivity, aiming to avoid culturally biased or potentially insensitive questions.

Reflexivity was also considered throughout the research process. Reflexivity refers to the researcher's critical reflection on how their own background, experiences, and assumptions may influence the research process and interpretation of data (Finlay, 2002). In the present study, the researcher's experiences both as an international student studying in the UK and as a language teacher provided contextual understanding of the linguistic and psychological challenges associated with learning and using a second language. These experiences may have facilitated rapport with participants and sensitivity to the issues discussed during interviews. At the same time, efforts were made to maintain a reflective and balanced stance throughout the research process. For example, reflective practice was adopted during the interview process by maintaining a neutral interviewing stance and by continually considering how the researcher's assumptions might influence participants' responses and the interpretation of their narratives. Overall, ethical principles were embedded throughout the design and conduct of the study to ensure the protection, dignity, and well-being of all participants.

5.2.5 Research Design

This study adopted a longitudinal, multi-method design and was conducted in accordance with the two main goals of a longitudinal study. Longitudinal studies involve tracking specific individuals through continuous or repeated assessments over extended periods of time. These studies are typically observational, often gathering both quantitative and qualitative data on various exposures and outcomes (Caruana et al., 2015). Longitudinal studies enable researchers to capture two characteristics of change: i.) intra-unit variation over time and ii.) inter-unit variation differences that can be predicted or used for prediction (Ployhart & Vandenberg, 2010). Specifically, the aim was to explore how international students adapt to their new environment psychologically, as well as how their English-speaking anxiety changes, to achieve an overall ‘fit’ between themselves and the environment.

To capture psychological processes operating on different timescales, the study adopted a dual approach, combining high-frequency repeated measures over short durations with lower-frequency assessments across a longer time span. This design allowed for the investigation of both short-term variability and longer-term developmental patterns. Three quantitative measures were used to examine processes at multiple timescales:

- Trait-level Questionnaires
 - Administered at multiple timepoints aligned with academic calendar.
 - Assessed psychological dispositions commonly treated as trait-like.
 - Enabled analysis of intraindividual change over an extended period.
- Weekly State Assessment (WSA)
 - Repeated state-level questionnaires administered twice per week.
 - Captured short- to medium-term within-person fluctuation.

- Reflects a moderate-frequency intensive longitudinal method (Bolger & Laurenceau, 2013).
- Experience sampling method (ESM)
 - High-frequency assessments (four times per day across seven days).
 - Captured momentary psychological states in real-life settings.

ESM, a structured self-report methodology, facilitates the examination of experiences both within and in relation to the real-world setting (Myin-Germeys et al., 2018). ESMs play a crucial role in developing a contemporary idiographic approach to research. By capturing repeated moments of individuals' experiences in their daily lives, these methods enable researchers to uncover behavioural patterns unique to each person, rather than focusing solely on patterns shared across groups, as traditional nomothetic approaches do (Beckmann & Wood, 2017, 2020; Conner et al., 2009). ESM also allows researchers to capture experiences in the moment, thereby overcoming the problem of retrospective recall bias, and to examine patterns prospectively, enabling the investigation of temporal variability and associations (Myin-Germeys et al., 2018).

As suggested by Plano-Clark et al. (2014), combining different types of data can help to corroborate results, capture the complexity of the phenomenon, and enrich the interpretation of one type of result with the other. In line with this rationale, the qualitative component – primarily semi-structured interviews – was incorporated to complement the quantitative results by revealing the subjective and contextual nuances of participants' lived experiences:

- Semi-structured interviews
 - Conducted in two rounds: once following the pre-session course and again at the end of the academic year.

- Enabled participants to articulate perceived psychological changes and adjustment challenges.

In sum, the longitudinal, multi-method design facilitated a nuanced investigation of psychological functioning across timescales. The integration of quantitative and qualitative approaches yields both breadth and depth, enabling a comprehensive understanding of international students' psychological experiences.

5.2.6 Procedure

The following section outlines the procedures used for data collection across both phases of the study. Data were collected using the online platform Qualtrics, with all study materials including trait-level questionnaires, WSAs, and ESMs, distributed to participants via clickable links or QR codes. In some instances, particularly during face-to-face recruitment, participants completed a paper-based version of the trait-level questionnaire. These paper-based responses were later digitised and securely stored in the same database as the online responses. Additionally, paper versions were also offered as a backup option in cases where participants encountered technical difficulties accessing the online surveys.

5.2.6.1 Phase One Data Collection.

The first phase of data collection was conducted during the summer of 2023, coinciding with the start of pre-sessional English courses across several UK universities. After introducing the study through the recruitment strategies described earlier, students who agreed to participate signed a consent form either digitally or on paper and completed a set of trait-level questionnaires. These included items on demographic and background information, Big Five personality traits, English-speaking anxiety in and outside the classroom, psychological well-being, and life satisfaction. Due to variations in the timing of contacting participants or receiving responses from potential participants, most participants completed

the trait questionnaire during the first week of the pre-session course, while a smaller number did so in the second week.

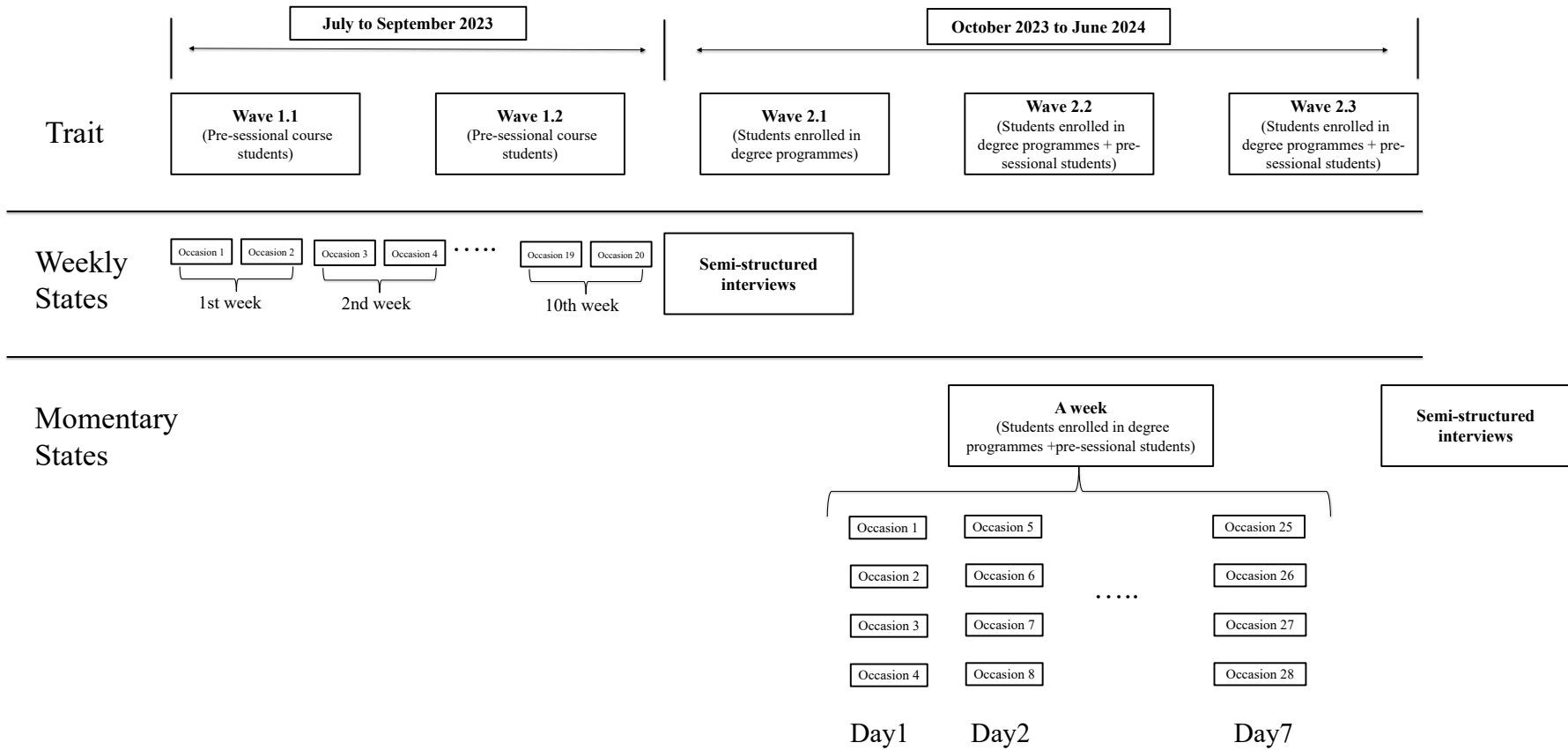
After completing the first trait-level questionnaire, participants were invited to take part in the WSAs, which involved responding to a brief questionnaire twice a week throughout the duration of the course. These WSAs were administered every Tuesday and Thursday at 5 p.m., following the end of a typical study day, and were to be completed within a two-hour window. The choice of Tuesday and Thursday was intended to capture fluctuations in experience across both the early and later parts of the academic week while also avoiding weekends, which tend to be less structured. In the final week of the pre-session course, after completing their last Thursday WSA entry, participants were invited to complete another set of trait-level questionnaire. This version included the same psychological measures but excluded demographic questions. Participants were given up to one week to complete it. During that same period, 20 participants were invited to take part in a semi-structured interview. These interviews were completed over the following months depending on participant availability. As pre-session courses ended at slightly different times across universities, typically between late August and early September, the first phase of data collection concluded by October 2023. One exception was a participant who, due to availability constraints, completed the interview later on November 9, 2023.

5.2.6.2 Phase Two Data Collection.

The second phase of data collection began in the Michaelmas term of autumn 2023. This phase involved a new cohort of international students who had recently begun their academic year. Participants were recruited using the same strategies described in Phase One, and were invited to take part in the study at the beginning of the academic year. After being introduced to the aims and procedures of the study, those who consented completed a trait-level questionnaire, which was largely consistent with the one used in the first phase. This

data collection took place within the first month of the semester. Around the midpoint of the following term, participants who had completed the earlier trait-level questionnaire and had taken part in the first phase were invited to participate in a seven-day Experience Sampling Method study. The ESM protocol followed a fixed time sampling schedule. Notifications were sent out four times daily at 10:00 a.m., 12:30 p.m., 3:00 p.m., and 5:30 p.m., and participants were asked to complete each questionnaire within one hour of receiving the notification. These time points were chosen to capture experiences across the morning, midday, afternoon, and early evening, offering a balanced coverage of the daily routine. “Fixed schedules are typically the least burdensome to participants; reports are made at standardised times, and participants can configure their schedule around this report” (Conner & Lehman, 2012, p. 96). After the ESM study, all participants, including those who had not participated in the ESM but had completed the earlier trait-level questionnaires, were invited to complete another round of trait-level questionnaire. Approximately three months later, near the end of the Easter term, participants were invited to complete a final round of trait-level questionnaire, which again mirrored the previous measures. Following the conclusion of all quantitative data collection, invitations for semi-structured interviews were distributed via email and messaging platforms. After obtaining informed consent, I conducted 20 interviews during the summer of 2024, scheduled according to participant availability. An overview of the complete data collection timeline is presented in Figure 4.

Figure 4. Timeline of Trait- and State-Level Measures and Interviews Across Two Phases



5.2.7 Response Rates

5.2.7.1 Trait-level Questionnaire Response Rates.

The trait-level questionnaire was administered four times for pre-sessional participants (1.1, 1.2, 2.2, 2.3) and three times for non-pre-sessional participants (2.1, 2.2, 2.3) (see Table 6). Pre-sessional participants began with 245 students at Time 1.1 but dropped to 68 by Time 2.3, while non-pre-sessional participants started with 159 at Time 2.1 and decreased to 79 at Time 2.3. Taken Together, a total of 404 students entered the study, with 147 remaining at the final timepoint, reflecting overall retention rates of 36.4% at Time 2.3, highlighting the challenge of maintaining engagement over multiple assessments. Across all timepoints, the dataset comprised 892 valid trait-level questionnaire entries.

Table 6. Retention Rates for Trait-level Questionnaire Across groups and Timepoints

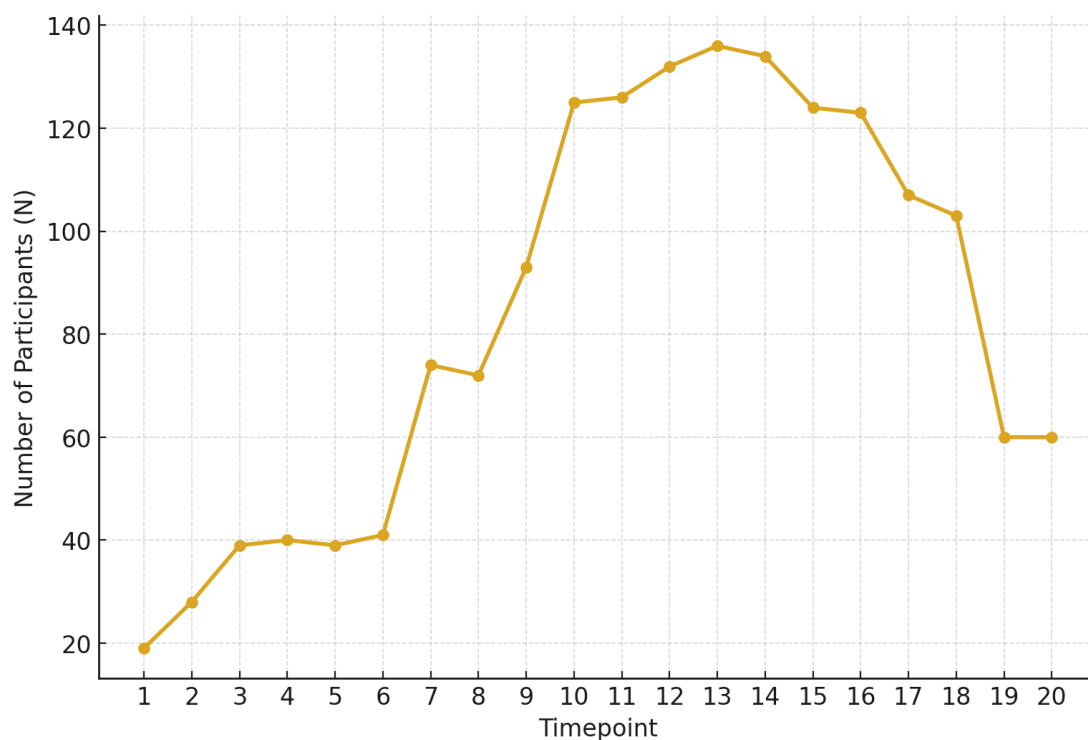
Trait-level Questionnaire					
Time point	1.1	1.2	2.1	2.2	2.3
Pre-sessional course participants	245	157	x	85	68
Retention rate (%)	100%	64.1%	x	34.7%	27.8%
Non-pre-sessional course participants	n/a	n/a	159	99	79
Retention rate (%)	n/a	n/a	100%	62.3%	49.7%
In total	245	157	159	184	147
Retention rate (%)	100%	64.1 %	100%	45.5%	36.4%

5.2.7.2 Weekly State Assessment Response Rates.

Following the initial trait-level questionnaire (Time 1.1), a subset of participants engaged in the weekly state assessments (WSAs). Due to variations in pre-sessional course schedules across universities, participants began and concluded their involvement in the WSAs at different times. Consequently, participation numbers fluctuated across the 20

timepoints. In total, 144 participants contributed 1,675 WSA responses. On average, participants completed 11.63 of the 20 prompts ($SD = 3.73$), with individual completion ranging from 4 to 20 reports. Participation was relatively low in early July but increased steadily throughout late July and early August, peaking in mid-August before tapering off towards mid-September. Figure 5 illustrates the number of participants across the 20 WSA timepoints, showing both the upward trend in August and the subsequent decline.

Figure 5. Participation in Weekly State Assessment across Timepoints.

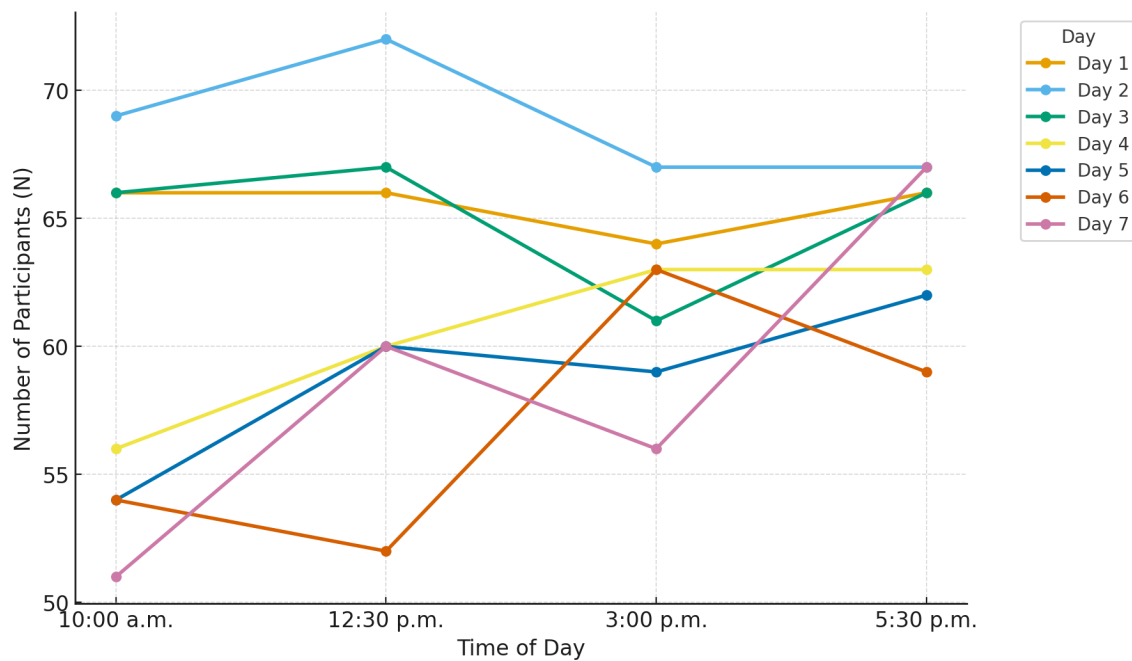


5.2.7.3 Experience Sampling Method Response Rates.

The ESM involved both participants who continued from the initial phase and others who were newly enrolled at Time 2.1 (see Figure 4), ensuring that all participants had previously completed at least one round of the trait-level questionnaire. In total, 79 students (39 pre-sessional and 40 non-pre-sessional) contributed 1,736 responses. On average, participants completed 21.97 out of 28 prompts ($SD = 6.34$), with individual completion ranging from 7 to 28. Response rates therefore varied considerably, ranging from 25% to

100%. Figure 6 illustrates response patterns by time of day and day of the week. Participation rates fluctuated across the day, with slightly higher completion around midday. Overall, responses showed a modest decline from Day 1 to Day 7, suggesting a gradual reduction in engagement over the week.

Figure 6. Participation Across Time of Day and Days in the ESM Phase



As English-speaking anxiety was assessed only when participants indicated they had recently used English, response rates for these items were lower; a total of 143 entries were recorded for the classroom context, completed by 52 unique participants. On average, participants who responded to the classroom anxiety item completed it 2.75 times ($SD = 2.91$, range = 1–15 responses). For the outside-classroom context, 346 entries were submitted by 70 participants. On average, participants who responded to the outside-classroom anxiety item completed it 4.94 times ($SD = 3.83$, range = 1–15 responses). In total, 75 participants provided at least one response to either of the two English-speaking anxiety items. In other words, 4 out of the 79 participants (i.e. those who never selected English as their main language) did not contribute any data on English-speaking anxiety.

5.2.7.4 Semi-structured Interviews.

The semi-structured interviews were conducted in two rounds, following the completion of quantitative data collection in each phase. In the first round, 20 participants who had completed the pre-session programme and the associated trait-level and WSA measures volunteered to be interviewed. In the second round, 20 additional interviews were conducted, including 11 new participants from the non-pre-session group and 9 returning participants who had already taken part in the first round. Interviews were scheduled according to participant availability and were completed during the month following each phase of data collection. In total, the qualitative component comprised 40 interviews, reflecting a relatively high level of continued engagement, particularly among participants who had contributed to earlier phases of the study.

5.2.8 Sample Characteristics

5.2.8.1 Sample Characteristics at Baseline – Pre-session Sample

At Time 1.1 (see Figure 4), 245 participants from ten universities across the UK completed the baseline questionnaire. Participants ranged in age from 16 to 43 years ($M = 23.47$, $SD = 3.31$), with 69% ($N = 169$) identifying as female, 29 % ($N = 71$) as male, 2 % ($N = 5$) chose not to disclose their gender.

All participants were international students, the vast majority ($N = 228$) were from China, including 219 from Mainland of China, three from Hong Kong, six from Taiwan (together accounting for 93 % of the sample). The remaining participants came from Turkey ($N = 4$), Thailand ($N = 4$), South Korea ($N = 2$), Saudi Arabia ($N = 2$), Japan ($N = 2$), Iraq ($N = 2$), Poland ($N = 1$). In terms of native language, 90.2 % ($N = 221$) reported Chinese as their first language. Other reported native languages included Cantonese (2.9 %), Arabic (1.6 %), Thai (1.6 %), Turkish (1.6 %), Japanese (0.8 %), Korean (0.8 %), and Polish (0.4 %).

Participants were enrolled in pre-sessional English courses of varying durations, with the most common being 6-week ($N = 138$, 56.3 %), 10-week ($N = 71$, 29 %) programmes. Smaller proportions attended 4-week (10.6 %), 16-week (1.6 %), 20-week (1.2 %), 5-week (0.8 %), and 12-week (0.4 %) courses. At the time of completing the baseline questionnaire, participants had been in the UK for an average of approximately 10 days, with most (68.6%) having arrived within the past week. A small number of participants had been in the UK for a month or longer ($N = 39$). Based on standardized language test scores (e.g., IELTS) and CEFR alignment criteria, participants' English proficiency levels were classified as follows: 3.7% at B1 level, 78.4% at B2 level, and 18.0% at C1 level⁵.

A sub-sample also participated in the qualitative component. In the first round of semi-structured interviews, 20 international students who had taken part in the quantitative phase volunteered to be interviewed. They ranged in age from 19 to 30 years ($M = 23.75$) and included 14 females and 6 males. The majority ($N = 18$) were from China, with one participant from Japan and one from Turkey, in terms of native language, most participants reported Chinese, with one participant each reporting Japanese and Turkish as their first language. Participants were enrolled in pre-sessional courses of varying durations, including 4-week ($N = 3$), 6-week ($N = 11$), 10-week ($N = 5$), and 16-week ($N = 1$) programmes. A subset of these participants also took part in the second round of interviews. Specifically, 9 of the original 20 interviewees returned for a follow-up interview after the completion of the second data collection phase. These individuals are indicated with an asterisk in Table 7, which provides a full summary of the demographic characteristics of all interview

⁵ The Common European Framework of Reference (CEFR) defines six proficiency levels: A1 (Beginner) – can understand and use familiar everyday expressions and very basic phrases; A2 (Elementary) – can understand frequently used expressions related to immediate relevance (e.g., shopping, local geography); B1 (Intermediate) – can deal with most situations likely to arise while travelling, produce simple connected text, and describe experiences; B2 (Upper-Intermediate) – can understand main ideas of complex text, interact fluently, and produce clear, detailed text; C1 (Advanced) – can understand a wide range of demanding, longer texts, express ideas fluently, and use language flexibly in academic and professional contexts; C2 (Proficient/Mastery) – can understand virtually everything heard or read and express themselves precisely and spontaneously.

participants.

Table 7. Demographic Information of Interviewed Participants (Pre-sessional Sample)

ID	Age	Gender	Country of Origin	First/Native language	Length of Pre-sessional Course
A1	24	Female	China	Chinese	6 weeks
A2*	27	Female	China	Chinese	10 weeks
A3*	22	Female	China	Chinese	4 weeks
A4*	30	Female	China	Chinese	6 weeks
A5*	25	Male	China	Chinese	6 weeks
A6*	23	Male	China	Chinese	10 weeks
A7	24	Female	China	Chinese	6 weeks
A8	19	Female	China	Chinese	10 weeks
A9*	24	Female	China	Chinese	10 weeks
A10	22	Female	China	Chinese	6 weeks
A11*	23	Female	China	Chinese	6 weeks
A12	20	Female	Japan	Japanese	16 weeks
A13	22	Female	China	Chinese	6 weeks
A14	24	Female	China	Chinese	6 weeks
A15	26	Male	China	Chinese	6 weeks
A16	25	Male	China	Chinese	10 weeks
A17*	22	Female	China	Chinese	6 weeks
A18	27	Female	Turkey	Turkish	6 weeks
A19	23	Male	China	Chinese	4 weeks
A20*	23	Male	China	Chinese	4 weeks

Participant IDs are identified using codes. *Indicates participants who were interviewed in both rounds.

5.2.8.2 Sample Characteristics at Baseline – Non-pre-sessional Sample (Students joining at the Start of the Academic Year).

A total of 159 participants from seven universities completed the baseline questionnaire at Time 2.1 in October 2023. Participants in this group were not enrolled in pre-sessional English courses and completed the questionnaire as part of their ongoing studies in the UK. Participants ranged in age from 18 to 44 years ($M = 24.01$, $SD = 4.92$), with 69.8%

($N = 111$) identifying as female, 28.9% ($N = 46$) as male, and 1.3% ($N = 2$) preferring not to disclose their gender.

Participants represented a wide range of national and linguistic backgrounds. Over half of the sample (59.7%) were from China, followed by students from India (10.7%), Italy (4.4%), and France (3.1%). Smaller groups came from Germany, Pakistan, Saudi Arabia, Thailand, Turkey, and Vietnam (each 1–2%), with the remainder representing more than 30 other countries worldwide (e.g., Brazil, Denmark, the Netherlands, Russia). In terms of native language, the majority (57.2%) reported Mandarin, followed by Hindi (6.3%), Italian (4.4%), Cantonese (3.8%), Arabic (3.1%), French (3.1%), and Spanish (2.5%). Additional languages, including Bengali, German, Portuguese, Thai, Turkish, and Vietnamese, were each spoken by fewer than 2% of participants, with over 20 further languages represented across the sample.

The length of time participants had been living in the UK varied considerably. While many had arrived within days or weeks, about one-fifth reported being in the country for one month, and 11.3% for two months. A smaller number had resided in the UK long-term, including 7.5% for around three years, with 8.8% reporting a stay of over three years. Based on standardised test scores (e.g., IELTS or equivalent), participants' English proficiency was classified into CEFR bands: 3.1% at B1, 26.4% at B2, 43.4% at C1, and 7.5% at C2, while 19.5% had not taken a standardised test. No participants were classified at A1 or A2.

The second round of semi-structured interviews included 20 international students. Participants ranged in age from 19 to 33 years ($M = 25.1$), and the sample comprised 14 females and 6 males. While a majority were from China ($N = 13$), others came from Brazil, India, Thailand, France, Germany, and Mexico. In terms of native language, most participants reported Chinese, while other languages included Portuguese, Marathi, Thai, French, German, Spanish, and Bengali. This group included 9 participants (A2, A3, A4, A5, A6, A9,

A11, A17, A20) who had also taken part in the first round of interviews. Their demographic information has already been reported in Table 7 and is therefore not repeated here. The demographic characteristics of the 11 newly interviewed participants are presented in Table 8.

Table 8. Demographic Information of Interviewed Participants (Non-pre-sessional Sample)

ID	Age	Gender	Country of Origin	First/Native language
B1	33	Male	China	Chinese
B2	28	Male	Brazil	Portuguese
B3	31	Female	China	Chinese
B4	21	Male	India	Marathi
B5	20	Female	Thailand	Thai
B6	21	Female	France	French
B7	33	Female	China	Chinese
B8	20	Female	Germany	German
B9	19	Female	India	Bengali
B10	25	Male	China	Chinese
B11	31	Female	Mexico	Spanish

Participant IDs are identified using codes.

5.2.9 Measures and Instruments

Participants were instructed to generate a confidential self-generated identification code (SGIC) at the beginning of each questionnaire to allow for anonymous longitudinal data matching. Following this procedure, the first set of measures collected concerned participants' demographic information.

5.2.9.1 Demographics.

The demographic questionnaire gathered participants' background information, including gender, age, country of origin, program, first (native) language, standardised language test scores, duration of the pre-sessional course (if applicable), length of residency in the UK, prior overseas experience. These demographic variables were collected only at the

baseline. In contrast, self-assessed language proficiency, as a more subjective indicator, was measured in every wave of trait data collection.

5.2.9.2 Trait-level Questionnaires.

In addition to demographic information, participants completed a set of trait-level questionnaires, which included validated measures of English-speaking anxiety (inside and outside the classroom), personality traits, and psychological well-being and life satisfaction. The specific instruments are outlined below.

5.2.9.2.1 English Speaking Anxiety (in/outside of Classroom).

The Foreign Language Classroom Anxiety Scale (FLCAS; Horwitz et al., 1986) was used to assess English-speaking anxiety within the classroom environment. A shortened version consisting of 18 items was employed in the present study, with items selected from the original 33-item FLCAS to capture speaking-related aspects of foreign language anxiety. Items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency of the scale was assessed using Cronbach's alpha. Cronbach's alpha values at the two baseline timepoints (1.1 and 2.1) were .95 and .96, respectively. All items demonstrated strong corrected item-total correlations ($r = .65-.82$), indicating high item homogeneity. An exploratory factor analysis (EFA) was conducted using the combined dataset from the two baseline time points to assess the underlying factor structure, which supported a one-factor solution, with all items loading strongly on the factor (loadings = .69-.84). The Kaiser-Meyer-Olkin measure indicated excellent sampling adequacy ($KMO = .96$), and Bartlett's test of sphericity was significant ($p < .001$). Evidence for construct validity was further supported by the expected pattern of correlations with related variables (see Table J3). Specifically, scores on in-class English-speaking anxiety were positively associated with scores on neuroticism ($r = .36, p < .01$) and negatively

associated with scores on psychological well-being ($r = -.32, p < .01$) and life satisfaction ($r = -.23, p < .01$). Full validation results are provided in Appendix J.

For measuring English-speaking anxiety outside the classroom, existing anxiety scales often focus primarily on classroom contexts and therefore may not fully capture the everyday communication situations encountered by international students (Woodrow, 2006). In the present study, items were used to assess anxiety in common real-life English-speaking situations outside formal learning environments. The items were informed by previous research on second language speaking anxiety in communicative contexts (MacIntyre & Gardner, 1989; Woodrow, 2006), including later work that examined anxiety in everyday language-use situations outside the classroom (Wan, 2012). The scale consists of 12 items, each describing a specific communicative situation that learners may encounter in daily life outside the classroom. Participants rated their anxiety using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was assessed using Cronbach's alpha. The coefficients at the two baseline timepoints (1.1 and 2.1) were .83 and .88, respectively, indicating good reliability. All items demonstrated acceptable corrected item-total correlations ($r = .38-.65$), indicating adequate item homogeneity. Exploratory analyses⁶ further suggested a coherent underlying structure, and expected associations with related variables were observed (see Table J3). Specifically, scores on outside-class English-speaking anxiety were positively associated with scores on neuroticism ($r = .27, p < .01$) and negatively associated with scores

⁶ An unexpected two-factor pattern emerged in the exploratory analysis. Inspection of item content indicated that this pattern primarily reflected the separation of reverse-worded and non-reverse-worded items rather than substantively distinct constructs. This interpretation is consistent with prior research showing that reverse-worded items can introduce method effects and distort the factor structure of psychological scales, often resulting in artificial factors that reflect item wording rather than underlying constructs (e.g. Marsh, 1996; Podsakoff et al., 2003; Zhang et al., 2016). Confirmatory factor analyses further supported this interpretation, as a one-factor model showed poor fit, whereas a model accounting for wording effects demonstrated substantially improved fit. To further examine the robustness of the measure, additional analyses were conducted by separating reverse-worded and non-reverse-worded items. Multilevel models estimated using different item sets showed highly similar patterns of results, which were also comparable to those obtained using the composite score based on all items. This suggests that the findings are robust to item wording and supports the interpretation that the scale captures a single underlying construct. Full results are reported in Appendix J.

on psychological well-being ($r = -.39, p < .01$) and life satisfaction ($r = -.26, p < .01$). Taken together, these results provide support for the reliability and construct validity of the scale.

5.2.9.2.2 Personality Traits.

Personality traits were measured using the Big Five Inventory – 44 (BFI-44) developed by John et al. (1991). The BFI-44 consists of 44 items, each presented as a brief and clear statement, rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale assesses five broad dimensions of personality: Openness (10 items), Conscientiousness (9 items), Extraversion (8 items), Agreeableness (9 items), Neuroticism (8 items). Participants were asked to read each statement carefully and indicate the degree to which they agreed. Cronbach's alpha values for the five personality subscales at the baseline timepoints (1.1 and 2.1) were as follows: Extraversion (.82, .83), Agreeableness (.70, .70), Conscientiousness (.81, .76), Neuroticism (.76, .78), and Openness (.78, .72).

5.2.9.2.3 Psychological Well-Being & Satisfaction with Life.

Psychological well-being (PWB) and satisfaction with life (SWL) are commonly distinguished indicators of individuals' psychological responses to the host environment (Ward et al., 2001). While SWL captures the cognitive aspects of psychological adjustment, PWB reflects the more affective dimensions (Sam, 2001). In this study, PWB was assessed using a scale adapted from the Psychological Well-Being Scale (E. Diener et al., 2009), which is a validated 8-item instrument that evaluates individuals' perceived success in key life domains such as relationships, self-esteem, sense of purpose, and optimism. Items on both the PWB and SWL scales were rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alpha values at the two baseline timepoints were .88 and .91, respectively. SWL was measured using the widely recognised 5-item Satisfaction with Life Scale (Diener et al., 1985). Cronbach's alpha values at the two baseline

timepoints were .81 and .86, respectively. The full set of trait questionnaires is provided in the Appendix F.

5.2.9.3 Weekly State Assessments.

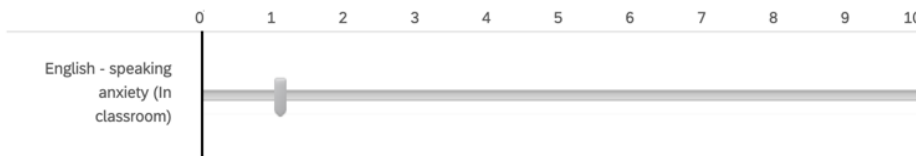
The Weekly State Assessment aimed to explore the weekly changes in life satisfaction and psychological well-being among international students during their overseas pre-session courses, with a particular focus on their English-speaking anxiety both inside and outside the classroom. This method involved the repeated use of a small number of items selected from the trait-level questionnaire described earlier. A complete list of the items used in WSA is provided in Appendix G. The components of WSA are as follows:

- ***Psychological Well-Being***: The Scale of Positive and Negative Experience (SPANE) (E. Diener et al., 2009) was utilised to evaluate subjective well-being. The SPANE offers general descriptors for good and negative feelings, as well as a number of positive and negative emotions that are fundamental to the sensation of well-being (E. Diener et al., 2009). This scale provides a score for positive feelings (6 items) and a separate score for negative feelings (6 items). Each item on the SPANE is rated on a 5-point scale, with 1 indicating “very rarely or never” and 5 indicating “very often or always” (E. Diener et al., 2009). The internal consistency was $\alpha = .98$ for SPANE-Positive and $\alpha = .94$ for SPANE-Negative.
- ***Satisfaction with Life***: measured with a single item asking participants to rate their agreement with the statement “I am satisfied with my life this week so far” on a 7-point Likert scale, from strongly disagree to strongly agree.
- ***English Speaking Anxiety in/outside the Classroom***: Two 10-point slider scales were employed to measure the dynamics of foreign language speaking anxiety both inside and outside the classroom, ranging from “not at all” (scored as 0) to “extremely

anxious” (scored as 10). As shown in Figure 7, this interface illustrates how it appeared to participants.

Figure 7. Slider-Based Assessment of English-Speaking Anxiety in the Classroom

To what extent did you feel anxious while speaking English in classroom this week so far? (The higher the number, the more anxious you are)



- ***English Speaking Anxiety in/outside the Classroom:*** In addition to the slider scales, three questions were used to assess English-speaking anxiety from cognitive, affective, and behavioural perspectives. All responses were recorded on a 7-point Likert scale, ranging from “strongly disagree” to “strongly agree.” This approach provided a comprehensive measure of anxiety by capturing not only the participants’ self-reported intensity of anxiety but also their thoughts, feelings, and behaviours related to speaking a foreign language. The three items measuring English-speaking anxiety (Cognitive, Affective, and Behaviour) showed a Cronbach’s α of .95. This multi-dimensional assessment aimed to offer deeper insights into how anxiety manifests and affects language learners across different psychological domains. The three specific items are as follows:
 - *I have thought that I’m not good at speaking in English-speaking situation this week so far.*
 - *I have been feeling anxious in English-speaking situations this week so far.*
 - *I have tried to avoid speaking in English-speaking situations this week so far.*

- ***Situations Triggering Anxiety***: Participants who provided a rating above 0 on the anxiety slider scale were invited to respond to an optional open-ended question, describing specific situations during the past week in which they experienced anxiety while speaking English. Responding to the text-entry questions was entirely voluntary, and participants were not required to provide an answer.

5.2.9.4 Experience Sampling Methods.

The purpose of the experience sampling method is to explore the psychological daily experiences of international students during their study abroad, focusing on aspects such as their English-speaking anxiety both inside and outside the classroom. Additionally, participants' self-perceptions of personality when speaking different languages were also examined. In this phase, selected questions from the earlier trait-level questionnaires and the WSA were reused and adapted for repeated application. Comprehensive information on all the questions used in the ESM is provided in the Appendix H. The ESM components are as follows:

- ***Psychological Well-Being***: Participants daily positive and negative emotional experiences were measured using the 12-item SPANE (E. Diener et al., 2009), rated on a 5-point Likert scale ranging from very rarely or never to very often or always, consistent with its use in WSA. The internal consistency was $\alpha = .98$ for SPANE-Positive and $\alpha = .95$ for SPANE-Negative.
- ***Satisfaction with Life***: The similar single-item measure from WSA was used to evaluate daily life satisfaction, asking participants to indicate their agreement with the statement "I am satisfied with my life until now today" on a 7-point Likert scale, from strongly disagree to strongly agree.
- ***Language use***: Participants were asked to respond to the question, "What language have you been speaking mainly in the last hour?", with four possible answer options:

“Native language,” “English,” “Other language,” or “Without saying a word”. Based on their selection, they then received follow-up items assessing state personality, with the initial instructions varying according to the reported language use.

- **State personality:** The 10-item Big Five Inventory (BFI-10; Rammstedt & John, 2007) was administered to assess participants’ self-reported personality when using different languages, rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. To examine the reliability of the BFI-10 the present sample, correlations between item pairs measuring the same trait were computed based on participants’ mean scores across repeated assessment. Significant moderate correlations were found for Agreeable ($r = .41, p < .001$), Conscientiousness ($r = .37, p < .001$), Neuroticism ($r = .60, p < .001$), Openness ($r = .38, p < .001$). The correlation for Extraversion was small and not significant ($r = .13, p = .24$). The modest internal reliabilities (assessed via bivariate correlations) may stem from the fact that each Big Five dimension was assessed with only two items.
- **English-speaking Anxiety:** If participants selected “English” as the language spoken above, they were then asked, “Where have you mostly spoken English in the last hour?” with two response options: “in the classroom” or “outside the classroom.” Depending on their selection, the relevant slider scale measuring classroom or outside-classroom English-speaking anxiety, identical to the one used in WSA, was presented.
- **End-of-Day Reflections:** During the final ESM session each day, two additional questions were included. One asked participants to rate their agreement with the statement, “I feel like a different person today when I speak English compared to when I speak my native language,” using a 7-point Likert scale from strongly disagree to strongly agree. This item was presented only once per day to minimize the risk of

prompting participants to assume personality differences across languages. The other was an optional open-ended question inviting participants to describe any specific situations earlier in the day when they felt anxious while speaking English.

An overview of the measures used for each variable across the trait-level assessments, weekly state assessments, and experience sampling methods is presented in Table 9.

Table 9. Measurement Tools Used for Each Variable at Trait and State Levels

Construct	Trait-level Assessment	Weekly State Assessment (WSA)	Experience Sampling Method (ESM)
English-Speaking Anxiety (classroom)	18 items from FLCAS (Horwitz et al., 1986)	1 slider + 3 Likert-type items (cognitive, affective, behavioural aspects)	If “English” and “in the classroom” were selected → same slider as in WSA
English-Speaking Anxiety (outside classroom)	12 items developed by Wan (2012) from real-life language use situations; adapted from SLSAS (Woodrow, 2006) and FUAS (MacIntyre & Gardner, 1989)	1 slider + 3 Likert-type items (cognitive, affective, behavioural aspects)	If “English” and “outside the classroom” were selected → same slider as in WSA

Situations triggering anxiety	Optional open-ended question	Optional open-ended question if anxiety rating > 0	Open-ended question shown during the final daily ESM session, inviting participants to describe specific anxiety-triggering situations
Psychological well-being	8-item scale adapted from E. Diener et al. (2009)	SPANE (E. Diener et al., 2009): 6 positive + 6 negative items	Same as WSA: SPANE (E. Diener et al., 2009)
Life satisfaction	SWLS (Diener et al., 1985)	Single item: "I am satisfied with my life this week so far"	Single item: "I am satisfied with my life until now today"
Language use	Not applicable	Not applicable	Report language spoken in the past hour (native/English/other/none); if English → classroom or outside; followed by English-speaking anxiety slider and BFI-10
Personality Traits/State	BFI-44 (John et al., 1991)	Not applicable	BFI-10 (Rammstedt & John, 2007); completed each time participants reported their main spoken language, to capture personality when using different languages; End-of-day reflection: final daily ESM session included: "I feel like a different person today when I speak English compared to when I speak my native language". Optional open-ended reflection on anxious situations while speaking English

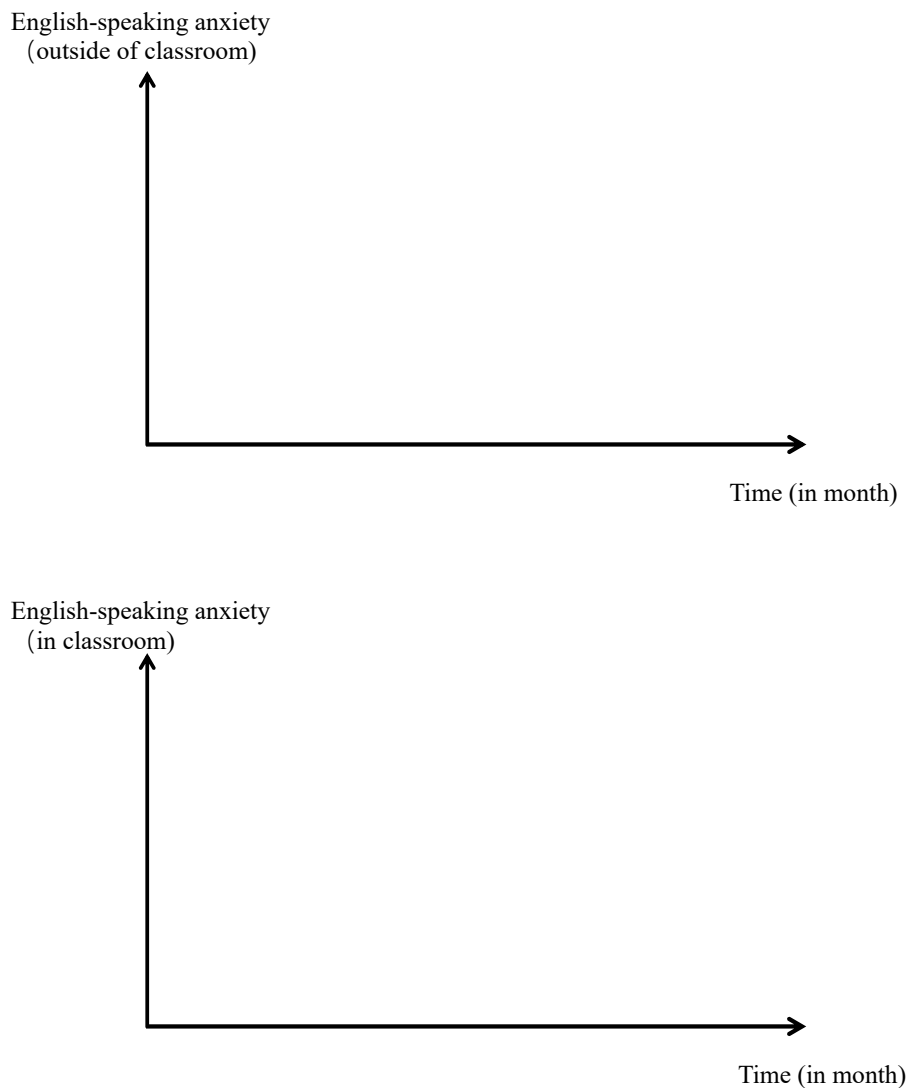
5.2.9.5 Semi-structured interviews.

To obtain a deeper insight into the change of English-speaking anxiety, psychological well-being, life satisfaction, and participants perceived changes in these domains, semi-structured interviews were carried out at two distinct timepoints in the study. These interviews were designed to not only explore specific themes related to these constructs but also to allow participants the opportunity to share personal insights and reflect on the progression of their experiences. The semi-structured interview offers a flexible approach, allowing it to be structured enough to explore particular topics related to the study phenomenon while still leaving room for participants to introduce fresh perspectives and insights (Galletta, 2020).

While all interviews shared the same overall objective, the goals of the two-round semi-structured interviews differed slightly. In the first round of interviews, participants were asked about their experiences during the pre-session course study period and their satisfaction with life in the UK. This included discussing factors that affected their life satisfaction and the strategies they used to overcome dissatisfaction when they felt less content with their lives. Additionally, participants were asked to describe their psychological well-being, including factors that influenced it and the methods they used to improve their psychological well-being. Regarding English-speaking anxiety, students were asked to share how they felt when speaking English in the UK, including whether they experienced any anxiety. They discussed the reasons behind these feelings and the strategies they employed to manage their anxiety while speaking English. Students were also encouraged to give examples of situations that made them feel anxious or not anxious. Furthermore, they were asked to compare their levels of English-speaking anxiety inside and outside the classroom, along with the reasons for any differences.

In the second-round interview, participants were asked questions similar to those in the first round, with the phase “during the pre-sessional course study” replaced by the length of time each participant had been living and studying in the UK. In addition to these similar questions, an extra question was added for each construct to explore participants’ views on “change”. For example, they were asked, “Do you think your life satisfaction has changed during your time studying and living in the UK”. At the conclusion of the interview, after participants had answered all questions, they were asked to reflect on their experiences in the UK over the duration of their stay and to create a sketch diagram illustrating the changes in their English-speaking anxiety both inside and outside the classroom. After receiving an image (see Figure 8) with time on the horizontal axis and levels of English-speaking anxiety on the vertical axis, students were asked to use different coloured pens to sketch their changes in English-speaking anxiety both inside and outside the classroom, approximately on a monthly basis. Details of all interview questions can be found in the Appendix I.

Figure 8. Sketch Template provided to Participants to Depict Monthly Change in English-speaking Anxiety Inside and Outside the Classroom During Their Study in the UK



5.2.10 Data Analysis Strategies

5.2.10.1 Quantitative Analysis.

All quantitative data were stored and analysed using Excel, R, and SPSS. Initial data cleaning was carried out across all datasets. Participant codes were matched across different timepoints, and any responses that could not be reliably tracked due to missing or

inconsistent identifiers were excluded. All datasets were structured in long format, with each row representing one measurement occasion per participant. In addition, entries with implausibly short completion times, such as completing a trait-level questionnaire in under one minute, were removed. This was done because insufficient effort responding is often characterised by short completion times due to a lack of genuine cognitive processing (Huang et al., 2011). Responses displaying patterned answering behaviour, such as selecting the same option for all items, were also excluded from the analysis. In total, 11 entries were removed based on these two criteria. Moreover, for the purposes of longitudinal modelling, participants who only completed the baseline questionnaire (i.e. only Time 1.1 or 2.1) and did not respond at any subsequent trait-level measurement timepoint were excluded from the analytic sample. This criterion also led to the removal of three participants from the WSA dataset and one from ESM, as they had only completed the initial trait questionnaire. After applying all criteria, the final sample used in the statistical analyses consisted of 312 participants who completed at least two waves of trait data collection.

In the trait-level questionnaires, reverse scoring was applied to items where appropriate, and the scores of items belonging to the same scale were averaged. For instance, the nine items assessing conscientiousness in the BFI-44 were averaged to generate a single conscientiousness score for each individual at each timepoint. In addition, some items measuring psychological well-being and life satisfaction were converted from a 7-point to a 5-point scale to maintain consistency across measures using the following transformation formula.

$$X_{rescaled} = (X - 1) \times \frac{4}{6} + 1$$

Before addressing the specific research questions (section 3.3), a series of preliminary data preparation and quality checks were conducted to ensure the integrity and suitability of

the data for subsequent analyses. Data were screened for extreme values, and the distribution of each variable was inspected visually and statistically to assess the suitability of parametric analyses. Given the longitudinal nature of the study, potentially extreme values were evaluated with caution, as they may reflect genuine within-person changes over time rather than statistical outliers in the conventional sense. Therefore, no data points were removed solely based on statistical extremity unless they were clearly implausible or fell outside the valid range of the scale. In addition, to address the potential impact of missing data, attrition bias in the trait-level questionnaire data was examined by comparing baseline characteristics between participants who completed at least two waves and those who dropped out after baseline measure. After excluding baseline-only cases, the remaining missing data resulting from intermittent non-responses at certain timepoints were retained in the dataset. These missing values were not deleted or imputed manually. Instead, they were handled using model-based approaches in subsequent analyses. Specifically, statistical techniques such as multilevel modelling accommodate unbalanced data and allow for the inclusion participants with incomplete response patterns. This approach maximises the use of available data while minimising potential bias. Following this, baseline descriptive statistics and correlations were conducted to provide an overview of initial status in key variable. Specially, all outcome variables across trait-level, WSA, ESM datasets were analysed using both raw scale and standardised coefficients. Raw scores preserve the original metric of each scale, facilitating interpretation in real-world units, while standardised scores are reported to provide effect size estimates and to facilitate comparison across variables. For RQ 3, following Zhang and Wang (2014), state variables were transformed into person-mean SD standardised scores, such that each participants' data were standardised relative to their own mean and standard deviation.

The following sections present the analytic strategies employed for the quantitative and qualitative data. Quantitative analyses are structured around each research question (RQ),

while the qualitative approach is first described as a whole, followed by an explanation of how it addresses each RQ individually.

5.2.10.1.1 RQ1: How do trait English-speaking anxiety, psychological well-being, and life satisfaction change over time?

To examine longitudinal changes in participants' trait-level English-speaking anxiety, psychological well-being, and life satisfaction, growth curve modelling (GCM) was conducted using linear mixed-effects models in R (R Core Team, 2023), implemented via the *lme4* package (Bates et al., 2015) and *lmerTest* package (Kuznetsova et al., 2017). The data were drawn from two participant groups: the pre-session sample and non-pre-session sample. Participants in pre-session program completed trait-level measures at four time points (T1.1, T1.2, T2.2, T2.3), while non-pre-session participants completed them at three time points (T2.1, T2.2, T2.3). Data from both groups were combined for analysis. For analysis purposes, T1.2 and T2.1 were considered to occur at roughly similar points in time. Accordingly, a recoded time variable was created: T1.1 was coded as Time = 1, T1.2 and T2.1 as Time = 2 (reflecting a similar stage in participants' academic transition), T2.2 as Time = 3, and T2.3 as Time = 4. This coding allowed for a coherent modelling of time across participants despite differences in data collection schedules.

An initial series of intercept-only (null) models were fitted to each outcome variable to partition variance into between-person and within-person components, confirming the appropriateness of multilevel modelling and providing intraclass correlation coefficients (ICCs). Two-level growth curve models were then estimated for each outcome variable, with time treated as a continuous level-1 predictor reflecting the recoded measurement sequence. This approach allowed for the modelling of linear trajectories while accommodating unbalanced time structures across participants. The level-1 model for each outcome (e.g. psychological well-being) was specified as:

$$PWB_{ij} = \beta_{0j} + \beta_{1j} (Time_{ij}) + e_{ij}$$

Where β_{0j} is the intercept (initial level) for participant j , and β_{1j} represents the rate of change over time. The residual term e_{ij} captures within-person variation unexplained by the linear time trend. At level 2, both intercepts and slopes were modelled as random effects to account for between-person differences:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

Here, γ_{00} and γ_{10} represent the fixed effects for the overall intercept and slope, while u_{0j} and u_{1j} denote individual-level deviations.

To examine whether changes differed by group type, group membership (pre-sessional vs. non-pre-sessional) was included as a level-2 predictor. Group membership was dummy-coded, with the pre-sessional group serving as the reference category, and was used to predict both the intercept and slope:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Group_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Group_j) + u_{1j}$$

In this extended model, γ_{01} represents the difference in initial levels of the outcome variable between the non-pre-sessional and pre-sessional groups, and γ_{11} reflects differences in the rate of change over time between the two groups.

5.2.10.1.2 RQ2: Does trait personality associate with the trajectory of changes in English-speaking anxiety, psychological well-being, and life satisfaction?

Building on the growth models used for RQ1, this analysis examined whether participants' baseline personality traits were associated with the trajectories of change in

English-speaking anxiety, psychological well-being, and life satisfaction, baseline personality traits were included as time-invariant level-2 predictors in the growth models described for RQ1. Specifically, personality data collected at the first available timepoint (Time 1.1 for pre-sessional participants and Time 2.1 for non-pre-sessional participants) were used.

For each of the Big Five traits (extraversion, agreeableness, conscientiousness, neuroticism, openness), separate two-level models were estimated for each outcome variable. Each model included time as a level-1 (within-person) predictor and baseline personality traits as a level-2 (between-person) predictor. The interaction between time and personality traits was also included to test whether personality moderated the rate of change. Random intercepts and slopes were included to account for individual differences in starting points and rates of change. The models were specified as follows (using psychological well-being as an example):

Level 1 (within-person model):

$$PWB_{ij} = \beta_{0j} + \beta_{1j} (Time_{ij}) + e_{ij}$$

Level 2 (between-person model):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Personality_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Personality_j) + u_{1j}$$

Where γ_{01} reflects the association between personality traits and initial levels of psychological well-being, and γ_{11} indicates whether personality predicts differences in the rate of change over time. Separate models were estimated for each Big Five trait and outcome variable. All analyses were conducted using R (R Core Team, 2023), following the model specifications described above.

5.2.10.1.3 RQ3: How do momentary experiences of anxiety, psychological well-being, and life satisfaction fluctuate in daily life?

Although both WSA and ESM data in this study involve repeated assessments, classical analysis techniques such as repeated-measures ANOVA or MANOVA are not suitable, primarily because they are not well suited to handle the extensive missingness typically present in experience sampling studies. Moreover, these methods assume complete and balanced datasets, which is rarely the case in real-world ESM research (Bolger et al., 2003). Given that the data consist of multiple repeated observations collected from each individual, multilevel (mixed-effects) modelling was used to analyse both WSA and ESM datasets. This analytic approach handles missing data effectively and enables the examination of within-person variability over time (Kwok et al., 2008). It also accounts for individual differences by incorporating random effects, making it a flexible and robust method for modelling the dynamic nature of experience sampling data.

Weekly State Assessment (WSA)

To investigate whether participants' momentary experiences of English-speaking anxiety, psychological well-being, and life satisfaction fluctuate during a 10-week period, data collected through the WSA protocol were analysed using multilevel modelling. In this dataset, participants completed brief questionnaires twice a week, reporting their current psychological states. The number of completed entries varied across participants, reflecting individual difference in participation consistency.

A series of intercept-only multilevel models (null models) were first fitted to each outcome variable to examine the extent of within-person versus between-person variation. These models did not include predictors and served to partition the total variance into components attributable to stable individual differences (between-person) and momentary

fluctuations (within-person). The resulting ICCs were used to determine whether the psychological states demonstrated meaningful within-person variability.

To assess whether participants' momentary experience changed systematically over the 10-week period, a series of growth curve models were estimated, one for each outcome variable. Time was treated as a continuous level-1 predictor, coded from 1 to 20 to reflect the sequential order of WSA measures, rather than actual calendar dates. This approach enabled the modelling of linear change in participants' psychological states over time. The level-1 model for state PWB (psychological well-being) was specified as:

$$PWB_{ij} = \beta_{0j} + \beta_{1j} (Time_{ij}) + e_{ij}$$

Where β_{0j} denotes the intercept for individual j , and β_{1j} represents the rate of change across time. The residual term e_{ij} reflects within-person fluctuations unexplained by the time trend.

At level 2, both intercepts and slopes were allowed to vary across individuals:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

Here, γ_{00} represents the grand mean of psychological well-being at the initial session, and γ_{10} indicates the average rate of change across the course. The person-specific deviations u_{0j} and u_{1j} capture individual differences in baseline levels and change trajectories.

Experience Sampling Method (ESM)

To investigate whether participants' momentary experiences of English-speaking anxiety, psychological well-being, and life satisfaction fluctuate in daily life, data from the ESM protocol were analysed using multilevel modelling, extending the same analytical approach used in the WSA analyses. Participants completed brief questionnaires four times

per day for seven consecutive days, reporting their current psychological states and language-used contextual information. The number of entries varied across participants, resulting in an unbalanced data structure. For both psychological well-being and life satisfaction, intercept-only (null) models were first estimated to assess the proportion of within- and between-person variance (ICCs). Then, time was included as a continuous level-1 predictor to model potential linear change across the 7-day period, with both random intercepts and slopes specified at level 2.

For English-speaking anxiety, two distinct outcome variables were analysed: in-classroom English-speaking anxiety and outside-classroom English-speaking anxiety. These variables were measured only when participants reported having used English in the past hour, and depending on their response to a follow-up question about the context (in classroom vs outside), they were shown the corresponding item. Due to this branching logic, English-speaking anxiety data were not available for every timepoint, and each observation contained at most one of the two context-specific anxiety ratings. Because the display of each item depended on prior responses, the resulting datasets for in-class and out-of-class anxiety were inherently sparse and non-overlapping, with missingness that was planned and conditional rather than random. As such, the two anxiety variables were analysed separately, each using only the subset of observations where it was measured.

For each variable, null multilevel models were first estimated to partition variance into within- and between-person components. Then, time (prompt number) was entered as a continuous level-1 predictor to examine whether English-speaking anxiety in each context changed systematically over the 7-day period. The level-1 model for in-class English-speaking anxiety was specified as:

$$\text{English speaking anxiety}_{ij}^{in} = \beta_{0j} + \beta_{1j} (\text{Time}_{ij}^{in}) + e_{ij}$$

At level 2, both intercepts and slopes were allowed to vary across individuals:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

The same model was used for out-of-class English-speaking anxiety, with time reflecting the number of reporting occasions in that context.

5.2.10.1.4 RQ4: Does speaking a different language associate with a change in personality states?

RQ4 focused on personality states, aiming to a) determine whether language use is associated with personality states; and b) examine whether language use systematically explains between-person and within-person variability in personality states. This research question was addressed using data from the ESM dataset, in which participants reported the language they had mainly used in the past hour and then completed a state personality scale based on how they perceived themselves when using that language. If participants indicated that they had not spoken at all during the past hour, they were instructed to complete the questionnaire in general terms, without referring to a specific language-use context.

Quantifying Variability

To examine the degree to which personality states fluctuated across language-use contexts, a series of null (intercept-only) models were estimated, one for each personality state. Intraclass correlation coefficients (ICCs) were then calculated to partition the total variance into between-person and within-person variance.

Modelling Systematicity Effects of Language Use

To determine whether personality states vary systematically in relation to language use, a series of multilevel models were conducted, one for each personality state. In the

original dataset, English and other foreign languages were coded as separate categories (2 and 3, respectively). However, for analysis purposes, these two categories were merged and recoded as “foreign language use” (coded as 2). This decision was based on the conceptual similarity between English and other foreign languages, as both reflect communication in a *non-native* language. Participants were instructed to reflect on their personality when speaking that language, regardless of which specific foreign language it was. Moreover, the number of observations under category 3 (other foreign languages) was relatively small ($n = 43$), and merging improved statistical power and model converge.

Language use was treated as a categorical level-1 predictor with three levels: native language, foreign language (including English and other non-native languages), and no language use. Native language served as the reference category. Models included random intercepts to account for between-person differences in baseline personality states. In addition, random slopes for language use were specified, allowing the effect of language use on personality states to vary across individuals. Taking state conscientiousness as an example, the level-1 model is specified as:

$$\begin{aligned} & \textit{State conscientiousness}_{ij} \\ & = \beta_{0j} + \beta_{1j} (\textit{Foreign_Language}_{ij}) + \beta_{2j} (\textit{No_Language}_{ij}) + e_{ij} \end{aligned}$$

Where β_{0j} represents the intercept for participant j (i.e. the estimated level of conscientiousness when speaking their native language), and β_{1j} and β_{2j} represent the within-person slopes indicating the extent to which an individual’s state conscientiousness increases or decreases when using a foreign language (β_{1j}) or when not using any language (β_{2j}), relative to speaking their native language. The residual term e captures occasion-specific deviations from the predicted score for each observation. At level 2, the individual-level coefficient is modelled as follows:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + u_{2j}$$

Where γ_{00} is the overall average state conscientiousness score across all participants when they are speaking their native language. γ_{10} is the average difference in state conscientiousness between foreign language and native language use across the sample. γ_{20} is the average difference in state conscientiousness between no language and native language use. u_{0j} , u_{1j} , and u_{2j} are the random effects capturing each participant's deviation from these overall means. Pairwise comparisons were conducted using estimated marginal means (EMMs) with Tukey-adjusted p -values to determine whether personality states differed significantly between the three language conditions. A summary of the datasets, outcome variables, predictors, statistical methods, and standardization approaches used to address each research question is provided in Table 10.

Table 10. Overview of Quantitative Data Analysis Strategies across Research Questions

Research Question	Dataset	Outcome Variables	Predictors/ Moderators	Statistical Method	Notes
RQ1: Trait change over time	Trait-level questionnaires	English-speaking anxiety (in & out); psychological well-being; life satisfaction	Time (recoded); Group (pre-sessional vs. non-pre-sessional)	Two-level growth curve modelling	Linear change; ICCs; random intercept & slope
RQ2: Personality as a moderator of change over time	Trait-level questionnaires	Same as RQ1	Time; personality traits (Big Five); Time x Personality interaction	Two-level growth curve modelling	Separate model per trait
RQ3: Momentary fluctuation	WSA	State English-speaking anxiety; psychological well-being; life satisfaction	Time	Multilevel modelling	Unbalanced data; random intercept & slope
RQ3: Momentary fluctuation	ESM	State psychological well-being; life satisfaction	Time	Multilevel modelling	Unbalanced data; random intercept & slope

RQ3: momentary fluctuation	ESM	State English-speaking anxiety (in & outside classroom)	Prompt number (time); entries filtered by context.	Multilevel modelling	Separate models for in/outside classroom
RQ4: Language x personality states	ESM	Personality states	Language used (context); within- person variation	Multilevel modelling	Post-hoc tests conducted

5.2.10.2 Qualitative Analysis.

To complement the quantitative analyses and address the research questions (section 3.3) that required in-depth exploration of participants' experiences, qualitative interview data were analysed using both thematic and longitudinal approaches. These analyses primarily addressed RQ1, RQ5, and RQ6, though the findings were not strictly divided by research question, as many themes cut across multiple areas of inquiry.

A thematic analysis was conducted on all 40 interview transcripts, treating each as an independent data point regardless of whether participants were interviewed once or twice. Thematic analysis was selected because it provides a flexible approach for identifying and interpreting patterns of meaning within qualitative datasets (Ahmed et al., 2025). The analysis followed Braun and Clarke's (2006) six-phase framework. The researcher first familiarized herself with the interview transcripts through repeated reading, followed by the generation of initial codes to capture meaningful features of the data. These codes were then organised into broader candidate themes, which were subsequently reviewed and refined through an iterative process. This inductive approach enabled the development of themes through coding and interpretative engagement with the data, capturing participants' experiences and subjective interpretations of their English-speaking anxiety, psychological well-being, and life satisfaction during their time abroad. Throughout the analytic process, the researcher engaged reflexively with the data, acknowledging her active role in interpreting participants' accounts and constructing themes.

For the nine participants who were interviewed twice, a longitudinal thematic analysis was employed to specifically examine how their English-speaking anxiety and coping strategies evolved over time. The analysis was primarily inductive, with categories of change emerging from participants' narratives. At the same time, the process was guided by the research question, making it partially deductive. In particular, the study incorporated

elements of thematic trajectory analysis proposed by Spencer et al. (2021), which, although originally developed for diary data, is well suited for systematically tracking thematic progression in repeated interviews. A three-level coding framework was applied:

- (1) Micro-template to identify key themes at each timepoint;
- (2) Meso-template to map individual thematic trajectories over time;
- (3) Macro-template to synthesis cross-participant patterns.

This dual approach allowed the study to capture both patterns across individual and fine-grained within-person changes, offering a more nuanced understanding of how English-speaking anxiety might develop and fluctuate over time.

The qualitative analysis addressed RQ1 by first describing participants' general experiences of English-speaking anxiety, psychological well-being, and life satisfaction during their time abroad. These insights were drawn from the first-round interviews with all participants. To further explore how these experiences evolved over time, a separate analysis was conducted for the nine participants who completed a second interview. This allowed for a closer examination of individual-level changes and trajectories in relation to RQ1.

In addition, the analysis also informed RQ5 by highlighting the types of situations with target language environments in which participants experienced English-speaking anxiety. This question was explored using all 40 interviews as independent data points, along with open-ended responses from the weekly state assessment the experience sampling method prompts. These diverse sources provided complementary perspectives on how situational and contextual factors shaped participants' psychological experiences with English-speaking.

Lastly, the qualitative data contributed to answering RQ6, which focused on identifying the coping strategies participants used to manage English-speaking anxiety.

Thematic analysis of all 40 interviews allowed for the categorisation of commonly reported strategies, offering insight into the different ways individuals attempted to manage or reduce their anxiety. For a summary of the qualitative analyses conducted for RQ1, RQ5, and RQ6, see Table 11. In presenting the results, excerpts from interviews conducted in English are quoted verbatim, whereas excerpts from interviews conducted in Chinese are translated into English by the researcher, with attention to maintaining their original meaning and nuance.

Table 11. Overview of Qualitative Analyses Addressing Research Questions

Research Question	Data Sources	Participants	Analytic Approach	Focus
RQ1: Psychological changes and trajectories	40 interview transcripts (includes 9 repeated interviews)	31 unique participants	Thematic analysis	Experiences of English-speaking anxiety; psychological well-being and life satisfaction
RQ1: Psychological changes and trajectories	18 interview transcripts	9 repeated-interview participants	Thematic trajectory analysis (A three-level coding framework)	English-speaking anxiety; psychological well-being; and life satisfaction change over time
RQ5: Situational triggers of English-speaking anxiety	40 interview transcripts; open-ended responses from the weekly state assessments, and the experience sampling prompts	31 unique participants (interview); participants who contributed relevant data through WSA or ESM	Thematic analysis across sources	Identification of anxiety-inducing situations
RQ6: Coping strategies for English-speaking anxiety	40 interview transcripts	31 unique participants	Thematic analysis	Identification of common coping strategies for managing English-speaking anxiety

5.3 Results

5.3.1 Preliminary Analyses

A total of 92 participants who provided data at only one timepoint were excluded from the longitudinal analyses (35 from the non-pre-sessional group; 57 from the pre-sessional group). The final sample therefore consisted of 312 participants ($N_1 = 188$ pre-sessional; $N_2 = 124$ non-pre-sessional), each of whom contributed data from at least two timepoints. Attrition analyses are reported in the next section, followed by baseline descriptive statistics and correlations among the key study variables.

5.3.1.1 Attrition.

Attrition was examined to assess whether participants who dropped out differed in meaningful ways from those who remained in the study, as such differences could bias the findings (Gustavson et al., 2012; Salkind, 2010). As shown in Table 12, the two groups (participants who continued in the study, referred to as the non-dropout group, and those who withdrew after baseline, referred to as the dropout group) demonstrated highly similar means and standard deviations across all baseline variables, including English-speaking anxiety (in-class and out-of-class), psychological well-being, life satisfaction, and the Big Five personality traits. Independent-samples t-tests confirmed that none of these differences were statistically significant (all $ps > .05$), with effect sizes consistently small (all $|\text{Cohen's } d| < 0.20$). For instance, in-class English-speaking anxiety did not significantly differ between groups, $t(148.25) = 0.39, p = .70, 95\% \text{ CI} [-0.17, 0.25]$, nor did out-of-class English-speaking anxiety, $t(176.06) = -0.63, p = .53, 95\% \text{ CI} [-0.20, 0.11]$. These results indicate minimal evidence of attrition bias in the present study.

Table 12. Group Comparisons of Baseline Variables by Attrition Status Using Independent Samples *t*-tests

Constructs	Mean (SD) (dropout)	Mean (SD) (Non-dropout)	t-value	df	p-value	95% CI (mean diff)	Cohen's d [95% CI]
English-speaking anxiety (in)	2.88 (.91)	2.84 (.90)	0.39	148.25	0.70	[-0.17, 0.25]	0.05 [0.19, 0.28]
English-speaking anxiety (out)	2.69 (.63)	2.74 (.76)	-0.63	176.06	0.53	[-0.20, 0.11]	-0.07 [-0.30, 0.17]
Psychological well-being	3.86 (.62)	3.85 (.68)	0.03	160.57	0.98	[-0.15, 0.15]	0.00 [-0.23, 0.24]
Life Satisfaction	3.29 (.73)	3.30 (.81)	-0.13	164.25	0.90	[-0.19, 0.16]	-0.01 [-0.25, 0.22]
Extraversion	3.02 (.72)	3.04 (.76)	-0.23	154.35	0.82	[-0.19, 0.15]	-0.03 [-0.26, 0.21]
Agreeableness	3.69 (.52)	3.70 (.57)	-0.02	163.28	0.99	[-0.13, 0.12]	-0.00 [-0.24, 0.23]
Conscientiousness	3.27 (.65)	3.22 (.64)	0.66	146.39	0.51	[-0.10, 0.20]	0.08 [-0.15, 0.31]
Neuroticism	3.07 (.72)	3.17 (.67)	-1.19	140.93	0.24	[-0.27, 0.07]	-0.15 [-0.38, 0.09]
Openness	3.67 (.57)	3.57 (.60)	1.46	154.60	0.15	[-0.04, 0.24]	0.17 [-0.07, 0.40]

Note. Means and standard deviations are reported for the dropout and non-dropout groups. The 95% confidence interval (CI) in the “mean diff” column refers to the mean difference between groups. Cohen's *d* provides the standardized mean difference (effect size), with its own 95% CI reported in brackets. Positive values of Cohen's *d* indicate higher scores in the dropout group relative to the non-dropout group.

5.3.1.2 Descriptive Statistics of Baseline Trait-level Measures.

5.3.1.2.1 Pre-sessional Sample (Timepoint 1.1).

Descriptive statistics for the baseline trait (Timepoint 1.1) are present in Table 13. Pre-sessional participants reported moderate levels of English-speaking anxiety, with a mean of 3.01 ($SD = 0.83$) for classroom settings and 2.93 ($SD = 0.65$) for outside classroom settings, on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Scores for psychological well-being ($M = 3.80$, $SD = 0.64$) and life satisfaction ($M = 3.22$, $SD = 0.77$) were slightly above the midpoint of the 5-point scale. Among the Big Five personality traits, agreeableness ($M = 3.64$, $SD = 0.65$) and openness ($M = 3.50$, $SD = 0.61$) were rated relatively high, while conscientiousness ($M = 3.14$, $SD = 0.65$) was somewhat lower on the 5-point Likert scale. Neuroticism ($M = 3.18$, $SD = 0.66$) was moderate, and extraversion ($M = 3.00$, $SD = 0.76$) showed more variability.

Correlational analyses showed several significant associations among the variables in line with expectations. English-speaking anxiety in classroom and outside classroom contexts were strongly correlated ($r = .679$, $p < .01$). Both were negatively associated with psychological well-being ($r = -.379$ and $r = -.332$, respectively) and life satisfaction ($r = -.239$ and $r = -.212$, respectively). Higher English-speaking anxiety was also related to higher neuroticism ($r = .483$ for classroom, $r = .344$ for outside classroom) and lower levels of conscientiousness and extraversion. In contrast, psychological well-being showed strong positive associations with life satisfaction ($r = .541$) and conscientiousness ($r = .467$), and a negative association with neuroticism ($r = -.486$). Additional correlation coefficients among the trait variables can be found in Table 13.

Table 13. Descriptive Statistics and Intercorrelations for Baseline Trait Variables (Pre-sessional group, Timepoint 1.1; $N = 188$)

	Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.
1.English-speaking Anxiety (in)	3.01(0.83)								
2.English-speaking Anxiety(out)	2.93 (0.65)	.679**							
3.Psychological Well-being	3.80 (0.64)	-.379**	-.332**						
4.Life Satisfaction	3.22 (0.77)	-.239**	-.212**	.541**					
5.Extraversion	3.00 (0.76)	-.335**	-.310**	.447**	.190**				
6.Agreeableness	3.64 (0.56)	-.070	-.143	.312**	.077	.212**			
7.Conscientiousness	3.14 (0.65)	-.291**	-.307**	.467**	.339**	.289**	.234**		
8.Neuroticism	3.18 (0.65)	.483**	.344**	-.486**	-.354**	-.470**	-.253**	-.449**	
9.Openness	3.50 (0.61)	-.219**	-.252**	.275**	.158*	.221**	.087	.110	-.047

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

5.3.1.2.2 Non-pre-sessional Sample (Timepoint 2.1).

Table 14 presents the descriptive statistics and intercorrelations for the baseline trait variables in the non-pre-sessional group (N = 124). Overall, participants reported moderate levels of English-speaking anxiety in both classroom and out-of-class settings, and relatively high levels of psychological well-being and life satisfaction, with mean scores above the midpoint of the 5-point scale. The Big Five personality traits also showed average to moderately high levels across dimensions. Correlation analyses revealed several meaningful associations among the variables which were again in line with expectations. English-speaking anxiety in classroom and outside classroom contexts were strongly positively correlated ($r = .643, p < .01$). Both were negatively associated with psychological well-being ($r = -.282$ and $r = -.379$, respectively). Psychological well-being also showed strong positive associations with life satisfaction ($r = .623$), extraversion ($r = .411$), agreeableness ($r = .382$) and conscientiousness ($r = .353$), and a negative association with neuroticism ($r = -.286$). Life satisfaction correlated positively with agreeableness ($r = .362$), conscientiousness ($r = .315$), openness ($r = .276$), extraversion ($r = .240$). Additional details of the correlations among all variables can be found in Table 14.

Table 14. Descriptive Statistics and Intercorrelations for Baseline Trait Variables (non-pre-sessional group, Timepoint 2.1; $N = 124$)

	Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.
1.English-speaking anxiety (in)	2.58 (0.95)								
2.English-speaking anxiety(out)	2.45 (0.81)	.643**							
3.Psychological Well-being	3.94 (0.73)	-.282**	-.379**						
4.Life Satisfaction	3.42 (0.87)	-.141	-.155	.623**					
5.Extraversion	3.11 (0.74)	-.271**	-.247**	.411**	.240**				
6.Agreeableness	3.76 (0.58)	.003	-.056	.382**	.362**	.203*			
7.Conscientiousness	3.35 (0.61)	-.118	-.027	.353**	.315**	.286**	.322**		
8.Neuroticism	3.15 (0.70)	.269**	.174	-.286**	-.349**	-.367**	-.156	-.458**	
9.Openness	3.67 (0.57)	-.158	-.158	.421**	.276**	.401**	.239**	.122	-.061

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

5.3.1.2.3 Summary of Descriptive Findings.

The descriptive results at baseline offer an overview of participants' psychological variables and personality traits across two samples. Moderate levels of English-speaking anxiety were reported overall, with slightly lower scores in the Timepoint 2.1 non-pre-session sample. Across both groups, English-speaking anxiety was consistently correlated with lower psychological well-being and life satisfaction, and positively associated with neuroticism. Other personality traits also showed meaningful associations with the core outcome variables. These patterns provide a reference point for the longitudinal and multilevel analyses presented in the following sections. The following sections present the results of longitudinal and multilevel analyses conducted to address the study's research questions (section 3.3).

5.3.2 RQ1: How do English-speaking anxiety, psychological well-being, and life satisfaction change over time?

This research question is addressed in two parts. The first part presents results from the repeated trait-level questionnaire data, analysed using linear mixed-effects models. The second part draws on qualitative findings from semi-structured interviews to supplement and contextualise the observed trends.

5.3.2.1 Changes in Key Variables (Quantitative Findings).

5.3.2.1.1 Classroom English-Speaking Anxiety.

Table 15 presents four multilevel growth curve linear models for those four variables (classroom/ outside of classroom English-speaking anxiety, psychological well-being, life satisfaction), while Table 16 reports the corresponding standardised coefficients. Taking classroom English-speaking anxiety as an example, the null model (Model 1) includes only a random intercept and no predictors. The intercept estimate ($\beta_0 = 2.69$) represents the grand

mean of classroom English-speaking anxiety across all participants and timepoints. The model also yields an intra-class correlation coefficient (ICC) of .51, indicating that 51% of the total variance in anxiety scores was due to between-person differences, while 49% was attributable to within-person fluctuations over time. This suggests that both stable individual differences and meaningful within-person changes were present in the data.

In model 2, time was included as a predictor to examine changes in classroom English-speaking anxiety over time. Results revealed a significant negative fixed effect of time ($\beta_{\text{standardised}} = -0.162$, $SE = 0.028$, $p < .001$), indicating that anxiety levels decreased across measurement waves, the effect size was small. The variance in intercepts ($\sigma^2 = 0.80$) indicates that baseline classroom English-speaking anxiety varied across participants, while the random slope variance ($\sigma^2 = 0.03$) suggests modest variation in individuals' rate of change over time. Notably, the correlation between intercepts and slopes was strong and negative ($r = -.84$), indicating that participants who started with higher levels of anxiety tended to show steeper decline.

In Model 3, group (pre-sessional vs. non-pre-sessional) was added as a fixed effect. Time remained a significant predictor ($\beta_{\text{standardised}} = -0.151$, $SE = 0.029$, $p < .001$), representing a small effect size. Group also showed a significant main effect ($\beta_{\text{standardised}} = -0.217$, $SE = 0.094$, $p = .022$), indicating a small effect size. These results suggest that non-pre-sessional participants reported lower classroom anxiety on average than pre-sessional participants.

In Model 4, the interaction between time and group was added to examine whether the rate of change differed between the two groups. The fixed effect of time remained significant ($\beta_{\text{standardised}} = -0.170$, $SE = 0.034$, $p < .001$), and the group main effect also remained significant ($\beta_{\text{standardised}} = -0.248$, $SE = 0.099$, $p = .013$), both reflecting small effect

sizes. However, the time-by-group interaction was not statistically significant ($\beta_{\text{standardised}} = 0.064$, $SE = 0.062$, $p = .307$), suggesting that the rate of decline did not differ significantly between pre-sessional and non-pre-sessional participants. The random effects were comparable to those in earlier models, indicating consistent individual differences in both baseline anxiety levels and their rates of change.

5.3.2.1.2 Outside-Classroom English-Speaking Anxiety.

The multilevel linear growth curve models for outside-classroom English-speaking anxiety yielded the following findings. In model 1, the ICC was .48, indicating that 48% of the variance was due to between-person differences. Model 2 showed a significant negative effect of time ($\beta_{\text{standardised}} = -0.221$, $SE = 0.029$, $p < .001$), reflecting a small effect size, and suggesting a general decline in anxiety across time. In Model 3, group was also a significant predictor ($\beta_{\text{standardised}} = -0.451$, $SE = 0.089$, $p < .001$) indicating a medium effect size: non-pre-sessional students reporting lower anxiety overall than pre-sessional students. The time-by-group interaction in Model 4 was not significant ($\beta_{\text{standardised}} = 0.076$, $SE = 0.064$, $p = .232$), indicating similar change trajectories between groups.

5.3.2.1.3 Psychological well-being.

Multilevel linear growth models were also conducted for psychological well-being. In model 1, the ICC was .55, indicating that 55% of the variance in well-being scores was attributable to between-person differences. Model 2 revealed a non-significant decline in psychological well-being over time ($\beta_{\text{standardised}} = -0.050$, $SE = 0.029$, $p = .082$), corresponding to a negligible effect. In Model 3, the inclusion of group as a predictor resulted in a significant time effect ($\beta_{\text{standardised}} = -0.061$, $SE = 0.029$, $p = .038$), indicating a small but statistically significant decline in psychological well-being once group differences were controlled for. The group main effect itself was small and non-significant ($\beta_{\text{standardised}} = 0.188$,

$SE = 0.101, p = .065$), indicating a tendency for non-pre-sessional students to report slightly higher psychological well-being. In Model 4, the time-by-group interaction was not significant ($\beta_{\text{standardised}} = -0.045, SE = 0.063, p = .480$), indicating similar trajectories across groups.

5.3.2.1.4 Life Satisfaction.

Four multilevel models were estimated to examine change in life satisfaction. In the null model, the ICC was 0.54, indicating 54% of the variance in life satisfaction occurred at the between-person level. In Model 2, a negligible but significant increase in life satisfaction over time was observed ($\beta_{\text{standardised}} = 0.070, SE = 0.028, p = .012$). This effect remained significant in Model 3 ($\beta_{\text{standardised}} = -0.063, SE = 0.028, p = .026$), while the group variable itself was not statistically significant ($\beta_{\text{standardised}} = 0.129, SE = 0.100, p = .199$). In Model 4, the interaction between time and group was non-significant ($\beta_{\text{standardised}} = -0.028, SE = 0.061, p = .648$), suggesting that both pre-sessional and non-pre-sessional students showed a similar increasing trend in life satisfaction.

5.3.2.1.5 Summary of Quantitative Findings.

Overall, Classroom and outside-classroom English-speaking anxiety both showed statistically significant decreases over time, with small, standardised effect sizes. Life satisfaction demonstrated negligible but significant increases, while psychological well-being exhibited a negligible negative effect that was not statistically significant, indicating relative stability rather than a clear decline. In addition to these general trends, the models revealed considerable between-person variability in both baseline levels and rates of change. Notably, participants with higher initial anxiety tended to exhibit greater reductions over time. These findings provide a basis for further examining whether individual differences in trait personality are associated with these trajectories (RQ2).

Table 15. Raw (unstandardised) Fixed and Random Effects Across Four Constructs ($N = 312$)

	English-speaking anxiety (in)				English-speaking anxiety (out)				Psychological well-being				Satisfaction with Life			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Fix effects																
Intercept	2.69	2.98	3.03	3.07	2.62	2.95	3.04	3.08	3.82	3.90	3.87	3.85	3.36	3.24	3.21	3.19
(SE)	(0.04)	(0.07)	(0.07)	(0.08)	(0.03)	(0.06)	(0.06)	(0.07)	(0.03)	(0.06)	(0.06)	(0.06)	(0.04)	(0.06)	(0.07)	(0.08)
p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Time		-0.13	-0.12	-0.13		-0.15	-0.13	-0.15		-0.03	-0.04*	-0.03		0.05	0.05	0.05
(SE)		(0.02)	(0.02)	(0.03)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.03)
p		.000	.000	.000		.000	.000	.000		.082	.038 *	.186		.012 *	.026 *	.035 *
		***	***	***		***	***	***								
Group (non-pre- sessional)			-0.17	-0.32			-0.31	-0.45			0.13	0.20			0.10	0.16
(SE)			(0.08)	(0.16)			(0.06)	(0.13)			(0.07)	(0.13)			(0.08)	(0.15)
p			.022 *	.046 *			.000	.001			.065	.107			.198	.286
							***	***								
Time * Group				0.05				0.05				-0.03				-0.02
(SE)				(0.05)				(0.04)				(0.04)				(0.05)
p				.307				.231				.480				.648
Random effects																
Intercept	0.34	0.80	0.78	0.79	0.22	0.58	0.54	0.54	0.26	0.40	0.39	0.39	0.34	0.56	0.56	0.56
(SE)	(0.58)	(0.90)	(0.89)	(0.89)	(0.47)	(0.76)	(0.73)	(0.73)	(0.51)	(0.63)	(0.63)	(0.63)	(0.58)	(0.75)	(0.75)	(0.75)
Time		0.03	0.03	0.03		0.03	0.03	0.03		0.02	0.02	0.02	0.28	0.02	0.02	0.02
(SE)		(0.18)	(0.17)	(0.17)		(0.16)	(0.16)	(0.16)		(0.15)	(0.15)	(0.15)	(0.53)	(0.13)	(0.13)	(0.14)
Residual	0.32	0.26	0.26	0.26	0.24	0.18	0.18	0.18	0.21	0.18	0.18	0.18		0.25	0.25	0.25
(SE)	(0.57)	(0.51)	(0.51)	(0.51)	(0.49)	(0.43)	(0.43)	(0.43)	(0.46)	(0.43)	(0.43)	(0.43)		(0.50)	(0.50)	(0.50)
Intercept- slope correlation		-.84	-.84	-.84		-.86	-.86	-.86		-.56	-.56	-.56		-.66	-.66	-.66
ICC	.51				.48				.55				.54			
Model fit statistics																
-2LLH	1774.5	1724.5	1722.6	1725.7	1513.9	1431.6	1410.5	1413.5	1477	1474.1	1474.2	1478.2	1691.6	1685.4	1687	1691.1

Note. Model 1 is the unconditional model (null model), which includes only a random intercept and provides the ICC values. Model 2 adds time as a fixed effect and allows for random slopes across individuals. Model 3 adds group (pre-sessional vs. non-pre-sessional) as a fixed effect, and Model 4 includes the interaction between time and group. Standard errors are reported in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 16. Standardised Fixed Effects Across Four Constructs ($N = 312$)

Outcome	Model (M)	Predictor	β	SE	df	t value	95% CI	p	Effect size (magnitude)
English-speaking anxiety (in)	M2	Time	-0.162	0.028	234.001	-5.704	[-0.217, -0.106]	.000 ***	small
	M3	Time	-0.151	0.029	232.943	-5.281	[-0.208, -0.095]	.000 ***	small
		Group (non-pre-sessional)	-0.217	0.094	308.270	-2.302	[-0.402, -0.032]	.022 *	small
		Time \times Group	0.064	0.062	333.297	1.023	[-0.059, 0.186]	.307	negligible
	M4	Time	-0.170	0.034	178.349	-4.972	[-0.238, -0.103]	.000 ***	small
		Group (non-pre-sessional)	-0.248	0.099	341.214	-2.503	[-0.443, -0.054]	.013 *	small
Time \times Group		0.064	0.062	333.297	1.023	[-0.059, 0.186]	.307	negligible	
English-speaking anxiety (out)	M2	Time	-0.221	0.029	235.148	-7.635	[-0.279, -0.165]	.000 ***	small
	M3	Time	-0.199	0.029	238.139	-6.792	[-0.256, -0.141]	.000 ***	small
		Group (non-pre-sessional)	-0.451	0.089	318.989	-5.085	[-0.625, -0.277]	.000 ***	medium
		Time \times Group	0.076	0.064	333.696	1.199	[0.048, 0.201]	.232	negligible
	M4	Time	-0.222	0.035	183.278	-6.325	[-0.291, -0.153]	.000 ***	small
		Group (non-pre-sessional)	-0.487	0.094	343.331	-5.204	[-0.670, -0.303]	.000 ***	medium
Time \times Group		0.076	0.064	333.696	1.199	[0.048, 0.201]	.232	negligible	
Psychological well-being	M2	Time	-0.050	0.029	202.155	-1.751	[-0.106, 0.006]	.082	negligible
	M3	Time	-0.061	0.029	207.731	-2.086	[-0.118, -0.004]	.038 *	negligible
		Group (non-pre-sessional)	0.188	0.101	327.617	1.855	[-0.011, 0.386]	.065	small
		Time \times Group	-0.045	0.063	293.215	-0.708	[-0.169, 0.079]	.480	negligible
	M4	Time	-0.047	0.035	156.393	-1.329	[-0.116, 0.022]	.186	negligible
		Group (non-pre-sessional)	0.194	0.102	339.168	1.907	[-0.005, 0.393]	.057	small
Time \times Group		-0.045	0.063	293.215	-0.708	[-0.169, 0.079]	.480	negligible	
Life satisfaction	M2	Time	0.070	0.028	223.136	2.521	[0.016, 0.124]	.012 *	negligible
	M3	Time	0.063	0.028	222.292	2.238	[0.008, 0.119]	.026 *	negligible
		Group (non-pre-sessional)	0.129	0.100	309.269	1.288	[-0.068, 0.326]	.199	small
		Time \times Group	-0.028	0.061	330.739	-0.457	[-0.150, 0.093]	.648	negligible
	M4	Time	0.072	0.034	165.896	2.122	[0.005, 0.138]	.035 *	negligible
		Group (non-pre-sessional)	0.139	0.103	340.068	1.351	[-0.062, 0.339]	.178	small
Time \times Group		-0.028	0.061	330.739	-0.457	[-0.150, 0.093]	.648	negligible	

Note. All fixed effects are standardised coefficients (z-standardised). Time was standardised across all participants, and outcome variables were z-scored prior to model fitting. Group was dummy-coded (0 = pre-sessional, 1 = non-pre-sessional). Model 2 includes Time as a fixed effect with random intercepts and slopes. Model 3 adds Group as a fixed effect, and Model 4 adds the interaction term between Time and Group. Degrees of freedom were estimated using Satterthwaite's approximation. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ indicates a negligible effect, $|\beta| = .10-.29$ a small effect, $|\beta| = .30-.49$ a medium effect, and $|\beta| \geq .50$ a large effect. * $p < .05$, ** $p < .01$, *** $p < .001$.

5.3.2.2 Changes in Key Variables (Qualitative Findings).

The qualitative results are drawn from 40 semi-structured interviews, including 22 participants who were interviewed once and nine who completed two rounds of interviews. This section first presents themes identified across the full sample, capturing participants' experiences and interpretations of their English-speaking anxiety, psychological well-being, and life satisfaction during their time abroad. Following this, a separate subsection focuses on the longitudinal data from the nine participants who completed both interviews, highlighting within-person developments over time.

5.3.2.2.1 English-Speaking Anxiety.

Participants' reflections across both rounds of interviews revealed a complex and context-dependent experience of English-speaking anxiety during their time in the UK. While many ($N = 24$) reported some level of anxiety when communicating in English, others described themselves as confident or emotionally unaffected ($N = 7$). Several participants expressed minimal or no anxiety, often attributing their comfort to prior English exposure or a relaxed attitude toward making mistakes. For instance, participant A13 shared, "*I frequently had online conversations in English with foreigners as part of my previous job, so I didn't experience much of a change when I arrived here*" (October 23, 2023). Similarly, participant B11 noted, "*I don't feel anxious or anything at all because I don't mind. Even if I say something wrong, it doesn't affect me*" (September 20, 2024).

In contrast, many others ($N = 8$) described anxiety as a persistent or initially overwhelming experience, especially at the beginning of their UK stay. Participant A1 remarked, "*I feel afraid to speak English, so I tend to rely on my peers to speak for me or limit myself to very short and simple sentences*" (September 10, 2023). Others ($N = 10$) reported a lack of confidence, fear of judgment, or discomfort when expressing themselves,

even when they understood what to say. As participant B10 put it, *“I often feel nervous because I lack confidence in my English skills and ability to express myself, which also makes me afraid to speak up”* (August 5, 2024).

Some participants ($N = 16$) described changes in their anxiety levels over time. While several noted improvements in confidence and emotional ease, others experienced no significant change or even an increase in anxiety. As Participant A11 said, *“I was initially very concerned about my grammar and vocabulary and lacked confidence. However, as time went on, I realized that people could still understand even if my speaking is not perfect, which made me feel more at ease”* (October 26, 2023). In contrast, Participant A9 reflected, *“I feel more and more afraid to speak and increasingly anxious. At first, I didn’t feel this way, probably because everything was new and exciting in a different environment. However, as the novelty wore off, I started to feel more anxious and worried about others’ opinions”* (October 3, 2023).

Overall, the interviews revealed substantial individual variation in participants’ experiences of English-speaking anxiety. While some described feeling little to no anxiety, others reported persistent discomfort or nervousness. A number of participants noted changes over time, such as reduced anxiety or improved confidence, whereas others felt their anxiety remained stable or even increased.

5.3.2.2.2 Changes in English-Speaking Anxiety Among repeated interviewees.

As shown in Table 17, trait-level questionnaire results revealed that most of the nine interview participants demonstrated a decreasing trend in both classroom and outside-class English-speaking anxiety from Time1.1 to Time 2.3, while a few participants showed relative stability or slight increases. These quantitative changes suggest overall reductions in English-speaking anxiety, albeit with notable individual differences. The qualitative findings further

elaborated on this variability, revealing that participants' self-perceived changes were not always consistent with the quantitative trends, and that they experienced anxiety shifts in diverse and context-dependent ways across time. Among the nine participants who completed two rounds of interviews, changes in English-speaking anxiety over time exhibited substantial individual variation. Based on the three-level thematic trajectory coding framework (see Table 18), participants' experiences were categorised into three overarching patterns: decreasing anxiety, partly decreasing anxiety, and no significant change.

Table 17. Mean Scores of Classroom and Outside-class English-speaking Anxiety for Nine Interview Participants Across Time Points

	A2		A3		A4		A5		A6		A9		A11		A17		A20	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
1.1	2.39	3.33	3.61	3.08	1.33	1.75	2.22	3.08	3.05	3.42	3.94	3.83	3.28	2.58	3.61	2.92	3.16	2.42
1.2	1.89	2.50	2.50	2.92	1.78	2.25	1.72	2.83	2.44	2.67	3.22	3.75	3.00	3.25	2.27	2.17	-	-
2.2	3.06	2.67	2.56	2.42	2.67	2.42	2.39	2.25	-	-	3.61	3.83	2.56	2.50	-	-	2.61	2.42
2.3	1.06	1.08	2.50	2.33	1.78	2.08	2.78	2.92	-	-	3.61	3.50	2.39	2.17	-	-	-	-
Change	↓	↓	↓	↓	↑	↑	↑	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	→

Note. In = classroom English-speaking anxiety; Out = outside-class English-speaking anxiety. Dashes (-) indicate that the participant did not complete the questionnaire at that time point. Arrows (↑, ↓, →) in the Change row represent the direction of change from Time 1.1 to Time 2.3, where ↑ indicates an increase, ↓ a decrease, and → relative stability. Scores are mean values derived from the trait-level questionnaire corresponding to the nine interviewees.

Table 18. Three-level Thematic Trajectory Analysis Coding Table

IDs	Micro-template (T1) – Broad Theme	Micro-template (T1) – Sub-theme	Micro-template (T2) – Broad Theme	Micro-template (T2) – Sub-theme	Meso-template (Individual Trajectories)	Macro-template (Group Patterns)
A2	Speaking Anxiety and Fear	Fear of judgment, hesitation to speak	Speaking Confidence and Growth	More willingness to speak, overcoming fear	From fear to confidence	Decreasing Anxiety
A3	Speaking Anxiety and Avoidance	Avoidance despite sufficient language skills; pressure in classroom and daily interactions	Context-Dependent Anxiety	Continued classroom avoidance; more ease in informal settings	Persistent avoidance in class; reduced anxiety outside	Partly Decreasing Anxiety
A4	Environmental Influence on Anxiety	Classroom tolerance reduces anxiety	Environmental Influence on Anxiety	Less opportunity to speak, maintaining same level of anxiety	Stable but reduced engagement	No significant change
A5	Neutral Attitude Toward English	English as a functional tool	Stable Attitude Toward English	Consistent neutral stance	Consistently neutral stance; anxiety unchanged	No significant change
A6	Context-Dependent Anxiety	Predictability in classroom lowers anxiety, casual conversations cause uncertainty	Context-Dependent Anxiety	Reduced anxiety in casual conversations, unpredictability remains challenging	Shifting anxiety depending on context	Partly Decreasing Anxiety
A9	Speaking as a Necessity	Only speaking when required	Emotional Detachment	Accuracy matters less, more focus on communication	From necessity-driven to emotional detachment and reduced concern	Decreasing Anxiety
A11	Linguistic Barriers and Communication Challenges	Anxiety due to vocabulary and grammar limitations	Shifting Perception and Reduced Anxiety	Less concern about minor mistakes; anxiety persists in vocabulary-limited situations	Anxiety decreased with shifting perception, occasional vocabulary-related anxiety remains.	Decreasing Anxiety
A17	Linguistic Barriers and Communication Challenges	Struggling to express thoughts clearly; compare with others	Context-Dependent Anxiety	Higher anxiety in classroom, more ease in informal settings	Shifting anxiety depending on context	Partly Decreasing Anxiety
A20	Self-Perception and Emotional Reactions	Low confidence, frustration with progress	Self-Perception and Emotional Growth	Greater confidence, positive perception of progress	From frustration to positive self-perception	Decreasing Anxiety

Decreasing anxiety

Four participants (A2, A9, A11, A20) reported a noticeable reduction in English-speaking anxiety between the two interviews. This was often associated with increased confidence, a more relaxed attitude toward mistakes, and changes in mindset.

Participant A2 initially reported a strong fear of judgment and social discomfort: *“At first, I was afraid to speak up.”* However, by the second interview, she noted, *“As I interacted with more people, I gradually became more confident. Now, I don’t feel that much anxiety”* (June 27, 2024). Similarly, participant A20 reflected on her initial lack of confidence and frustration, which gave way to a more positive outlook: *“I’m quite happy with my spoken English now. I feel I’ve made significant progress, and I’m now willing to express myself and speak up”* (September 12, 2024).

Participant A11 experienced reduced anxiety not necessarily due to improved language skills, but because of a change in perception: *“People don’t really care about small mistakes”* (June 31, 2024). Although she still felt uneasy in vocabulary-demanding contexts, her overall anxiety had lessened. Participant A9 also reported decreased anxiety, attributing this not to proficiency but to caring less about perfection: *“I don’t feel very anxious now, not because my English has improved, but because I no longer worry about speaking perfectly or making mistakes”* (September 19, 2024).

Partly Decreasing Anxiety

Three participants (A6, A17, A3) showed mixed patterns, reporting context-specific changes. Their anxiety decreased in informal or familiar situations, but remained stable or became even more pronounced in academic or structured settings.

Participant A6 described relatively low anxiety in class but continued nervousness in casual conversations:

“In class, since the content was structured, I didn’t feel that anxious even with a lot of technical terms. But when it came to informal conversations, I still felt a bit nervous because I wasn’t as familiar with daily vocabulary, but lesser than before”

(September 13, 2024).

A similar pattern was observed for A17, who noted persistent anxiety in academic contexts but less concern in daily interactions: *“I still feel nervous speaking English in class, but outside, I feel more relaxed. I don’t really mind making mistakes anymore”* (September 12, 2024). Participant A3 consistently avoided English-speaking situations despite acknowledging her language competence. Although she reported feeling less pressure outside the classroom by the second interview, classroom-related anxiety and avoidance behaviours persisted: *“I rarely attended classes and chose to study at home instead because I strongly resisted it. I felt that I couldn’t understand what was being said and couldn’t express myself either”* (September 19, 2024)

No Significant Change

Two participants (A4, A5) reported stable, low levels of anxiety across both interviews. Their prior experience using English and their practical, communication-focused attitudes appeared to buffer them from emotional fluctuations. Participant A4 explained that speaking English felt neutral due to her previous job: *“I don’t really feel anything when I speak English. Since my previous job required me to use English, I never felt that people cared about how well I spoke”* (September 12, 2023). By the second interview, this remained unchanged, aside from occasional anxiety in urgent or unfamiliar situations. Similarly, A5 consistently framed English as a tool: *“Even if I need to repeat myself a few times, it feels normal”* (September 12, 2023). Although he reported mild classroom nervousness when unprepared, he did not describe strong emotional responses to speaking English: *“my feelings have remained unchanged, and I don’t have much of an emotional response. In class, I might*

feel slightly nervous, mainly due to a lack of preparation, but overall, speaking English doesn't make me feel very anxious” (June 13, 2024).

Furthermore, the nine participants were requested to reflect on their English-speaking experiences and generate a sketch diagram to illustrate the trajectory of their English-speaking anxiety over time, in addition to the interview questions. Figure 9 and Figure 10 present the hand-drawn diagrams of the nine participants, with each colour representing a different participant. Based on the analysis of the nine diagrams, the majority of participants exhibited a decrease in English-speaking anxiety over time, both inside and outside the classroom. However, some fluctuations were observed during the process. For example, participant A11 experienced a peak in classroom English-speaking anxiety, which she explained was due to transitioning from her pre-sessional program to formal Master program, where unfamiliarity with her surroundings contributed to an increase in English-speaking anxiety. Participant A4 also reported a mid-point rise in English-speaking anxiety for a similar reason. Moreover, Participant A5's sketch diagram also indicates that their English-speaking anxiety remained relatively stable, showing little change over time, which aligns with his statements during the interview.

In sum, participants exhibited different trajectories of English-speaking anxiety over time, reflecting individual differences in how they responded to using English in the immersion environment.

Figure 9. The Sketch Diagram of English-speaking Anxiety (Outside of Classroom)

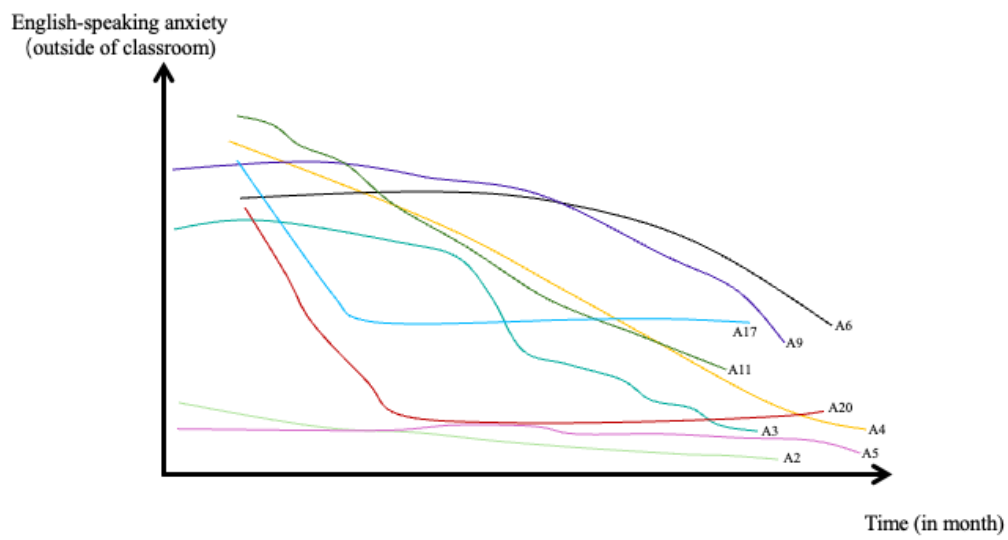
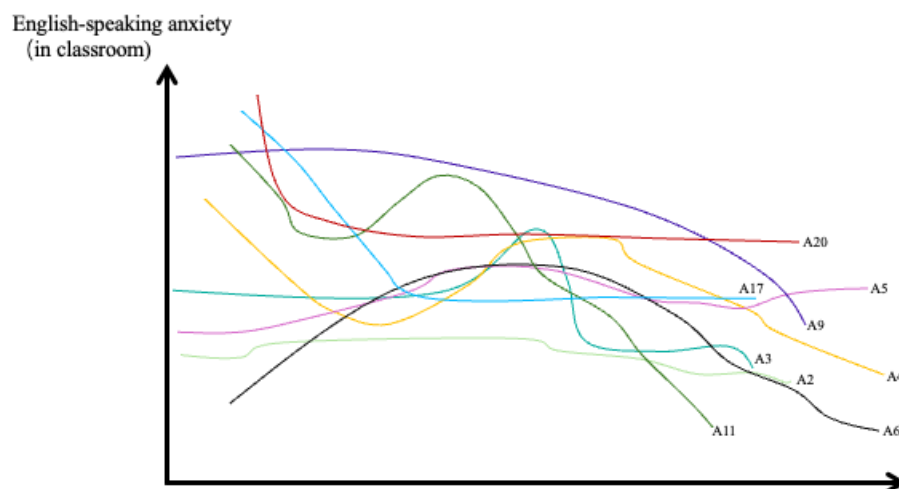


Figure 10. The Sketch Diagram of English-speaking Anxiety (In Classroom)



5.3.2.2.3 *Changes in Psychological Well-being and Life Satisfaction.*

Since English-speaking anxiety was the primary focus of this study and explored in detail, the following sections on psychological well-being and life satisfaction are presented more briefly to supplement the quantitative findings with participants' reflections.

Psychological Well-being

Participants' reflections revealed a generally positive but varied experience of psychological well-being during their stay in the UK. Many described themselves as “*mostly positive but occasionally negative*” (e.g. A1, A19, B1), attributing fluctuations to factors such as physical fatigue, social pressure, or lack of close connections. For instance, A20 reported, “*I feel mostly positive, but sometimes the social side of life brings me pressure*” (September 20, 2023). Others expressed consistently positive states, often linked to personality traits or stable support systems (e.g. A15, B11). Some participants maintained a neutral or emotionally flat state, neither particularly positive nor negative (e.g. A5, A13). A few reported emotional downturns, often associated with academic stress or adjustment difficulties. For example, A3 (September 19, 2024) described her state as “*terrible,*” citing heavy academic and emotional burden, while B2 (August 1, 2024) characterised her well-being as “*relative negative*” as she was struggling with study-related difficulties.

Among the nine participants who were interviewed twice, patterns of change were mixed. Some showed improvement (e.g. A4: “*I feel more emotionally stable and mature*”), while others described greater fluctuation (e.g., A17: “*Some days are good, some are bad*”) or a shift toward emotional flatness (e.g., A6: “*The novelty has worn off, and things have become more ordinary*”). A3's emotional state worsened over time, while A9 reported feeling “*slightly more positive*” in the second interview (September 19, 2024). Overall, the findings

reflect individual variability in psychological well-being, shaped by personal characteristics, academic and social demands.

Life Satisfaction

Across both interview rounds, most participants expressed general satisfaction with their life in the UK, although the specific reasons varied. In the first round, participants frequently mentioned greater independence (A1, A10), personal growth (A14), and social connection (A12, A4) as key contributors. For example, A14 said she had become “*more willing to try new things*” (September 26, 2023), while A1 appreciated having more autonomy and less family pressure. In the second round, many participants described further adaptation and growing comfort with their environment (B1, B5, B6, B8). Participant B4 shared that she had “*a very good experience*” (August 27, 2024) while B9 (August 5, 2024) noted that although he was “*not satisfied at the beginning,*” and “*gradually got used to life here.*”

Among the nine repeated interviewees, some reported stable satisfaction over time (A2, A6, A11, A20), while others described improvements. For instance, A9 moved from a neutral stance to describing her life as “*basically satisfied*” (September 19, 2024), and A17 noted that she felt “*more satisfied in summer*” (September 12, 2024). However, not all changes were positive – A3, who was initially satisfied, became less so over time due to weather and food-related discomforts. In sum, although a few participants faced ongoing challenges, the majority reported a satisfying and gradually improving experience of life abroad.

Overall, participants’ psychological well-being and life satisfaction were generally positive, though both showed individual variation and occasional fluctuations over time.

These differences reflected personal attitudes, contextual factors, and adaptation processes during their stay abroad.

5.3.2.2.4 Summary of Findings.

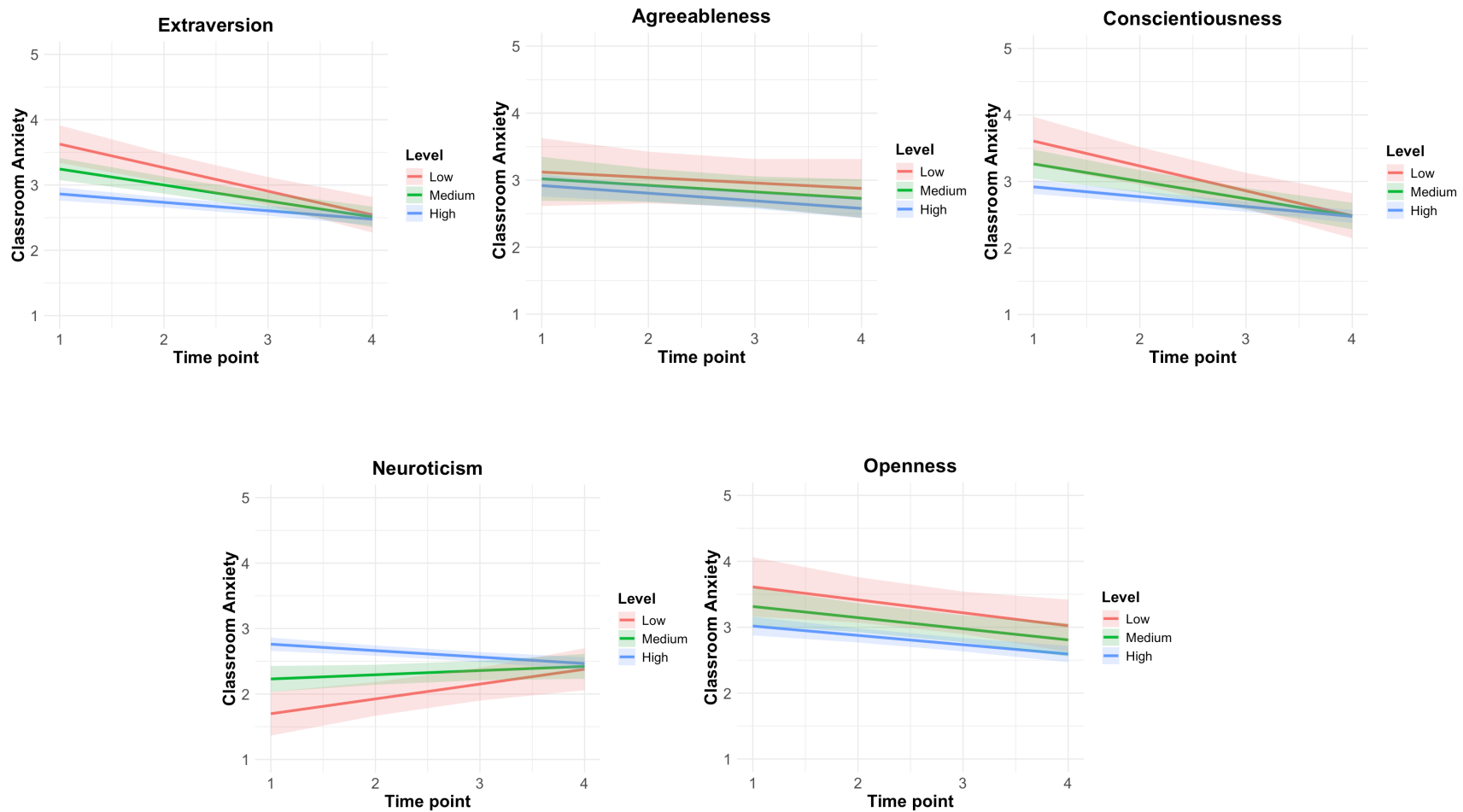
Drawing on 40 semi-structured interviews, the qualitative findings reveal that participants' experience of English-speaking anxiety, psychological well-being, and life satisfaction were diverse. While some reported persistent discomfort in academic or unfamiliar settings, others became more confident over time. Psychological well-being was generally positive but showed individual fluctuations influenced by academic stress, social dynamics, or personal resilience. Similarly, most participants expressed satisfaction with their life in the UK, often linked to independence, personal growth, or supportive relationships. These differences reflected each individual's unique experiences and circumstances.

5.3.3 RQ 2. Does trait personality associate with the trajectory of changes in English-speaking anxiety, psychological well-being, and life satisfaction?

To explore whether personality traits were associated with changes in *classroom English-speaking anxiety* over time, five separate linear mixed-effects models were tested. Each model included one of the Big Five traits (measured at baseline) as a predictor, along with time and their interaction. Results revealed that extraversion, conscientiousness, and neuroticism were significantly related to both the baseline levels and the trajectories of classroom-speaking anxiety. Individuals higher in extraversion reported lower initial anxiety ($\beta = -0.55, SE = 0.09, p < .001$). Individuals who scored higher in extraversion experienced a less steep decline in English-speaking over time ($\beta_{\text{standardised}} = 0.111, SE = 0.028, p < .001$). Although statistically significant, this interaction reflected a small effect. Similarly, higher conscientiousness was associated with lower baseline classroom anxiety ($\beta = -0.46, SE = 0.11, p < .001$) and a slower decrease in classroom English-speaking anxiety ($\beta_{\text{standardised}} =$

0.093, $SE = 0.028$, $p = .001$), but this effect was negligible in size. In addition, neuroticism showed the opposite pattern, being positively associated with baseline anxiety ($\beta = 0.69$, $SE = 0.10$, $p < .001$) and linked a faster decrease over time ($\beta_{\text{standardised}} = -0.136$, $SE = 0.027$, $p < .001$). This interaction likewise reflected a small effect, indicating that individuals higher in neuroticism experienced a steeper decline in anxiety across timepoints, perhaps reflecting greater emotional reactivity that led to more noticeable reduction with repeated exposure. In comparison, agreeableness ($\beta_{\text{standardised}} = -0.012$, $SE = 0.028$, $p = .672$) and openness ($\beta_{\text{standardised}} = 0.021$, $SE = 0.028$, $p = .452$) did not significantly moderate changes in classroom English-speaking anxiety over time. These trends are presented in Figure 11, which displays predicted trajectories of classroom English-speaking anxiety over time across different levels of each personality traits.

Figure 11. Change in Classroom English-Speaking Anxiety over Time by Personality Traits



Note. The figure was generated based on linear mixed-effects models using unstandardised data, including time, personality traits, and their interaction. Trait levels were categorised as low, medium, and high, corresponding to values one standard deviation below the mean, at the mean, and one standard deviation above the mean, respectively. Shaded areas represent 95% confidence intervals. Anxiety scores were measured on a 1–5 scale.

In addition to classroom English-speaking anxiety, changes in *English-speaking anxiety outside the classroom* were also examined. Results revealed that neuroticism and conscientiousness significantly moderated the trajectory of outside-classroom English-speaking anxiety. Individuals higher in neuroticism reported higher baseline anxiety ($\beta = 0.44, SE = 0.09, p < .001$) but experienced a faster decrease over time ($\beta_{\text{standardised}} = -0.115, SE = 0.028, p < .001$), representing a small effect. Conversely, those higher in conscientiousness reported lower initial outside-classroom English-speaking anxiety ($\beta = -0.37, SE = 0.10, p < .001$) but exhibited a slightly slower decline over time ($\beta_{\text{standardised}} = 0.089, SE = 0.029, p = .002$), reflecting a negligible effect. Extraversion was also associated with lower baseline anxiety ($\beta = -0.43, SE = 0.08, p < .001$), but more extraverted individuals showed a slower decline ($\beta_{\text{standardised}} = 0.127, SE = 0.029, p < .001$), a small effect. No significant interaction with time was found for agreeableness ($\beta_{\text{standardised}} = 0.030, SE = 0.029, p = .295$) and openness ($\beta_{\text{standardised}} = 0.040, SE = 0.029, p = .163$).

The next set of models examined changes in *psychological well-being* and whether personality traits were associated with these trajectories. Results showed that all personality traits were significantly associated with initial levels of psychological well-being. Specifically, individuals scoring higher on extraversion ($\beta = 0.51, SE = 0.07, p < .001$), agreeableness ($\beta = 0.57, SE = 0.09, p < .001$), conscientiousness ($\beta = 0.59, SE = 0.08, p < .001$), and openness ($\beta = 0.47, SE = 0.09, p < .001$) also scored higher in baseline psychological well-being, with higher neuroticism associated with lower baseline psychological well-being ($\beta = -0.49, SE = 0.08, p < .001$). Additionally, all traits except neuroticism ($\beta_{\text{standardised}} = 0.048, SE = 0.028, p = .089$) showed negligible but significant negative interactions with time, indicating that individuals higher in these traits experienced a faster decline in psychological well-being.

In addition to English-speaking anxiety and psychological well-being, participants' *satisfaction with life* was also examined in relation to personality traits and its development over time. Results showed that all five personality traits were significantly associated with initial life satisfaction levels. Participants scoring higher on extraversion ($\beta = 0.29$, $SE = 0.08$, $p < .001$), agreeableness ($\beta = 0.46$, $SE = 0.11$, $p < .001$), conscientiousness ($\beta = 0.53$, $SE = 0.10$, $p < .001$), and openness ($\beta = 0.37$, $SE = 0.11$, $p < .001$) reported greater baseline life satisfaction, whereas those higher in neuroticism ($\beta = -0.55$, $SE = 0.09$, $p < .001$) reported lower baseline life satisfaction. With respect to change over time, three traits significantly moderated the temporal trajectory of life satisfaction: higher agreeableness ($\beta_{\text{standardised}} = -0.067$, $SE = 0.028$, $p = .017$) and conscientiousness ($\beta_{\text{standardised}} = -0.081$, $SE = 0.028$, $p = .004$) were associated with a slower increase in life satisfaction, while higher neuroticism was linked to a slightly steeper increase over time ($\beta_{\text{standardised}} = 0.066$, $SE = 0.028$, $p = .018$). These effects, however, were negligible in size. All fixed effects from both unstandardised and standardised models are presented in Table 19 and Table 20, respectively.

Table 19. Fixed and Random Effects Across Four Constructs ($N = 312$)

Outcome Variable	Personality Traits	Intercept	Time	Personality traits	Time* Personality traits	Random Intercept	Random Slope	Residual	- 2LLH
English-speaking Anxiety (in)	Extraversion	4.49***(0.28)	-0.48***(0.09)	-0.50***(0.09)	0.12***(0.03)	0.66 (0.81)	0.02 (0.15)	0.26 (0.51)	1703.6
	Agreeableness	3.29***(0.46)	-0.07 (0.14)	-0.08 (0.12)	-0.02 (0.04)	0.80 (0.89)	0.03 (0.17)	0.26 (0.51)	1728.7
	Conscientiousness	4.44***(0.35)	-0.49***(0.11)	-0.46***(0.11)	0.11**(0.03)	0.71 (0.85)	0.03 (0.16)	0.26 (0.51)	1715.6
	Neuroticism	0.78*(0.32)	0.39***(0.11)	0.69***(0.10)	-0.16***(0.03)	0.56 (0.75)	0.02 (0.14)	0.26 (0.51)	1687.3
	Openness	4.13***(0.42)	-0.22 (0.13)	-0.32**(0.12)	0.03 (0.04)	0.76 (0.87)	0.03 (0.17)	0.26 (0.51)	1716.3
English-speaking Anxiety (out)	Extraversion	4.24***(0.24)	-0.48***(0.08)	-0.43***(0.08)	0.11*** (0.03)	0.47 (0.69)	0.02 (0.14)	0.18 (0.43)	1411.6
	Agreeableness	3.73***(0.39)	-0.27*(0.12)	-0.21*(0.10)	0.03 (0.03)	0.56 (0.75)	0.03 (0.16)	0.18 (0.43)	1434.6
	Conscientiousness	4.13***(0.30)	-0.43***(0.10)	-0.37***(0.10)	0.09**(0.03)	0.53 (0.73)	0.02 (0.16)	0.18 (0.43)	1424.8
	Neuroticism	1.56***(0.28)	0.22*(0.09)	0.44***(0.09)	-0.11***(0.03)	0.48 (0.69)	0.02 (0.14)	0.18 (0.43)	1417.3
	Openness	4.08***(0.35)	-0.30**(0.11)	-0.32**(0.10)	0.04 (0.03)	0.54 (0.73)	0.03 (0.16)	0.18 (0.43)	1423.5
Psychological Well-being	Extraversion	2.37***(0.21)	0.21**(0.08)	0.51***(0.07)	-0.08**(0.03)	0.25 (0.50)	0.02 (0.14)	0.18 (0.43)	1414.4
	Agreeableness	1.82***(0.34)	0.25*(0.12)	0.57***(0.09)	-0.07*(0.03)	0.30 (0.54)	0.02 (0.14)	0.18 (0.43)	1429.9
	Conscientiousness	2.00***(0.25)	0.23*(0.10)	0.59***(0.08)	-0.08**(0.03)	0.23 (0.48)	0.02 (0.14)	0.18 (0.43)	1405.7
	Neuroticism	5.45***(0.25)	-0.19*(0.09)	-0.49***(0.08)	0.05 (0.03)	0.25 (0.50)	0.02 (0.13)	0.18 (0.43)	1418.3
	Openness	2.25***(0.32)	0.19 (0.11)	0.47***(0.09)	-0.06*(0.03)	0.36 (0.60)	0.03 (0.16)	0.18 (0.42)	1444.2
Satisfaction with Life	Extraversion	2.35***(0.26)	0.19*(0.08)	0.29***(0.08)	-0.05 (0.03)	0.52 (0.72)	0.02 (0.14)	0.25 (0.50)	1679.3
	Agreeableness	1.56***(0.41)	0.37**(0.14)	0.46***(0.11)	-0.09*(0.04)	0.52 (0.72)	0.02 (0.13)	0.25 (0.50)	1674.9
	Conscientiousness	1.53***(0.31)	0.35***(0.11)	0.53***(0.10)	-0.09**(0.03)	0.45 (0.67)	0.02 (0.12)	0.25 (0.50)	1658.3
	Neuroticism	4.98***(0.30)	-0.19 (0.10)	-0.55***(0.09)	0.08*(0.03)	0.43 (0.66)	0.02 (0.13)	0.25 (0.50)	1645.1
	Openness	1.94***(0.38)	0.26*(0.12)	0.37***(0.11)	-0.06 (0.03)	0.53 (0.73)	0.02 (0.14)	0.25 (0.50)	1678.8

Note. All predictors are based on raw (unstandardised) values. Time was coded as numeric and personality traits were entered as continuous variables.

The table displays unstandardised fixed effects. Standard errors are shown in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 20. Standardised Fixed Effects Across Four Constructs ($N= 312$)

Outcome	Model (M)	Predictor	β	SE	df	t value	95% CI	p	Effect size (magnitude)
English-speaking anxiety (in)	M1	Time	-0.160	0.028	235.228	-5.799	[-0.214, -0.106]	.000 ***	small
		Extraversion	-0.207	0.046	307.490	-4.512	[-0.297, -0.117]	.000 ***	small
		Time \times Extraversion	0.111	0.028	244.478	3.950	[0.056, 0.166]	.000 ***	small
	M2	Time	-0.160	0.028	235.234	-5.661	[-0.215, -0.105]	.000 ***	small
		Agreeableness	-0.087	0.048	305.846	-1.829	[-0.180, 0.006]	.068	negligible
		Time \times Agreeableness	-0.012	0.028	235.266	-0.424	[-0.067, 0.043]	.672	negligible
	M3	Time	-0.159	0.028	235.947	-5.676	[-0.213, -0.104]	.000 ***	small
		Conscientiousness	-0.512	0.047	302.790	-3.217	[-0.244, -0.059]	.001 **	large
		Time \times Conscientiousness	0.093	0.028	228.242	3.313	[0.038, 0.148]	.001 **	negligible
	M4	Time	-0.164	0.027	232.189	-6.041	[-0.217, -0.111]	.000 ***	small
		Neuroticism	0.251	0.045	311.058	5.641	[0.164, 0.339]	.000 ***	small
		Time \times Neuroticism	-0.136	0.027	267.450	-4.992	[-0.190, -0.083]	.000 ***	small
	M5	Time	-0.161	0.028	238.101	-5.701	[-0.217, -0.106]	.000 ***	small
		Openness	-0.193	0.047	301.637	-4.140	[-0.285, -0.102]	.000 ***	small
		Time \times Openness	0.021	0.028	229.000	0.753	[-0.034, -0.076]	.452	negligible
English-speaking anxiety (out)	M1	Time	-0.220	0.028	233.608	-7.847	[-0.275, -0.165]	.000 ***	small
		Extraversion	-0.181	0.045	301.309	-4.046	[-0.268, -0.093]	.000 ***	small
		Time \times Extraversion	0.127	0.029	243.361	4.446	[0.071, 0.183]	.000 ***	small
	M2	Time	-0.220	0.029	2343.741	-7.613	[-0.277, -0.164]	.000 ***	small
		Agreeableness	-0.111	0.046	299.438	-2.426	[-0.201, -0.021]	.016 *	small
		Time \times Agreeableness	0.030	0.029	234.581	1.049	[-0.026, 0.087]	.295	negligible
	M3	Time	-0.220	0.029	243.260	-7.631	[-0.276, -0.163]	.000 ***	small

Psychological well-being		Conscientiousness	-0.148	0.046	295.707	-3.248	[-0.237, -0.059]	.001 **	small
		Time × Conscientiousness	0.089	0.029	236.079	3.069	[0.032, 0.146]	.002 **	negligible
	M4	Time	-0.224	0.028	233.853	-7.919	[-0.279, 0.169]	.000 ***	small
		Neuroticism	0.162	0.044	303.173	3.653	[0.075, 0.249]	.000 ***	small
		Time × Neuroticism	-0.115	0.028	266.387	-4.033	[-0.170, -0.059]	.000 ***	small
	M5	Time	-0.222	0.029	238.001	-7.676	[-0.279, -0.165]	.000 ***	small
		Openness	-0.190	0.045	294.244	-4.196	[-0.278, -0.101]	.000 ***	small
		Time × Openness	0.040	0.029	228.914	1.398	[-0.016, 0.097]	.163	negligible
	M1	Time	-0.051	0.028	207.972	-1.802	[-0.106, 0.004]	.073	negligible
		Extraversion	0.338	0.044	314.644	7.613	[0.251, 0.425]	.000 ***	medium
		Time × Extraversion	-0.092	0.029	218.532	-3.221	[-0.148, -0.036]	.001 **	negligible
	M2	Time	-0.054	0.028	203.638	-1.901	[-0.109, 0.002]	.059	negligible
		Agreeableness	0.318	0.046	307.137	6.965	[0.228, 0.407]	.000 ***	medium
		Time × Agreeableness	-0.068	0.028	203.477	-2.398	[-0.123, -0.012]	.017 *	negligible
	M3	Time	-0.057	0.028	201.528	-2.038	[-0.112, -0.002]	.043 *	negligible
		Conscientiousness	0.375	0.044	306.615	8.287	[0.288, 0.461]	.000 ***	medium
		Time × Conscientiousness	-0.080	0.028	195.323	-2.828	[-0.135, -0.025]	.005 **	negligible
	M4	Time	-0.047	0.028	203.714	-1.689	[-0.102, 0.008]	.093	negligible
		Neuroticism	-0.357	0.044	316.163	-8.184	[-0.443, -0.272]	.000 ***	medium
		Time × Neuroticism	0.048	0.028	233.955	1.706	[-0.007, 0.103]	.089	negligible
	M5	Time	-0.054	0.029	210.619	-1.875	[-0.111, 0.002]	.062	negligible
		Openness	0.277	0.047	308.716	5.935	[0.185, 0.368]	.000 ***	small
		Time × Openness	-0.057	0.029	202.333	-1.990	[-0.114, -0.001]	.048 *	negligible
	Life satisfaction	M1	Time	0.069	0.028	227.676	2.483	[0.015, 0.124]	.014 *

	Extraversion	0.176	0.048	307.830	3.689	[0.082, 0.269]	.000 ***	small
	Time × Extraversion	-0.046	0.028	236.956	-1.629	[-0.102, 0.009]	.105	negligible
M2	Time	0.068	0.028	220.262	2.448	[0.013, 0.122]	.015 *	negligible
	Agreeableness	0.185	0.048	303.502	3.833	[0.090, 0.279]	.000 ***	small
	Time × Agreeableness	-0.067	0.028	220.525	-2.397	[-0.120, -0.012]	.017 *	negligible
M3	Time	0.065	0.027	220.646	2.365	[0.011, 0.119]	.019 *	negligible
	Conscientiousness	0.258	0.047	300.014	5.475	[0.165, 0.350]	.000 ***	small
	Time × Conscientiousness	-0.081	0.028	212.895	-2.931	[-0.135, -0.027]	.004 **	negligible
M4	Time	0.072	0.028	228.004	2.596	[0.018, 0.126]	.010 *	negligible
	Neuroticism	-0.313	0.045	309.226	-6.967	[-0.401, -0.225]	.000 ***	medium
	Time × Neuroticism	0.066	0.028	261.896	2.379	[0.012, 0.121]	.018 *	negligible
M5	Time	0.067	0.028	225.407	2.413	[0.013, 0.122]	.017 *	negligible
	Openness	0.177	0.048	301.756	3.653	[0.082, 0.271]	.000 ***	negligible
	Time × Openness	-0.047	0.028	216.347	-1.686	[-0.101, 0.008]	.093	negligible

Note. All fixed effects are standardised coefficients (β , z-standardised). Time was standardised across all participants, and outcome variables and personality predictors were z-scored prior to model fitting. Confidence intervals (CI) are reported at 95%. * $p < .05$, ** $p < .01$, *** $p < .001$. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ indicates a negligible effect, $|\beta| = .10-.29$ a small effect, $|\beta| = .30-.49$ a medium effect, and $|\beta| \geq .50$ a large effect. * $p < .05$, ** $p < .01$, *** $p < .001$. Models were estimated using linear mixed-effects modelling in R (package lme4).

5.3.3.1 Summary of Findings.

Across all four constructs – English-speaking anxiety (in and out of the classroom), psychological well-being, and life satisfaction – several personality traits were significantly associated with initial levels of each outcome. Extraversion, agreeableness, and conscientiousness were most consistently linked to more adaptive baseline levels, such as lower anxiety and higher well-being and life satisfaction. In contrast, neuroticism was generally associated with poorer initial outcomes. Regarding changes over time, conscientiousness consistently showed significant interactions with time across all four outcomes. Higher levels of conscientiousness were associated with a more gradual decrease in English-speaking anxiety (in & outside classroom), a greater decline in psychological well-being, and a slower increase in life satisfaction over time. Neuroticism also moderated three outcomes: higher neuroticism at baseline was associated with a steeper reduction in English-speaking anxiety and slightly more rapid gains in life satisfaction. Extraversion showed significant moderation effects in English-speaking anxiety, with higher extraversion linked to slower reductions in anxiety over time.

5.3.4 RQ 3: How do momentary experiences of anxiety, psychological well-being, and life satisfaction fluctuate in daily life?

To address this question, the results are presented separately for the WSA and ESM datasets. The first section focuses on WSA, illustrating patterns observed over the 10-week pre-session course. The second section turns to ESM, which captured more intensive sampling over a one-week period during the degree programme. Both datasets provide insight into short-term fluctuations and individual variability across the key constructs.

5.3.4.1 WSA.

5.3.4.1.1 *Descriptive Statistics.*

The descriptive statistics (Table 21) present the mean, standard deviation, and range of participants' grand mean score for each psychological state variable measured in WSA. Each grand mean was computed by averaging participants' available responses across the WSA sessions they completed. Although a total of 20 sessions were scheduled, the number of completed sessions varied across individuals. On average, participants reported moderate levels of *English-speaking anxiety*, both in classroom settings ($M = 2.42$, $SD = 1.74$, $range = 0 - 8.33$) and outside the classroom ($M = 2.62$, $SD = 1.86$, $range = 0 - 8.00$). These scores were obtained using a 0–10 visual analogue scale presented as a slider scales, with higher values indicating greater anxiety. When *English-speaking anxiety* was examined as a composite of cognitive, affective, and behavioural components, the average level was slightly higher ($M = 2.89$, $SD = 1.05$, $range = 1.00 - 5.64$). Participants demonstrated an overall tendency toward positive *psychological well-being*, as reflected in a generally positive affective balance ($M = 9.52$, $SD = 6.87$, $range = -5.76 - 23.70$). *Psychological well-being* was assessed using the SPANE-B score, derived by subtracting negative affect from positive affect, with possible scores ranging from -24 to +24; higher scores indicate a more positive emotional experience. In addition, participants reported moderate to high levels of *life satisfaction* ($M = 5.18$, $SD = 1.00$, $range = 2.65 - 7.00$). The observed standard deviations and wide score ranges across these measures indicate considerable variability between individuals in their average state experiences over the course of the study.

Table 21. Descriptive Statistics for State-level Psychological Variables ($N = 144$)

Variables	M	SD	Range
English-speaking anxiety (in)	2.42	1.74	0 – 8.33
English-speaking anxiety (out)	2.62	1.86	0 – 8.00
English-speaking anxiety (cognitive; affective; behaviour)	2.89	1.05	1.00 – 5.64
Psychological well-being	9.52	6.87	-5.76 – 23.70
Satisfaction with life	5.18	1.00	2.65 – 7.00

5.3.4.1.2 *Intraindividual Variability.*

To examine the extent to which participants' psychological states fluctuated during the 10-week period, ICCs (intraclass correlation coefficients) were extracted from the intercept-only model described earlier. The results indicated that the majority of variability was attributable to between-person differences, which accounted for 54% to 70% of the total variance across the five measured constructs (see Table 22). This suggests that participants differed substantially from one another in their average levels of English-speaking anxiety, psychological well-being, and life satisfaction. The corresponding ICCs ranged from 0.54 for life satisfaction to 0.70 for psychological well-being. Conversely, within-person variability ranged from 30% to 46%, indicating that participants' responses also fluctuated across sessions rather than remaining fully stable. These findings highlight that while between-person variance predominated, there was still notable within-person variability over the course of the study.

Table 22. Between- and Within-Person Variability (ICCs) for State-level psychological variables

	Between	Within
English-speaking anxiety (in)	0.647	0.353
English-speaking anxiety (out)	0.673	0.327
English-speaking anxiety (cognitive; affective; behaviour)	0.668	0.332
Psychological well-being	0.696	0.304
Satisfaction with life	0.539	0.461

5.3.4.1.3 Systematicity of Variability.

To examine whether participants' psychological experiences changed systematically throughout the 10-week period, a series of two-level growth curve models were fitted to each outcome variable. Time point was included as a continuous level-1 predictor to capture within-person change, and both random intercepts and slopes were estimated for each participant. Table 23 presents the unstandardised fixed and random effects, and Table 24 present standardised fixed effects with confidence intervals and effect sizes.

The raw model estimates (Table 23) demonstrated meaningful individual variability across all psychological state variables. The variance in intercepts indicated that participants differed in their baseline levels of classroom anxiety (8.49), outside-classroom anxiety (7.60), composite anxiety (1.77), psychological well-being (55.76), and life satisfaction (1.55). The slope variances – though generally smaller – still suggested individual differences in change trajectories over time, with values ranging from 0.01 (composite anxiety and life satisfaction) to 0.21 (psychological well-being). Additionally, the residual variances, ranging from 0.15 to 16.57, captured substantial within-person fluctuations not explained by time. Together, these

estimates provide quantitative support for both inter-individual and intra-individual variability in participants' psychological state experiences across the study period.

All three anxiety measures showed significant negative time slopes, indicating a steady reduction in English-speaking anxiety over time. Specifically, English-speaking anxiety in the classroom decreased significantly ($\beta_{\text{standardised}} = -0.086$, $SE = 0.007$, $p < .001$), as did English-speaking anxiety outside the classroom ($\beta_{\text{standardised}} = -0.077$, $SE = 0.007$, $p < .001$) and the composite English-speaking score (cognitive, affective, behaviour) ($\beta_{\text{standardised}} = -0.055$, $SE = 0.007$, $p < .001$). Although all three effects were negligible in size ($|\beta| < .10$), their consistent direction underscores systematic decreases in participant's English-speaking anxiety.

Psychological well-being showed a significant positive time trend ($\beta_{\text{standardised}} = 0.025$, $SE = 0.008$, $p = .002$), suggesting an improvement in participants' affective balance over time, the effect size was negligible. In contrast, no significant change was observed in life satisfaction over time ($\beta_{\text{standardised}} = 0.007$, $SE = 0.007$, $p = .339$), indicating relative stability in participants' cognitive evaluation of life, with a negligible effect size.

In sum, the WSA findings revealed meaningful intraindividual variability and consistent trends in participants' psychological states over the 10-week period. Both classroom and outside-classroom English-speaking anxiety demonstrated a gradual decrease, while psychological well-being increased slightly over time. In contrast, life satisfaction showed no clear temporal trend and remained relatively stable. The standardised slopes indicated negligible effect size, suggesting that although the observed changes were systematic, their average magnitude was modest. The intraclass correlation coefficients (ICCs) and residual variances indicated notable within-person fluctuations across all

measures, underscoring the dynamic changes in participants' daily psychological experiences. Figure 12 displays the trajectories of the three variables across the study period.

Table 23. Fixed and Random Effects from Two-Level Growth Models (WSA) ($N = 144$)

	Anxiety_in	Anxiety_out	Anxiety_cab	Psychological well-being	Life satisfaction
Fix effects					
Intercept	4.23	4.27	3.50	7.33	5.07
SE	(0.26)	(0.25)	(0.13)	(0.74)	(0.13)
p	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***
Time_point	-0.15	-0.13	-0.05	0.18	0.01
SE	(0.02)	(0.01)	(0.01)	(0.05)	(0.01)
p	.000***	.000 ***	.000 ***	.000 ***	.336
Random effects					
Intercept	8.49 (2.92)	7.60 (2.76)	1.77 (1.33)	55.76 (7.47)	1.55 (1.25)
Slope	0.03 (0.16)	0.02 (0.15)	0.01 (0.08)	0.21 (0.45)	0.01 (0.08)
Residual	0.93 (0.97)	1.01 (1.01)	0.39 (0.62)	16.57 (4.07)	0.72 (0.85)
Model fit statistics					
-2LLH	5381.5	5495.6	3840.1	10092.5	4725.6

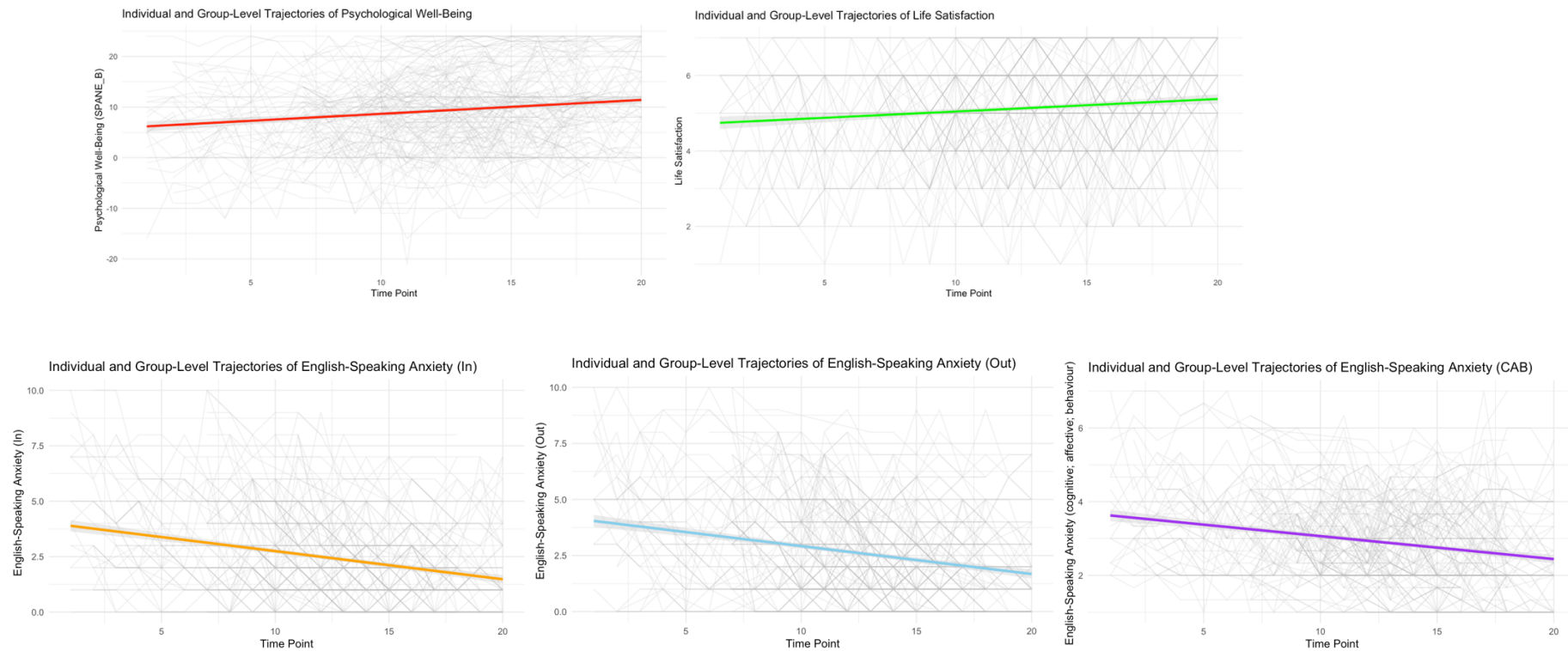
Note. Table presents fixed and random effects from two-level growth models for each psychological state variable. The models include a random intercept and random slope for time, capturing both between-person differences in baseline levels and individual trajectories of change. Residual variance reflects within-person fluctuations not accounted for by time. Anxiety_in = Classroom English-speaking anxiety; Anxiety_out = Outside-classroom English-speaking anxiety; Anxiety_cab = English-speaking anxiety (cognitive, affective, behavioural). Standard errors are reported in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 24. Standardised Fixed Effects Across State Constructs (N=144)

Outcome	Predictor	β	SE	df	t value	95% CI	<i>p</i>	Effect size (magnitude)
English-speaking anxiety (in)	Time	-0.086	0.007	80.634	-11.66	[-0.100, -0.072]	.000***	negligible
English-speaking anxiety (out)	Time	-0.077	0.007	96.234	-10.75	[-0.091, -0.063]	.000***	negligible
English-speaking anxiety (cab)	Time	-0.055	0.007	111.009	-7.368	[-0.070, -0.040]	.000***	negligible
Psychological well-being	Time	0.025	0.008	96.502	3.181	[0.010, 0.040]	.002**	negligible
Life satisfaction	Time	0.007	0.007	81.432	0.962	[-0.007, 0.020]	.339	negligible

Note. All fixed effects are standardised coefficients (person-mean SD standardisation). Time was included as a fixed effect with random intercepts and slopes by participant. Degrees of freedom were estimated using Satterthwaite's approximation. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ indicates a negligible effect, $|\beta| = .10-.29$ a small effect, $|\beta| = .30-.49$ a medium effect, and $|\beta| \geq .50$ a large effect. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 12. Individual and Group-Level Trajectories of Key Psychological State Variables across the WSA Period



Note. Grey lines represent individual participants' trajectories, and coloured lines represent group-level trajectories with 95% confidence intervals. Outcomes include psychological well-being (SPANE-B), life satisfaction, and three dimensions of English-speaking anxiety (in-class, out-of-class, and cognitive–affective–behavioural) assessed across 20 time points. The figure illustrates both inter-individual variability and overall group-level trends, with smoothed lines indicating systematic patterns of change over time.

5.3.4.2 ESM.

5.3.4.2.1 *Psychological Well-Being.*

Psychological well-being was assessed using the same SPANE-B score, consistent with WSA. Participant-level averages, scores ranged from -7.78 to 23.30, with a mean of 7.57 ($SD = 7.17$). The null multilevel model for psychological well-being yielded an intraclass coefficient (ICC) of 0.72, indicating that 72% of the variance in momentary psychological well-being was attributable to stable between-person differences, while 28% was due to within-person variability in responses.

A two-level growth curve model was used to examine change in momentary psychological well-being over time. The fixed effect of time was positive but not statistically significant ($\beta = 0.04$, $SE = 0.02$, $p = .096$), indicating that descriptively psychological well-being showed a slight upward trend over the 7-day period, but the trend did not reach statistical significance. The random slope variance ($Var = 0.03$) suggested modest individual difference in the rate of change. Substantial between-person variability remained in baseline well-being levels ($Var = 44.30$), while the residual variance was estimated at 17.50. Fixed and random effect estimates are summarised in Table 25. To enable comparability across constructs, an additional model with standardised scores (within-person SD scaling) was estimated. In this model, the effect of time reached statistical significance ($\beta_{\text{standardised}} = 0.014$, $SE = 0.003$, $p < .001$); however, the effect size was negligible ($|\beta| < .10$). Thus, although the standardised estimates suggested a small upward trend in well-being, the change was not of substantive magnitude. Standardised fixed effects are presented in Table 26. Figure 13 illustrates these results, showing a relatively stable group-level trajectory (red line), alongside notable variability in individual trajectories (grey lines), highlighting the extent of within-person fluctuations despite the absence of a meaningful overall trend.

Table 25. Fixed and Random Effects from Two-Level Growth Models (ESM)

	Psychological well-being	Life satisfaction	English-speaking Anxiety (In)	English-speaking Anxiety (Out)
Fix effects				
Intercept	7.00	5.05	3.06	2.50
(SE)	(0.78)	(0.15)	(0.34)	(0.23)
<i>p</i>	.000 ***	.000***	.000 ***	.000 ***
Time_point	0.04	-0.00	-0.09	-0.05
(SE)	(0.02)	(0.00)	(0.06)	(0.02)
<i>p</i>	.096	.964	.269	.008 ***
Random effects				
Intercept	44.30 (6.66)	1.51 (1.23)	4.76 (2.18)	3.15 (1.78)
Slope	0.03 (0.17)	0.00 (0.03)	0.01 (0.09)	- (removed due to singularity)
Residual	17.50 (4.18)	0.57 (0.76)	1.01 (1.01)	0.98 (0.99)
Model fit statistics				
-2LLH	10305.8	4366.7	534.6	1160.2

Note. N (obs/participants): Psychological well-being = 1736/79; Life satisfaction = 1736/79; English-speaking anxiety (In) = 143/52; (Out) = 346/70. All shown effects meet or exceed this level of significance. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 13. Trajectories of Psychological Well-Being Over Time across ESM Period

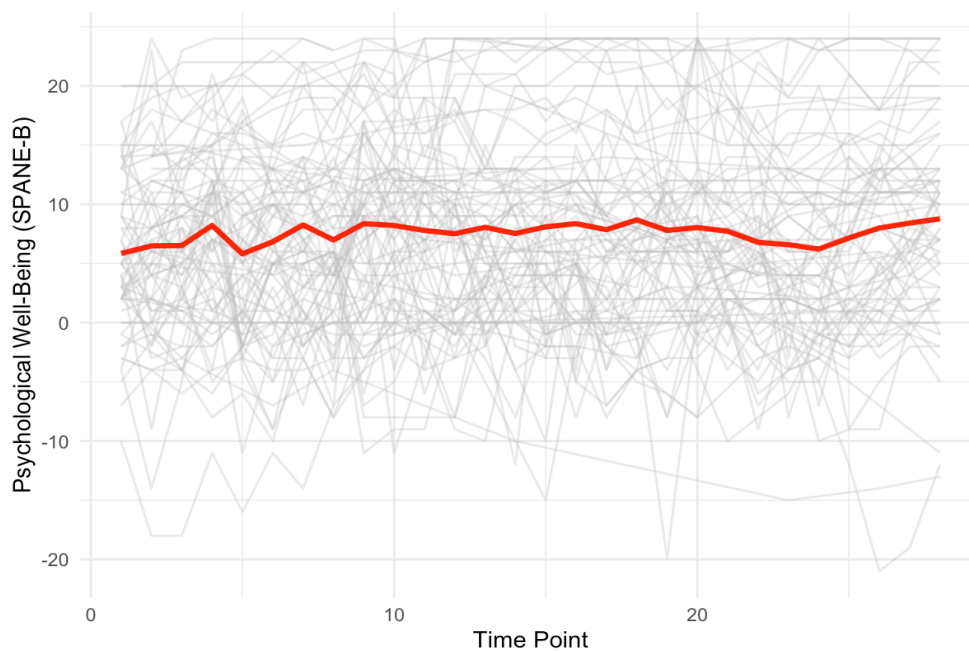


Table 26. Standardised Fixed Effects Across State Constructs Across ESM Period

Outcome	Predictor	β	SE	df	t value	95% CI	<i>p</i>	Effect size (magnitude)
Psychological well-being	Time	0.014	0.003	1706.000	4.921	[0.009, 0.020]	.000***	negligible
Life satisfaction	Time	0.004	0.003	1520.000	1.225	[-0.002, 0.010]	.221	negligible
English-speaking anxiety (in)	Time	-0.039	0.025	1.970	-1.512	[-0.889, 0.011]	.269	negligible
English-speaking anxiety (out)	Time	-0.023	0.009	291.196	-2.500	[-0.040, -0.005]	.013*	negligible

Note. *N* (obs/participants): Psychological well-being = 1736/79; Life satisfaction = 1736/79; English-speaking anxiety (in-class) = 143/52; English-speaking anxiety (out-of-class) = 346/70. Psychological well-being and life satisfaction were standardised within-person (person-mean SD scaling), as they were measured consistently across all time points. In contrast, English-speaking anxiety (in-class and out-of-class) was standardised across the entire sample (grand-mean SD scaling) because these measures were only available when participants reported using English, resulting in fewer observations per person. Time was included as a fixed effect with random intercepts and slopes by participant. Degrees of freedom were estimated using Satterthwaite's approximation. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ indicates a negligible effect, $|\beta| = .10-.29$ a small effect, $|\beta| = .30-.49$ a medium effect, and $|\beta| \geq .50$ a large effect. * $p < .05$, ** $p < .01$, *** $p < .001$.

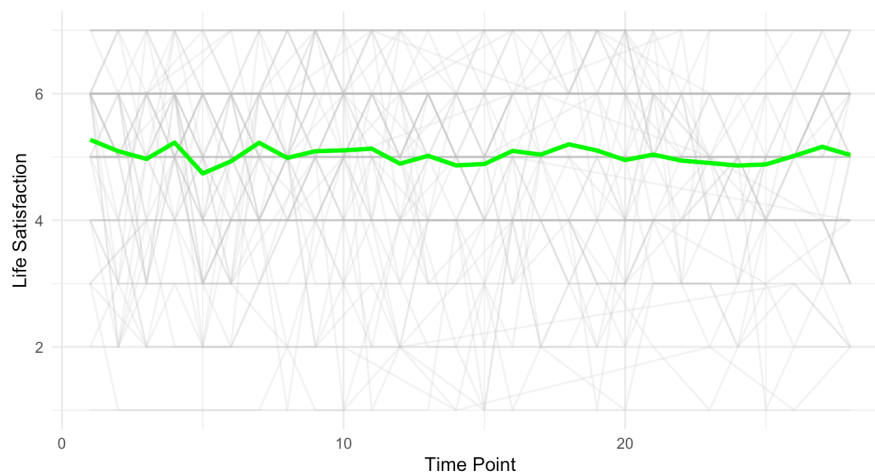
5.3.4.2.2 *Life Satisfaction.*

Participant-level momentary life satisfaction scores had an estimated grand mean of 5.05 ($SD = 0.15$). The intraclass correlation coefficient (ICC) was approximately 0.73, indicating that the majority of the variance (73%) in life satisfaction was due to between-person differences, with the remaining 27% attributable to within-person fluctuations.

Table 25 (raw data) and Table 26 (standardised) present the growth curve model estimates for momentary life satisfaction. In the raw growth curve model, the fixed effect of time was effectively zero and non-significant ($\beta = -0.00$, $SE = 0.00$, $p = .964$). The random slope variance was minimal ($Var = 0.00$), indicating little inter-individual variability in rates of change. Substantial variability remained in baseline levels ($Var = 1.51$), while the residual variance was estimated at 0.57.

The standardised model (within-person SD scaling) produced a similarly negligible effect of time, though with a slight change in coefficient direction ($\beta_{\text{standardised}} = 0.004$, $SE = 0.003$, $p = .221$). This shift in sign reflects scaling differences rather than a substantive discrepancy. Both models consistently indicate that participants' life satisfaction remained stable across the 7-day period, with no systematic change over time. Figure 14 illustrates the flat group-level trajectory (green line), accompanied by modest within-person fluctuations across individuals (grey lines).

Figure 14. Trajectories of Life satisfaction Over Time across ESM Period



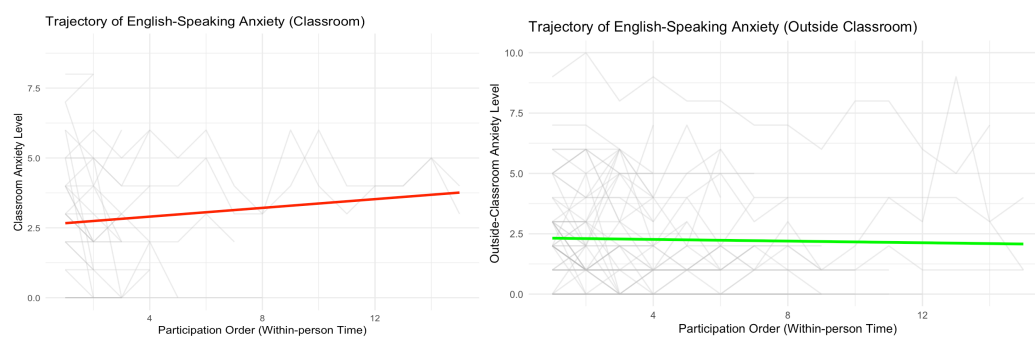
5.3.4.2.3 English-Speaking Anxiety.

Participants' momentary English-speaking anxiety was assessed separately in classroom and outside-classroom contexts. In the classroom, 52 participants contributed reports, with person-level averages ranging from 0 to 9.00 ($M = 2.94$, $SD = 2.30$). The null model yielded an intraclass correlation coefficient (ICC) of 0.81, indicating that 81% of the variance in classroom anxiety was attributable to stable between-person differences, with 19% due to within-person fluctuations. In outside-classroom settings, 70 participants provided reports, with person-level averages ranging from 0 to 7.57 ($M = 2.35$, $SD = 1.86$). The null model produced an ICC of 0.76, again suggesting that most of the variance (76%) reflected stable between-person differences, while 24% reflected within-person variability.

To examine temporal change, two-level growth curve models were estimated with time as a level-1 predictor. Standardised results are reported in Table 26. For classroom anxiety, the fixed effect of time was negative but not statistically significant ($\beta_{\text{standardised}} = -0.039$, $SE = 0.025$, $p = .269$), indicating that classroom-related anxiety remained relatively stable across the 7-day ESM period. By contrast, outside-classroom anxiety demonstrated a small but statistically significant decline ($\beta_{\text{standardised}} = -0.023$, $SE = 0.009$, $p = .013$).

Together, these findings suggest that momentary English-speaking anxiety in classroom settings showed little systematic change, whereas outside-classroom anxiety decreased modestly over the measurement period. Despite these group-level patterns, individual differences were evident in baseline levels and trajectories, as illustrated in Figure 15, which displays both individual participant trajectories (grey lines) and group-level trends (coloured lines).

Figure 15. Trajectories of English-speaking Anxiety across ESM Period



Note: Grey lines represent individual participants' momentary English-speaking anxiety levels across repeated measurements in classroom (left, $N = 52$, entries = 143) and outside-classroom contexts (right, $N = 70$, entries = 346). Red and green lines depict the average group-level trajectory based on linear trend.

Overall, the ESM results indicated that participants' momentary psychological states during the 7-day measurement period were characterised more by stability than by systematic change. English-speaking anxiety outside the classroom showed a small but statistically significant decline over time, whereas classroom-related anxiety remained stable. For psychological well-being, trajectories appeared relatively stable across the week. Life satisfaction likewise remained stable. Across all constructs, substantial between-person variability was evident, while within-person fluctuations were comparatively limited. These findings suggest that participants' daily experiences were shaped more by enduring

individual differences than by pronounced short-term shifts, with only modest signs of dynamic change.

5.3.5 RQ4: Does speaking a different language associate with a change in personality states?

Out of 1,736 ESM responses, 614 were linked to the use of a native language, 489 to English, 43 to another foreign language, and 590 to situations where no language had been spoken in the preceding hours, reflecting a natural or non-verbal context. Given the limited number of responses in “other language” category ($n = 43$), these were combined with the English group to form a single “foreign language” category for subsequent analysis, resulting in 532 responses classified as involving foreign language use. This grouping was based on the shared feature that both English and other foreign languages represent non-native language use.

5.3.5.1 Descriptive Statistics of Personality States Across Language Contexts.

Before presenting descriptive statistics by language-use context, a preliminary check was conducted to evaluate the correspondence between trait personality (BFI-44) and aggregated state personality scores. Trait-level data for participants included in the ESM dataset were extracted and matched to their mean state ratings. As shown in Table 27, trait–state correlations were moderate for extraversion, agreeableness, conscientiousness, and neuroticism, whereas openness displayed notably low correspondence. This pattern informed the additional sensitivity analyses reported later in this section.

Table 27. Descriptive Statistics and Pearson Correlations Between Trait and State Personality Dimensions ($N = 79$)

	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Trait_E	3.028	0.714										
2. Trait_A	3.696	0.635	0.401**									
3. Trait_C	3.210	0.649	0.392**	0.384**								
4. Trait_N	3.241	0.634	-0.453**	-0.388**	-0.541**							
5. Trait_O	3.558	0.528	0.304**	0.067	0.054	-0.078						
6. State_E	2.876	0.597	0.512**	0.168	0.183	-0.244*	0.157					
7. State_A	3.654	0.648	0.190	0.445**	0.223*	-0.333**	0.026	0.203				
8. State_C	3.213	0.579	0.232*	0.119	0.427**	-0.315**	-0.031	0.346**	0.403**			
9. State_N	2.773	0.711	-0.368**	-0.255*	-0.291**	0.535**	-0.060	-0.377**	-0.605**	-0.471**		
10. State_O	3.185	0.620	0.114	0.167	0.096	-0.215	0.159	0.072	0.058	0.154	-0.042	

Note. Trait = baseline trait-level personality; State = momentary personality ratings averaged across ESM measurements. Personality dimensions are abbreviated as follows: O = Openness, C = Conscientiousness, E = Extraversion, A = Agreeableness, N = Neuroticism. Asterisks indicate significance levels: **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

Descriptive statistics of personality states across native, foreign, and no language use contexts (General context) are presented in Table 28. On average, participants reported higher extraversion ($M = 3.03$, $SD = 0.64$) and agreeableness ($M = 3.76$, $SD = 0.62$), alongside lower neuroticism ($M = 2.50$, $SD = 0.81$), when speaking their native language. In contrast, foreign language use was associated with slightly lower extraversion ($M = 2.82$, $SD = 0.68$) and agreeableness ($M = 3.60$, $SD = 0.71$), and higher neuroticism ($M = 2.95$, $SD = 0.78$).

Personality states reported in the general context were typically intermediate between these two conditions. Pairwise comparisons (Table 29) largely supported these descriptive trends. Specifically, participants were more agreeable in their native language than in foreign ($M\ diff = 0.168$, $d = 0.395$, $p = .002$) or no-language contexts ($M\ diff = 0.164$, $d = 0.383$, $p = .003$). Extraversion was also higher in the native language than in foreign ($M\ diff = 0.260$, $d = 0.417$, $p = .001$) or no-language contexts ($M\ diff = 0.355$, $d = 0.643$, $p < .001$). Conversely, neuroticism was lower in the native language than in foreign ($M\ diff = -0.462$, $d = -0.609$, $p < .001$) or no-language contexts ($M\ diff = -0.413$, $d = -0.690$, $p < .001$). Other comparisons, including openness and conscientiousness, yielded smaller or non-significant differences.

In sum, participants displayed more favourable personality profiles (higher extraversion and agreeableness, lower neuroticism) when using their native language, less favourable ones in foreign language contexts, and intermediate patterns when no active language use was reported. Overall, these results indicate that personality states varied systematically across language-use contexts, with the clearest differences observed for extraversion, agreeableness, and neuroticism. These findings suggest context-dependent shifts, which are further examined using multilevel models in the next section.

Table 28. Mean Personality States by Language Use Context (Person-Level Averages)

	Extraversion			Agreeableness			Conscientiousness			Neuroticism			Openness		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Native language	3.03	.64	1.69-5	3.76	.62	2.25-5	3.32	.65	2-5	2.50	.81	1-4.25	3.25	.62	1-4.92
Foreign language	2.82	.68	1.25-5	3.60	.71	2-5	3.24	.63	1.81-5	2.95	.78	1.25-5	3.16	.61	1.25-4.71
General context	2.69	.68	1.47-4.75	3.62	.73	2-5	3.05	.67	1.63-5	2.93	.78	1.08-4.67	3.21	.73	1.05-5

Note. The table reports means and standard deviations based on person-level averages. The number of unique participants was 74 (native), 75 (foreign), and 70 (general context), based on 614, 532, and 590 responses, respectively.

Table 29. Pairwise Comparisons of Personality States across Language Contexts

Trait	Contrast	<i>n</i>	<i>M</i> diff	<i>t</i> (<i>df</i>)	<i>p</i>	95% CI	Cohen's <i>d</i>
Agreeableness	Native – Foreign	70	0.168	3.303(69)	.002**	[0.066, 0.269]	0.395
	Native – General	66	0.164	3.113(65)	.003**	[0.059, 0.269]	0.383
	General – Foreign	66	-0.031	-0.620(65)	.537	[-0.131, 0.069]	-0.076
Conscientiousness	Native – Foreign	70	0.106	1.412(69)	.162	[-0.044, 0.256]	0.169
	Native – General	66	0.297	4.201(65)	.000***	[0.156, 0.439]	0.517
	General – Foreign	66	-0.202	-2.970(65)	.004**	[-0.339, -0.066]	-0.366
Extraversion	Native – Foreign	70	0.260	3.492(69)	.001**	[0.110, 0.408]	0.417
	Native – General	66	0.355	5.224(65)	.000***	[0.219, 0.491]	0.643
	General – Foreign	66	-0.128	-2.069(65)	.043*	[-0.252, -0.004]	-0.255
Neuroticism	Native – Foreign	70	-0.462	-5.093(69)	.000***	[-0.642, -0.281]	-0.609
	Native – General	66	-0.413	-5.603(65)	.000***	[-0.560, -0.266]	-0.690
	General – Foreign	66	0.039	0.532(65)	.597	[-0.108, 0.187]	0.065
Openness	Native – Foreign	70	0.123	1.989(69)	.051	[0.000, 0.246]	0.238
	Native – General	66	0.028	0.526(65)	.601	[-0.078, 0.134]	0.065
	General – Foreign	66	0.092	1.409(65)	.164	[-0.039, 0.223]	0.173

Note. Results are based on pairwise comparisons of person-level average scores across native, foreign, and general language use contexts. *n* indicates the number of participants with valid data in both contexts being compared (range = 66–70). Effect sizes are reported as Cohen's *d*. Significance: * $p < .05$; ** $p < .01$; *** $p < .001$.

5.3.5.2 Variation in Personality States Across Language Use Contexts.

5.3.5.2.1 Extraversion.

To examine how state extraversion varied across language conditions, results from the two-level models (Table 30) and the standardised fixed effects (Table 31) were used. An empty random-intercepts model first indicated that 56% of the variance in extraversion was attributable to between-person differences, while 44% reflected within-person variation ($ICC = .56$). A linear mixed-effects model with native language as the reference category, including random intercepts and slopes by participant, showed that extraversion was significantly lower when participants reported using a foreign language ($\beta_{\text{standardised}} = -0.173$, $SE = 0.087$, $p = .002$), which represented a small effect, and even lower when no language was used ($\beta_{\text{standardised}} = -0.423$, $SE = 0.074$, $p < .001$), which represented a medium effect. A direct post-hoc comparison (see Table 32) between the foreign and no-language conditions showed that extraversion was not significantly different across the two contexts ($\beta_{\text{standardised}} = 0.150$, $SE = 0.068$, $p = .077$). Overall, these findings suggest that speaking a foreign language or not speaking any language is associated with reduced state extraversion compared to using the native language.

5.3.5.2.2 Agreeableness.

An empty random-intercept model indicated that 63% of the variance in agreeableness was attributable to between-person differences, with the remaining 37% reflecting within-person variation ($ICC = .63$). A linear mixed-effects model, including language group as a fixed effect (native language as the reference category) and by-participant random intercepts and slopes, showed that agreeableness was lower when participants reported using a foreign language ($\beta_{\text{standardised}} = -0.170$, $SE = 0.063$, $p = .009$, small effect) and when no language was used ($\beta_{\text{standardised}} = -0.193$, $SE = 0.064$, $p = .004$, small effect), compared to when using their native language (see Tables 30–31). A direct post-

hoc comparison (see Table 32) between the foreign and no-language conditions confirmed no significant difference in agreeableness ($\beta_{\text{standardised}} = 0.023$, $SE = 0.062$, $p = .924$, negligible effect).

5.3.5.2.3 Conscientiousness.

An empty random-intercept model for conscientiousness yielded an ICC of .51, indicating that 51% of the variance was attributable to between-person differences and 49% to within-person variability. A linear mixed-effects model, with native language as the reference category and by-participant random intercepts and slopes, showed no significant difference in conscientiousness between the foreign and native language conditions ($\beta_{\text{standardised}} = -0.104$, $SE = 0.079$, $p = .192$, small effect). In contrast, conscientiousness was significantly lower when no language was used compared to when participants spoke their native language ($\beta_{\text{standardised}} = -0.353$, $SE = 0.077$, $p < .001$, medium effect; see Tables 30–31). Post-hoc comparisons further indicated that participants reported significantly higher conscientiousness when speaking a foreign language relative to when no language was used ($\beta_{\text{standardised}} = 0.250$, $SE = 0.074$, $p = .003$, small effect; see Table 32).

5.3.5.2.3 Neuroticism.

An empty random-intercepts model indicated that 55% of the total variance in neuroticism was attributable to between-person differences ($ICC = .55$), with the remaining 45% reflecting within-person variability. A linear mixed-effects model, specified in the same way as for the other traits, showed that neuroticism was significantly higher when participants were using a foreign language ($\beta_{\text{standardised}} = 0.434$, $SE = 0.085$, $p < .001$, medium effect) and when no language was used ($\beta_{\text{standardised}} = 0.450$, $SE = 0.070$, $p < .001$, medium effect), compared to when using their native language (see Tables 30–31). Post-hoc comparisons showed no significant difference between the foreign language and no-language conditions ($\beta_{\text{standardised}} = -0.017$, $SE = 0.074$, $p = .973$, negligible effect; see Table 32).

5.3.5.2.3 Openness.

A null model assessing state openness showed that individual differences accounted for 60% of the total variance ($ICC = .60$), indicating moderate clustering of openness ratings within participants across language-use instances. A linear mixed-effects model, specified in the same way as for the other traits, indicated that openness was slightly lower when participants were using a foreign language compared to their native language ($\beta_{\text{standardised}} = -0.113$, $SE = 0.058$, $p = .060$, small effect), though this difference did not reach statistical significance. Similarly, openness did not differ significantly between the native and no-language conditions ($\beta_{\text{standardised}} = -0.026$, $SE = 0.063$, $p = .648$, negligible effect; see Tables 30–31). Post-hoc comparisons confirmed that no significant differences were present between the foreign and no-language conditions ($\beta_{\text{standardised}} = -0.086$, $SE = 0.070$, $p = .431$, negligible effect; see Table 32).

Given the notably low correspondence observed between trait and state openness scores in the preliminary measurement check (Table 27), additional sensitivity analyses using the single openness items were conducted to further examine the robustness of these findings. Using the single openness item (BFI_10; standardised), the null model indicated substantial between-person variance ($ICC = .58$). The mixed-effects model showed that openness was significantly lower in foreign-language contexts than in the native-language context ($\beta_{\text{standardised}} = -0.216$, $SE = 0.064$, $p = .001$). No significant difference was found between native and no-language contexts ($\beta_{\text{standardised}} = -0.042$, $SE = 0.064$, $p = .516$). Post-hoc comparisons further showed that openness was also lower in foreign-language contexts than in no-language contexts ($\beta_{\text{standardised}} = -0.174$, $SE = 0.071$, $p = .041$). Analyses using the second openness item (BFI_5R) showed no significant effects across language-use contexts. Full model results are presented in Appendix J.

Table 30. Fixed and Random Effects from Two-Level Growth Models (ESM)

	Extraversion		Agreeableness		Conscientiousness		Neuroticism		Openness	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Fix effects										
Intercept	2.87	3.04	3.65	3.75	3.21*	3.12*	2.77	2.51	3.18	3.23
(SE)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.09)	(0.07)	(0.07)
<i>p</i>	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***	.000 ***
Foreign vs. Native		-0.22		-0.13		-0.08		0.41		-0.09
(SE)		(0.07)		(0.05)		(0.06)		(0.08)		(0.05)
<i>p</i>		.002 **		.009 **		.192		.000 ***		.060
No Language vs. Native		-0.33		-0.15		-0.28		0.42		-0.02
(SE)		(0.06)		(0.05)		(0.06)		(0.07)		(0.05)
<i>p</i>		.000 ***		.004 **		.000 ***		.000 ***		.684
Random effects										
Intercept	0.34	0.34	0.41	0.34	0.32	0.31	0.48	0.54	0.37	0.36
(SE)	(0.58)	(0.58)	(0.64)	(0.58)	(0.56)	(0.56)	(0.70)	(0.74)	(0.61)	(0.60)
Slope (Foreign vs. Native)		0.26		0.10		0.17		0.34		0.06
(SE)		(0.51)		(0.31)		(0.41)		(0.58)		(0.25)
Slope (No Language vs. Native)		0.16		0.10		0.16		0.18		0.09
(SE)		(0.40)		(0.32)		(0.40)		(0.42)		(0.30)
Residual	0.27	0.21	0.24	0.21	0.31	0.26	0.40	0.32	0.25	0.23
(SE)	(0.52)	(0.47)	(0.49)	(0.46)	(0.55)	(0.51)	(0.63)	(0.56)	(0.50)	(0.48)
ICC	.56		.63		.51		.55		.60	
Model fit statistics										
-2LLH	2937.8	2674.2	2729.2	2632.9	3123.9	2986.6	3599.2	3360.4	2805.9	2746.6

Note. Model 1 includes only random intercepts and is used to estimate ICCs from unconditional models. Model 2 includes language use as a fixed effect (reference: native language), as well as random intercepts and random slopes for both foreign language and no language conditions. Values are unstandardized estimates with standard errors in parentheses. Slope variances are reported separately for foreign language vs. native and no language vs. native contrasts. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 31. Standardised Fixed Effects of Language Use Context on Personality States across the ESM Period

Outcome	Predictor	β	SE	df	t value	95% CI	p	Effect size (magnitude)
Extraversion	Foreign vs. Native	-0.173	0.087	76.089	-3.140	[-0.444, -0.103]	.002**	small
	No language vs. Native	-0.423	0.074	67.204	-5.719	[-0.568, -0.278]	.000***	medium
Agreeableness	Foreign vs. Native	-0.170	0.063	80.164	-2.697	[-0.293, -0.046]	.009**	small
	No language vs. Native	-0.193	0.064	61.972	-3.015	[-0.318, -0.068]	.004**	small
Conscientiousness	Foreign vs. Native	-0.104	0.079	67.123	-1.318	[-0.257, 0.050]	.192	small
	No language vs. Native	-0.353	0.077	60.555	-4.602	[-0.504, -0.208]	.000***	medium
Neuroticism	Foreign vs. Native	0.434	0.085	68.432	5.085	[0.267, 0.601]	.000***	medium
	No language vs. Native	0.450	0.070	66.222	6.463	[0.314, 0.587]	.000***	medium
Openness	Foreign vs. Native	-0.113	0.058	44.380	-1.929	[-0.227, 0.002]	.060	small
	No language vs. Native	-0.026	0.063	66.905	-0.409	[-0.150, 0.098]	.648	negligible

Note. N (obs/participants) = 1736/79. Personality states were standardised across the entire sample (grand-mean SD scaling). Models included random intercepts and slopes by participant. Degrees of freedom were estimated using Satterthwaite's approximation. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ negligible, $.10-.29$ small, $.30-.49$ medium, $\geq .50$ large. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 32. Post-hoc Comparisons Between Foreign and No-Language Conditions Across Personality States

Outcome	Contrast	β	SE	df	t value	95% CI	p	Effect size
Extraversion	Foreign vs. No language	0.150	0.068	66.9	2.208	[-0.013, 0.312]	.077	small
Agreeableness	Foreign vs. No language	0.023	0.062	66.0	0.379	[-0.125, 0.171]	.924	negligible
Conscientiousness	Foreign vs. No language	0.250	0.074	67.2	3.395	[0.073, 0.426]	.003**	small
Neuroticism	Foreign vs. No language	-0.017	0.074	69.2	-0.223	[-0.194, 0.161]	.973	negligible
Openness	Foreign vs. No language	-0.086	0.070	68.7	-1.245	[-0.254, 0.080]	.431	negligible

Note. Results are based on post-hoc pairwise comparisons using Tukey adjustment. Degrees of freedom were estimated using Satterthwaite's approximation. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ negligible, $.10-.29$ small, $.30-.49$ medium, $\geq .50$ large. * $p < .05$, ** $p < .01$, *** $p < .001$.

In addition to personality state ratings, participants were asked to indicate to what extent they felt like a different person when speaking English compared to their native language using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Across the seven daily measurements, the average score was approximately 4.24, indicating a moderate level of agreement with the idea of experiencing a shift in self-perception across languages. Responses spanned the full range of the scale, from 1 to 7, suggesting considerable individual variability in this perception.

5.3.5.3 Summary of Main Findings.

This study examined whether individuals' personality states varied depending on the language they reported using (native, foreign, or no language). Multilevel modelling indicated that personality states varied systematically across language-use conditions. Specifically, participants reported significantly lower levels of extraversion, agreeableness, and conscientiousness in both the foreign language and no-language conditions compared to the native language condition. In contrast, neuroticism scores were significantly higher in the foreign language and no-language conditions. There was no evidence that openness varied across language-use contexts. These findings suggest that momentary personality expressions appear to shift in accordance with the language being used, or with the broader presence or absence of language use. In addition, participants showed a moderate tendency overall to perceive themselves as a different person when speaking in a different language.

5.3.6 RQ 5. In what types of situations within target language settings do participants experience English-speaking anxiety?

This question was examined using interview data, WSA, and ESM responses. Together, these sources revealed a variety of real-life situations in which participants

experienced English-speaking anxiety across academic, interpersonal, and practical everyday contexts.

5.3.6.1 Findings from Interviews.

Interview data from both rounds revealed a wide range of English-speaking situations that participants found anxiety-inducing while living and studying in the UK. These situations were broadly grouped into three domains: academic settings, social interactions, and practical everyday scenarios. Across participants, common triggers of English-speaking anxiety included being unexpectedly called upon, interacting with native speakers, handling important matters, and encountering unfamiliar or unpredictable contexts.

5.3.6.1.1 Academic settings.

Classroom situations were consistently identified as a major source of English-speaking anxiety. Participants frequently mentioned feeling nervous when being randomly called upon to answer questions, especially without prior preparation. For instance, participants A11 described feeling blank and panicked despite understanding the question:

“In one of my classes, the teacher often asked students questions. When he called on me, I actually understood the question and knew how I could answer it, but my mind went blank, and I ended up answering randomly. Afterwards, I kept thinking about why I had responded in that way” (October 26, 2023).

Participants A8 shared: *“I get really nervous when my teacher calls on me to respond to questions because I feel like this is a very formal setting, and I’m concerned my response won’t be good enough”* (November 9, 2023). This experience was echoed in both interview rounds. Participant B6 shared:

“When my teacher randomly called on me to answer a question, I felt like all the attention was on me, and I sensed high expectations, which made speaking incredibly stressful. I began to worry about my language skills, grammar, and pronunciation, and as a result, I felt unable to give a good answer” (July 31, 2024).

Other anxiety-provoking academic scenarios included answering follow-up questions (Participants A18, October 18, 2023), struggling to understand lengthy or complex questions (Participant A19, September 8, 2023), participating in group discussions (Participant A9, October 3, 2023), and giving presentations (Participant A5, September 12, 2023; Participant A10, September 21, 2023). These situations often combined linguistic demands with performance pressure and fear of negative evaluation.

5.3.6.1.2 Social Interactions.

Participants reported experiencing English-speaking anxiety in various social interactions, particularly in unplanned or peer-facing scenarios. One recurring theme involved conversations with native English speakers, which many participants found intimidating due to their speed, use of idiomatic language, and perceived linguistic superiority. Participant A12 shared:

It really depends on who I am talking to. I feel comfortable speaking with someone from a non-English-speaking country, but I feel extremely anxious when speaking with native English speakers. They often speak very quickly and use a lot of slang, and I am simply afraid of talking to them, even when some of them use very standard English (September 23, 2023).

Participant A8 added: *“When engaging in a conversation with native English speakers, I feel as though I become someone who can’t say anything and freeze completely”* (November 9,

2023). Participant B3 echoed this concern, stating that they felt more comfortable speaking English with other international students than with native speakers (August 5, 2024).

Another source of anxiety was interactions involving perceived social judgment, particularly from peers or individuals of similar backgrounds. For instance, participant A3 (September 21, 2023) explained that she feels judged by people from her own country and cares more about their opinions compared to those from other countries. Interestingly, some participants reported feeling less anxious when speaking with strangers. Participant B10 described English-speaking anxiety triggered by comparison with more fluent peers: *“I feel anxious when I have to speak English in front of peers who are more fluent than me. I unconsciously start comparing myself to them, which makes me even more anxious”* (August 5, 2024).

Interestingly, a few participants reported reduced anxiety in low-stakes conversations with strangers, especially when no future relationship was expected. For instance, Participant A17 shared: *“I feel fine and comfortable speaking with strangers, regardless of their nationality. I think it’s because we might never see each other again, so even if my English is poor, they won’t care or remember”* (September 10, 2023). However, this was not universal. Participant A6 noted that large-group events with unfamiliar people, such as student society gatherings, could significantly raise anxiety levels (October 26, 2023).

5.3.6.1.3 Practical and Everyday Situations.

Beyond academic and social contexts, many participants experienced anxiety in everyday practical situations that required using English for routine tasks or problem-solving. These scenarios often involved time constraints, unfamiliar vocabulary, or fear of miscommunication, making them especially stressful despite being commonplace. Phone calls were frequently cited as anxiety-inducing. Participant A8 explained: *“I feel panicked*

when talking on the phone because I worry about what to do if I don't understand what they're saying or if they don't understand me" (November 9, 2023). Participant B1 added: *"especially when making a phone call in English, I need to mentally prepare myself for a long time before dialling"* (July 31, 2024).

Participants also described anxiety when interacting with service personnel, such as bus drivers, restaurant staff, or supermarket employees. Participant B10 stated: *"When I talk to the bus driver about where I want to go, I feel stressed because I can't pronounce the name of the place correctly"* (August 5, 2024). Participant A12 mentioned: *"I feel anxious when ordering food at a restaurant because I struggle to say or pronounce certain dishes correctly"* (September 23, 2023). Housing-related communication was another area where English-speaking anxiety arose, particularly when clarity and accuracy were essential. As Participant B1 described: *"When I need to talk with my landlord or agent, I feel stressed because sometimes I don't really understand what they are saying"* (July 31, 2024).

Some participants also reported anxiety when the topic of conversation was unfamiliar or difficult to follow. For example, Participant A9 shared feeling overwhelmed when unable to contribute to a discussion about unfamiliar films and actors (October 3, 2023). Finally, several participants described heightened anxiety in emergency or unexpected situations where immediate English communication was required. Participant A4 explained: *"When something unexpected happens, I freeze because I don't know how to respond quickly. For example, if my train or flight gets cancelled, communicating with the staff makes me feel very anxious"* (September 12, 2023).

Overall, the findings from both rounds of interviews revealed a broad spectrum of English-speaking situations that triggered anxiety among international students, including academic, social, and everyday situations. Common triggers included being called on in class,

interacting with native speakers or more fluent peers, and managing practical tasks such as phone calls or service encounters. These findings highlight the diverse and situation-specific nature of anxiety in English use in real-world.

5.3.6.2 Findings from WSA and ESM Data.

A total of 962 valid entries were collected in WSA, in which participants described specific situations that triggered their English-speaking anxiety. These entries were grouped into three major categories:

The largest group of entries ($N = 456$, 47.4%) reflected service encounters, including ordering food, speaking to salesclerks, visiting banks, communicating with housing staff, and handling practical issues at receptions or clinics. Participants often expressed anxiety stemming from situational stress, accent unfamiliarity, and limited topic-specific vocabulary. Notably, telephone conversations – which occurred frequently in this category – were perceived as especially challenging due to the lack of visual cues and the pressure to respond quickly and clearly, often under formal or transactional conditions.

The second category ($N = 243$, 25.3%) involved academic-related situations, such as answering questions in class, giving presentations, participating in seminars, or discussing assignments with lecturers. These scenarios typically carried high cognitive and linguistic demands, as well as strong performance pressure, especially when participants were required to speak without preparation or in front of others.

Interpersonal communication difficulties, including struggles with understanding others due to accents or speed, expressing oneself clearly, or initiating conversations in informal social settings, accounted for 263 entries (27.3%). These experiences often involved uncertainty, miscommunication, or self-consciousness, and highlight the nuanced challenges of real-time language use.

In contrast, ESM (N = 142) showed a different pattern: academic contexts were reported most frequently (36.6%), with service encounters (31.7%) and interpersonal communication (31.7%) being equally common. These findings suggest that while service-related situations were the most anxiety-inducing in WSA, academic contexts became more salient sources of anxiety in ESM.

5.3.6.3 Summary of Findings.

Findings from WSA, ESM, and interview data indicated that participants experienced English-speaking anxiety across a variety of real-life situations. These situations were grouped into three overarching categories: academic contexts, service-related encounters, and interpersonal communication. Academic situations involved classroom participation, answering questions, and giving presentations. Service-related contexts included interactions in everyday settings, such as ordering food, asking for assistance, or dealing with administrative matters. Interpersonal communication referred to informal or socially embedded conversations with peers, flatmates, or strangers. While the categorisation was broadly consistent across the three data sources, some variation in emphasis and grouping was observed due to differences in the nature and granularity of the data. Across both sources, participants described anxiety as emerging in diverse and situationally specific ways.

5.3.7 RQ 6. What are the main coping strategies that participants report using to manage English-speaking anxiety?

Participants described a wide range of strategies they considered effective for alleviating or managing their English-speaking anxiety. Thematic analysis across both rounds of interviews (40 interviews in total, involving 31 participants, including 9 who take part in both rounds) revealed six main categories of strategies: strengthening language skills, adjusting mindset, engaging in social practice, seeking support, preparation, and resignation.

These strategies reflected both personal preferences and situational needs. While some strategies were mentioned consistently across both rounds of interviews, others appeared more or less frequently depending on the group.

5.3.7.1 Strengthening Language Skills.

Many participants sought to improve their language ability as a way to enhance confidence and reduce English speaking anxiety. Participant A17 shared, *“The strategy I used to overcome my English-speaking anxiety is strengthening my English-speaking skills. For example, I watched videos and repeatedly practised reciting what is said in the videos, making it a daily habit”* (September 10, 2023). Similarly, participant A8 stated, *“I immerse myself in English as much as possible by watching English shows. I also expand my vocabulary through movies, YouTube, dictionaries, or language apps”* (November 8, 2023). From the second round, participant B10 echoed this approach: *“I often look for English books to read, memorise vocabulary, and try to improve my language skills because I believe that if my language ability improves, I will feel less anxious and more confident to speak”* (August 5, 2024).

5.3.7.2 Adjusting Mindset.

Several participants described efforts to reframe their thinking in order to manage anxiety. Participant A2 explained, *“I remind myself that we are all just people speaking different languages, and the key is communication, not the language itself. This way of thinking helps me feel more at ease”* (October 26, 2023). Participant A18 added, *“I try to motivate myself by reminding myself that I’m doing well because I’m speaking in a second language. Thinking this way helps me feel less anxious”* (October 18, 2023). In the second round, participant B9 noted, *“I used to worry a lot about my accent, but I started reminding myself that there are many different accents in the world. So, my accent is acceptable; over*

time, I realised this mindset was correct, and I became less anxious gradually when I spoke” (August 5, 2024).

5.3.7.3 Preparation.

Preparation was one of the most frequently mentioned strategies in the second round of interviews. Participant B1 said, *“I usually prepare what I want to say in advance or look up relevant information beforehand, which helps reduce my anxiety when speaking”* (August 5, 2024). Participant B3 elaborated, *“Before class, I try to familiarise myself with the content as much as possible, and even prepare the questions I want to ask. This helps me feel less nervous... because I’ve already prepared what to say and how to phrase it”* (August 5, 2024). This strategy was also prevalent in the first round. For example, participant A16 described, *“I usually prepare in advance. For instance, if I need to give a presentation, I write it out sentence by sentence. If I plan to visit a barbershop, I look up vocabulary related to hairdressing beforehand”* (September 21, 2023).

5.3.7.4 Engaging in Social Practice.

Some participants described intentionally engaging in communication despite anxiety. Participant A11 said, *“I try my best to communicate with foreigners as much as possible. With continuous practice, it might help me feel less anxious”* (October 26, 2023). Participant A15 similarly reported, *“I try to initiate conversations with strangers and staff at restaurants or shops as much as possible. Surprisingly, the more I talk with them, the less anxious I gradually feel”* (October 26, 2023). In the second round of interviews, participant A3 reflected, *“I force myself to make friends with local people, like building friendships with them, and then I push myself to chat with them regularly”* (September 19, 2024).

5.3.7.4 Seeking support.

Seeking emotional or practical support was also a recurring strategy. Participant A3 mentioned, *“I basically stick with my companions who share the same native language as me. It’s like having a safety net”* (September 21, 2023). Similarly, participant A12 explained, *“When we need to speak English with others, having friends from same country around provides me with psychological comfort. If I can’t express myself, my friends step in to help”* (September 23, 2023).

5.3.7.5 Resignation.

A small number of participants mentioned avoiding English-speaking altogether in particularly stressful situations. This included deliberately remaining silent, exiting conversations early, or steering dialogue toward more comfortable topics. For example, participant A4 stated, *“If I don’t know how to continue the conversation, I switch to a topic I’m more comfortable with”* (July 31, 2024).

5.3.7.6 Summary of Main Findings.

Overall, these findings show that participants employed a range of strategies to manage English-speaking anxiety. The most commonly reported strategies included improving language skills, adjusting mindsets, preparing in advance, engaging in social interaction, seeking support, and, in some cases, avoiding or withdrawing from communication. Each strategy reflected a different way of responding to anxiety, from increasing competence to reducing pressure or discomfort. The range of strategies reported across participants indicates that individuals adopt different ways of managing English-speaking anxiety based on their own experiences and choices.

5.4 Discussion and Conclusion

The purpose of this study was to investigate the dynamic nature of English-speaking anxiety, psychological well-being, and life satisfaction among international students, drawing on trait-level repeated measures, weekly state assessments, experience-sampling methods, and qualitative interview data. By integrating trait and state levels of analysis, as well as narrated perspectives, the study offers a nuanced understanding of how these psychological constructs evolve and interact across time. While some individuals maintained consistent levels of English-speaking anxiety and well-being, others showed considerable change – often within short timeframes – highlighting the value of repeated, multi-method measurement in understanding the nuanced emotional experiences of international students. These findings support the view that psychological well-being, life satisfaction, and language-related anxiety are dynamic rather than fixed, and can shift over time within an immersion environment.

5.4.1 Changes in English-speaking Anxiety, Psychological Well-being, and Life

Satisfaction

The present findings offer important insights into the dynamic nature of psychological constructs among international students. Trait-level questionnaire data indicated an overall decline in English-speaking anxiety, both within and outside the classroom. This pattern is consistent with previous findings that language-related anxiety tends to diminish over time (e.g. Koga, 2010; Liu & Xiangming, 2019; Veenstra & Weaver, 2022), thereby supporting Hypothesis 1 and reinforcing the view that such anxiety is malleable rather than fixed (Gregersen, 2020), though the significant between-person variability highlights that this process is far from uniform, echoing dynamic accounts of variability across learners (Larsen-Freeman & Cameron, 2008). These findings are also consistent with the evidence reviewed in Study 1, which showed that changes in foreign language anxiety can occur across different

timescales and differ markedly between individuals. In contrast, psychological well-being and life satisfaction showed weaker or less consistent changes (a slight rise for life satisfaction; relative stability for psychological well-being). Consistent with prior work, changes in psychological well-being and life satisfaction were limited, often approximating stability during studying abroad (e.g. Dewaele & Dewaele, 2021; Schartner & Young, 2020). Interviews corroborated these quantitative trends, illustrating diverse personal pathways: some students reported clear improvement, others little change, which highlighting heterogeneity in how individual experience immersion.

5.4.2 Personality as a Moderator of Change

Hypothesis 2 was partially supported. Several time \times personality trait interactions were observed, indicating that trait personality was associated with change trajectories of English-speaking anxiety, psychological well-being, and life satisfaction, rather than only static levels. For English-speaking anxiety, students scoring relatively higher in extraversion and conscientiousness reported lower baselines, whereas those relatively higher in neuroticism reported higher baselines and steeper declines over time. Similar patterns appeared for outside-classroom anxiety. These interactions should be interpreted as relative rather than absolute differences: individuals higher in neuroticism were higher in anxiety compared with their peers, yet their absolute scores remained moderate; their larger decreases therefore reflect greater relative change within the sample rather than extreme levels dropping to minimal levels. For psychological well-being, personality traits were strongly related with baseline levels but showed only small temporal shifts; life satisfaction displayed a distinct pattern in which agreeableness, conscientiousness, and neuroticism moderated change over time, such that individuals higher in agreeableness and conscientiousness tended to maintain slightly higher and more stable levels of life satisfaction, whereas those higher in neuroticism

showed lower initial satisfaction but more pronounced improvement across measurement points.

5.4.3 Momentary dynamics of English-speaking Anxiety, Psychological Well-being, and Life Satisfaction

The 10-week WSAs and 7-day ESMs findings further illustrate the dynamic nature of international students' psychological experiences during immersion. Supporting Hypothesis 3, a considerable amount of within-person variability was observed across English-speaking anxiety, psychological well-being, and life satisfaction in both WSAs and ESMs. These short-term variations highlight that students' emotional and cognitive states were not static, but responsive to everyday experiences. Importantly, English-speaking anxiety showed a clear pattern of decline over time – particularly outside the classroom – suggesting that frequent real-life language use may help reduce anxiety through accumulated exposure. In contrast, psychological well-being showed a modest upward trend in WSA but remained relatively stable in ESMs, while life satisfaction showed little systematic change across both datasets. Notably, despite these group-level patterns, individual differences were evident in the direction and magnitude of change. Some participants showed consistent improvement, while others fluctuated or remained stable, reinforcing the importance of considering intra-individual variation in immersion research. These differences point to the varying temporal sensitivities of different constructs and the diverse ways individuals adapt over time. Taken together, these findings underscore the value of experience sampling in capturing subtle, short-term psychological shifts that traditional designs may overlook (Myin-Germeys et al., 2009), and emphasise the need to account for both the emotional and evaluative dimensions of student experience.

5.4.4 Personality States Across Language-use Conditions

The present study also explored whether momentary personality expression varied across different language use conditions. Several Big Five states fluctuated across conditions in which participants reported using their native language, a foreign language, or no language at all, providing partial support for Hypothesis 4. Extraversion and agreeableness states were lower, and neuroticism higher, when participants reported using a foreign language or no language compared with their native language. Conscientiousness was lowest in the no-language condition, and openness remained stable. One interpretation is that active communication in one's native tongue facilitates the expression of socially oriented states. Alternatively, these differences may partly reflect social context: native-language use likely co-occurs with interactions among culturally similar others, affording familiarity and safety in immersion settings. Taken together, the findings indicate that personality states are context-sensitive, in line with dynamic and Whole Trait perspectives that emphasise situational variability in how dimensions are experienced and expressed (Fleeson, 2001; Fleeson & Jayawickreme, 2015).

5.4.5 Situation-specific Triggers of Anxiety

Across two-round semi-structured interviews, 10-week WSAs, and 7-day ESMs data, three families of situations most commonly triggered English-speaking anxiety: academic settings (being called on, seminars, group work, presentations), service encounters (phone calls, administrative or medical interaction, ordering food), and interpersonal interactions in informal social contexts. Consistent with Woodrow (2006), who argued that language anxiety arises not only in classroom but also in out-of-class context. Importantly, the distribution of triggers differed by method: service encounters were most salient in WSA, whereas academic contexts dominated in ESM. This likely reflects timing/design: WSA was administered shortly after students' arrival, when daily survival tasks were prominent; ESM ran during

term time, when academic activities were pervasive. These contextual differences highlight how the distribution of anxiety-provoking situations is shaped not only by the situational demands themselves but also by when in the academic year the data are collected.

5.4.6 Coping Strategies

Thematic analysis of interview data revealed six categories of coping strategies that students used to manage English-speaking anxiety: strengthen language skills, adjusting mindsets, engaging in social practice, seeking support, preparation, and resignation. These map onto, and extend, Kondo and Ying-Ling's (2004) taxonomies. These strategies reflect both active and passive responses, with some aimed at addressing the source of anxiety and other focused on regulating emotional responses or avoiding stressful situations. The diversity of coping approaches underscores the complex and individualised nature of students' experiences in immersion contexts. While some strategies, such as language practice and preparation, may foster greater confidence over time, others, like avoidance or resignation, may offer short-term relief but limit long-term development. Together, these findings highlight the diversity of ways students respond to speaking anxiety in immersion settings.

Taken together, the findings from Study 2 underscore the importance of attending to both temporal and individual variation in international students' experiences. By integrating multiple data sources, the study offers a nuanced understanding of how language-related anxiety and well-being evolve in immersion environment, laying the groundwork for more responsive and individualised support for learners navigating these challenges.

Chapter 6. Discussion

6.1 Introduction

This chapter discusses the findings of the two studies in relation to the overarching aims of the thesis. **Study 1** (chapter 4), a systematic review of 49 empirical studies, examined how the potential malleability of FLA has been conceptualised and studied across different temporal frameworks. The findings provided support for the view that FLA is a dynamic construct, exhibiting variability across macro-, meso-, and micro-level timescales. This review highlights the importance of methodological approaches and temporal framing in shaping how change in FLA is detected and interpreted. Macro-level studies typically used wide-interval self-report measures, while meso- and micro-level studies employed more temporally sensitive tools such as rating across sessions and idiodynamic techniques. **Study 2** (chapter 5), the empirical investigation, extended these findings by examining not only the malleability of language-related anxiety, but also the temporal dynamics of psychological well-being and life satisfaction. It further explored the moderating role of personality traits in shaping individual trajectories, and examined the situational shifts in personality states associated with different patterns of language use in an immersive study abroad context.

This discussion is organised into separate sections, each addressing one of the key variables under investigation. Section (6.2) focuses on language-related anxiety, integrating findings from both Study 1 and Study 2. It builds on the systematic insights from study 1 and presents empirical evidence from study 2 regarding the temporal patterns of language anxiety in immersion contexts, the types of situations that tend to trigger anxiety, and the coping strategies used by international students to manage these experiences. Section 6.3 addresses psychological well-being and life satisfaction, drawing primarily on the trait-level and state-level findings from Study 2 to examine how these aspects of psychological adjustment evolve during the study abroad experience. Section 6.4 discusses the role of personality,

incorporating both trait-level and state-level perspectives. Based on findings from Study 2, this section examines how personality traits may moderate changes in English-speaking anxiety and psychological adjustment, and how personality states may shift in response to different language contexts, including native language use, foreign language use, and no language use. The final section (6.5) provides an integrative discussion, outlining the methodological and theoretical contributions of the thesis, reflects on practical implications, addresses key limitations, and offers directions for future research.

6.2 Language-related Anxiety

Foreign language anxiety emerged from the systematic review (study 1) as a construct that has increasingly been studied from a temporal perspective, with evidence pointing to its malleability across different timescales. Building on this foundation, Study 2 shifted the focus to English-speaking anxiety within the immersion context of international students. This dual perspective enables a more nuanced discussion of how language anxiety changes over time, what kind of situations tend to trigger it, and how learners actively regulate their experiences. The following subsections address each of these dimensions in turn.

6.2.1 Change Over Time

Study 1 revealed that research on foreign language anxiety has provided support for Gregersen's (2020) view that language anxiety is not static but subject to change. At the macro level, studies spanning semesters or academic years tended to capture broad change in foreign language anxiety (e.g. Alamer & Lee, 2021; Alrabai & Moskovsky, 2016; Derakhshan & Fathi, 2024; Dewaele et al., 2022, 2023), while meso- and micro-level studies employing repeated-session or moment-to-moment tools were more sensitive in capturing short-term variability and subtle shifts in learners' language anxiety (e.g. Aubrey, 2022; Bielak & Mystkowska-Wiertelak, 2024; Boudreau et al., 2018; Elahi Shirvan & Talebzadeh, 2017).

These findings suggested that FLA is dynamic across timescales, with methodological and temporal framings determining whether observed change is interpreted as enduring development or momentary variation. The review therefore called for a more integrated approach that connects short-term fluctuation with long-term trajectories in order to capture the full complexity of FLA development. Study 2 was designed in direct response to this call and adopted a multi-method approach to examine changes in English-speaking anxiety in immersion contexts. While Study 1 synthesised evidence primarily from classroom-based FLA research, Study 2 extended this line of inquiry into the immersion context of international students, thereby broadening the scope of investigation while directly addressing the methodological gaps identified in the review.

6.2.1.1 Trait-level English-speaking Anxiety.

The trait-level findings of Study 2 add important nuance to the conclusion drawn in Study 1. The findings on Classroom English-speaking anxiety provide evidence for the malleability of language-related anxiety in immersion contexts. Consistent with the macro-level studies synthesised in Study 1 (e.g. Jee, 2014; Koga, 2010; Veenstra & Weaver, 2022; Yu et al., 2022), the findings indicated that language-related anxiety changes over time, further supporting the view that language anxiety is not static (Gregersen, 2020) but evolves during study abroad. This pattern is also in line with Allen and Herron (2003), who examined 25 American students participating in a six-week study abroad programmes in Paris and reported significant mean decrease in classroom anxiety after the experience. Likewise, Dewey et al. (2018) investigated American learners enrolled in an intensive Arabic programme in Jordan and found that, although participants reported an overall increase in general anxiety during immersion experience, their classroom-related anxiety significant declined over the study abroad, reflecting growing comfort with instructional settings despite broader challenges.

In addition, a particularly noteworthy finding was that students who entered with higher levels of classroom anxiety tended to experience greater reductions across time. As Thompson and Lee (2014) observed, the initial experience abroad may in fact heighten anxiety, which could help explain the relatively high starting levels. From a dynamic systems perspective, the findings support the assertion of Larsen-Freeman and Cameron (2008) that beginning conditions might not only affect the subsequent state of the system but also have extensive repercussions. The pattern reflects the principle that learners' developmental trajectories are shaped by their starting conditions: students with higher baseline classroom English-speaking anxiety had both more scope for reduction and appeared to benefit more substantially from immersion over time. Whereas those with relative low initial anxiety followed flatter trajectories, reflecting a ceiling effect, wherein individuals who begins from favourable starting points have less scope for subsequent improvement (Wang et al., 2009).

Moreover, group-level comparisons also provided important insights. Non-pre-sessional students consistently reported lower classroom anxiety than their pre-sessional peers, which likely reflects their relatively higher language proficiency at the outset of the programme. This interpretation aligns with previous research showing that language proficiency is closely linked to levels of language anxiety (e.g. Debreli & Demirkan, 2015; Dutra & Finger, 2019; Thompson & Lee, 2014; Xu & Xie, 2024). Notably, despite differences in their initial levels of anxiety, both groups exhibited similar trajectories of change over time. That is, students with higher initial anxiety showed more marked declines, while those with lower initial anxiety maintained relatively stable levels. These broadly parallel trends suggest that study abroad may be associated with converging patterns of emotional adjustment, regardless of students' starting points. One possible explanation is that immersion contexts offer common affordances, such as sustained exposure to academic English, repeated classroom engagement, and ongoing interactional demands (Porter & Sofia

Castillo, 2023; Savage & Hughes, 2014), that may shape learners' emotional responses in comparable ways. Even when baseline levels differ, the shared nature of the academic environment may support a general tendency toward adaptation over time.

As noted by Woodrow (2006), residing in a context where the target language is also used for daily interaction can shape learners' experience of language anxiety. By shifting attention beyond the classroom, this study contributes to a more comprehensive understanding of language anxiety, highlighting that learners' English-speaking anxiety in informal, everyday contexts are also subject to meaningful change over time. The trait-level findings showed a significant decline in outside-classroom English-speaking anxiety over time, mirroring the pattern observed for classroom anxiety, further reinforcing the malleable nature of language anxiety (Gregersen, 2020). Despite the less structured nature of informal communication, this decline suggests that learners may gradually become more comfortable navigating real-world communicative demands, particularly as they gain confidence through repeated exposure and interaction. This aligns with Allen and Herron (2003), who found that learners participating in a short-term study abroad program in France reported lower language anxiety as they became more confident in managing daily communicative situations and meeting personal needs. In the present study, the group difference is consistent with the pattern observed for classroom language anxiety, suggesting that the factors shaping learners' affective responses, such as prior proficiency or language learning experience, may operate across both formal and informal settings during study abroad. Although group differences in overall anxiety levels were evident, both groups exhibited similar trajectories of decline over time. This mirrors the pattern observed in classroom settings and suggests that shared features of immersion environments, such as repeated exposure to spontaneous interaction and everyday communicative demands, may shape affective change in similar ways, even when learners begin from different starting points.

Taken together, the findings from both classroom and outside-classroom contexts support the conclusion drawn in Study 1 that language anxiety is inherently dynamic and responsive to temporal factors. While Study 1 synthesised existing macro-level longitudinal evidence indicating that foreign language anxiety is malleable to some extent, Study 2 offers direct empirical support by tracking changes in learners' trait-level English-speaking anxiety across both formal and informal settings during study abroad. This study advances previous research by not only affirming the malleability of language anxiety but also delineating how these changes vary based on learners' baseline situations. Rather than merely reiterating that variability exists, this study extends the empirical landscape of language anxiety by documenting its development both within and beyond the classroom, capturing learners' affective experiences as they unfold in the real-life communicative demands of target-language environments.

6.2.1.2 State-level English-speaking Anxiety.

The state-level analysis in Study 2 builds directly on the conclusions drawn in Study 1, which highlighted the need to integrate macro-, meso-, and micro-level approaches to capture the dynamic nature of language anxiety. While Study 1 synthesised findings from studies adopting varied temporal scales, it also underscored the scarcity of research that systematically combined long-term measures with fine-grained assessments, which would provide more nuanced insights into how learners' affective experiences evolve across both immediate interactions and extended periods of study abroad. To address this gap, Study 2 adopted both weekly state assessment and high-frequency experience sampling methods, thereby offering a more nuanced and temporally sensitive understanding of how English-speaking anxiety unfolds in immersion environment.

Specifically, the weekly state-level findings offer empirical support for the dynamic nature of English-speaking anxiety proposed in Study 1 and Gregersen (2020), demonstrating that learners' affective responses are not only malleable over longer periods but also fluctuate on a week-to-week basis. Notably, all participants in this component were enrolled in intensive pre-sessional language courses, which provided a highly structured, time-limited context for academic language development (Bridle, 2021). The observed decline in classroom English-speaking anxiety over the course of the short-term pre-sessional programme suggests that students can, even in a limited timeframe, become increasingly comfortable with the linguistic and social demands of academic interaction. This decline may be attributed to several contextual features of pre-sessional programmes, such as frequent opportunities for speaking practice, scaffolded academic tasks, and observe their own progress (Aksit et al., 2020), their initial anxiety may gradually give way to a growing sense of linguistic competence and communicative efficacy. These findings from Study 2 illustrate that even within short-term academic immersion, meaningful affective can occur, especially when learners are consistently engaged in purposeful and interactive language use in classroom settings. This pattern is in line with previous studies (e.g. Allen & Herron, 2003; Lee, 2018), which have shown that participation in immersion is often associated with reductions in language anxiety.

In addition to changes observed in classroom settings, the weekly state assessment also revealed a decline in learners' English-speaking anxiety in outside-classroom contexts. this trend suggests that students gradually become more comfortable navigating informal and unstructured communicative situations, such as daily conversations, errands, or social interactions. Although these contexts lack the scaffolding of formal instructions, they offer authentic and recurring opportunities to practice the target language in meaningful ways, which may, over time, reduce feelings of apprehension and promote greater communicative

ease. This findings aligns with Woodrow's (2006) argument that living in an environment where the target language is used for everyday purposes can shape learners' affective experiences. In line with this, the composite measures of English-speaking anxiety – which captured cognitive, emotional, and behavioural responses – also showed a significant decline over time. This multidimensional reduction suggests that changes in language anxiety during study abroad are not limited to surface-level feelings of nervousness but may reflect broader shifts in how learners think about, feel about, and act upon English-speaking opportunities in both academic and social settings. The consistency of these patterns across domains and affective dimensions highlights the potential of short-term immersion experiences to foster adaptive emotional changes at the group level.

Although the group-level analysis points to a general decline in English-speaking anxiety over time, the decomposition of variance adds a further layer of complexity to these findings. Specifically, while between-person differences accounted for a larger proportion of the variance, the presence of within-person variation across all three anxiety indices suggests that learners' affective experiences were not entirely stable or uniform. This week-to-week fluctuation, though smaller in scale, underscores the dynamic nature of language anxiety as it unfolds in short timeframe – a perspective emphasised in Study 1 and corroborated by recent empirical work (e.g. Aubrey, 2022; Boudreau et al., 2018; Elahi Shirvan & Talebzadeh, 2017). These findings therefore indicate that English-speaking anxiety cannot be regarded as entirely stable, as short-term fluctuations coexist with more persistent individual differences. In this sense, even modest within-person variability offers empirical support for the view that language anxiety is context-sensitive and temporally situated, underscoring the methodological importance of capturing within-person processes rather than aggregating across individuals. Such an approach enables a more precise understanding of how learners'

affective states fluctuate in response to situational demands, thereby revealing patterns that group-level analyses may obscure (Ram & Gerstorf, 2009).

Moreover, the experience sampling component of study 2 expands on earlier findings by examining English-speaking anxiety as it unfolds in participants' daily lives. In response to Study 1's call for temporal approaches, this high-frequency method captured moment-to-moment fluctuations in learners' affective experiences across both academic and everyday settings, extending recent work that has applied intensive longitudinal or idiodynamic methods to trace affective variability in language learning (e.g. Aubrey, 2022; Bielak & Mystkowska-Wiertelak, 2024; Gregersen et al., 2014), offering a more granular perspective on the dynamic nature of language anxiety (Sun et al., 2025). At the group level, momentary anxiety exhibited distinct temporal patterns across the two contexts. Specifically, English-speaking anxiety in classroom settings appeared relatively stable over time. Whereas outside classroom anxiety showed a modest yet statistically significant decline across the 7-day sampling period. This pattern suggests that informal, real-world communication may offer more immediate affective response than classroom interaction, potentially due to the spontaneous, low-stakes nature of everyday exchanges. In contrast, classroom settings may continue to evoke consistent levels of apprehension due to their evaluative and performance-based demands (Horwitz et al., 1986), even during short periods of immersion. However, these findings must be interpreted in light of key methodological considerations. Notably, participants were only prompted to report their English-speaking anxiety when they had previously indicated English was the dominant in the past few hours. As a result, the number of ESM entries for this measure was reduced, and the sample size was smaller than for other ESM constructs. This selective prompting procedure likely reflects the authentic variability in participants' daily language use, but it also limits the generalisability of the observed trends. Moreover, the reduced frequency of English use among some participants may have

disproportionately affected the data available for classroom contexts, where English use is more predictable, thereby may partially be explaining the lack of significant within-person change.

Despite these limitations, the experience sampling findings offer valuable insight into the everyday dynamics of English-speaking anxiety. The relatively high intraclass correlation coefficients for both settings indicated that most of the variability in English-speaking anxiety was attributable to stable between-person differences, with less fluctuation observed within individuals across timepoints. This indicates that even momentary experiences of anxiety are not purely reactive to immediate situations but are shaped by enduring individual predispositions or affective styles. At the same time, the presence of non-negligible within-person variation – particularly in outside-classroom contexts – suggests that learners' emotional states remain sensitive to shifting environments and communicative demands. The fact that this variability was systematically higher in less structured, real-world contexts indicates that it reflects meaningful situational responsiveness rather than random measurement error. This interplay between stability and variability reinforces the need to attend to individual differences not just as fixed traits, but as dynamic processes unfolding across time and context, in line with dynamic perspectives in applied linguistics and psychology (Larsen-Freeman & Cameron, 2008).

Taken together, the weekly state assessments and high-frequency ESM results provide converging evidence for the temporal malleability of English-speaking anxiety during study abroad. While group-level trends indicate meaningful reductions – particularly in less structured, everyday interactions – the presence of within-person variation, even over short timeframes, showing that learners' anxiety fluctuate in subtle ways, even within brief periods. These findings extend the conclusions drawn in Study 1 by offering fine-grained, empirical

support for multi-timescale understanding of affective change. Through the use of assessments spanning different temporal intervals, the state-level analyses offer a richer perspective on the unfolding of English-speaking anxiety over time, demonstrating that individual patterns of affective change are reflected consistently across different temporal resolutions, from momentary fluctuations to week-level shifts.

6.2.1.3 Interview Perspectives on English-speaking Anxiety Change.

The qualitative interviews findings offer important insight into the complexity and heterogeneity of English-speaking anxiety during studying abroad, providing qualitative support for the dynamic nature of English-speaking anxiety. The integration of quantitative and qualitative data from the nine interview participants provides further insight into the multifaceted nature of English-speaking anxiety. While questionnaire results suggested overall reductions, participants' narratives revealed that their perceived changes were more diverse and context-dependent. This partial mismatch between measured and experienced change highlights that affective trajectories cannot be fully understood through numerical trends alone but require attention to learners' subjective interpretations and situational experiences. Such patterns echo Creswell and Clark's (2018) argument that quantitative and qualitative strands often tell distinct both complementary stories, and that mixed-methods interpretation benefits from attending to both convergent and discrepant findings rather than assuming they should align. As Patton (1990, p. 132) suggests that "qualitative data can put flesh on the bones of quantitative results, bring results to life through in-depth case elaboration". Consistent with Study 1's call for multi-timescale, mixed-methods research, the interview-based component complements the quantitative results by highlighting how participants subjectively interpreted their own emotional development over time. Moreover, these person-specific accounts provide further support for Study 1's call for approaches that

integrate temporal and individual-level complexity into the study of language anxiety. Similar qualitative evidence has been reported by Gkonou (2013), who found that adult learners' foreign language anxiety fluctuated across weeks in their diary reflections, and by Sun (2024), whose longitudinal journal study likewise documented mid-term reductions followed by individual divergence in anxiety trajectories.

Among those who completed two rounds of interviews, no singular pattern emerged. While some participants described a clear reduction in English-speaking anxiety, others reported only partial change, typically constrained to specific contexts, such as informal interactions. A few experienced minimal changes across time. This variation highlights that learners' emotional experiences in immersion settings are highly individualised, may be shaped by their own expectations, previous exposure to English, and how they perceive different communicative situations (Porter & Sofia Castillo, 2023). These patterns resonate with dynamic perspectives (Larsen-Freeman & Cameron, 2008), which suggest that changes in affect are not solely driven by time spent abroad but also by how learners interpret and engage with their environment over time.

Moreover, the inclusion of self-drawn trajectory diagrams enabled participants to articulate their own affective narratives. The diverse visual patterns, some gradual and others oscillating, highlight how learners experienced and made sense of change in unique personal ways. These sketches serve not merely as illustrations of anxiety levels but as evidence of how learners monitor, evaluate, and narrate their own development, a process not easily captured by quantitative measures alone. In this sense, the qualitative data offer a nuanced complement to group-level findings by illustrating that emotional development during study abroad may not follow a single trajectory. Learners' anxiety may rise, fall, or remain stable, depending on how they navigate and make sense of their immersion experiences. While

group-level data are valuable for capturing overall trends, such patterns risk obscuring the internal processes and subjective meanings that shape learners' trajectories (Lucas et al., 2003).

In sum, these qualitative insights reinforce the broader argument that language anxiety is best understood as a dynamic and individualised experience. By capturing learners' own interpretations and representations of affective change, the interview findings offer an essential complement to trait-level and state-level assessments and affirm the value of integrating temporal and subjective perspectives in future research.

6.2.2 Situation-Specific Triggers of English-Speaking Anxiety

An important contribution of the present study lies not only in illustrating the dynamic nature of English-speaking anxiety, but also in providing a systematic exploration of the specific situations that tend to evoke such anxiety in immersion contexts. While previous sections have focused on how English-speaking anxiety changes over time and varies between individuals, this section addresses where and under what circumstances anxiety tends to be triggered. By integrating semi-structured interview, WSA and ESM data, the study offers a detailed account of the types of real-world situations that international students identified as emotionally challenging. This situational mapping adds an important layer of insight to the emotional experience of studying abroad, shedding light on the communicative demands learners find difficult to manage. Across all sources, classroom-based situations, such as being called upon unexpectedly, responding in front of others, or navigating complex academic discourse were consistently described as highly anxiety-inducing. These situations likely elicit anxiety due to their formal, evaluative nature, where learners fear negative evaluation (Horwitz et al., 1986; Williams & Andrade, 2008). The combination of limited preparation time, high linguistic demands, and the public nature of response increases

learners' vulnerability to performance pressure. For international students, this challenge is particularly salient given that classroom learning constitutes a central component of their academic experience abroad. Consequently, anxiety arising in classroom contexts may not only affect learner' performance (e.g. Demirdas & Bozdoğan, 2015; Xianping, 2004) but also undermine their broader academic adjustment (e.g. Nuralieva et al., 2024; Yu, 2010) and sense of competence (e.g. Bensalem, 2018; Szyszka, 2011) in immersion settings.

In addition, interpersonal interactions, especially those with native speakers or more fluent peers, were another major source of anxiety. Research has shown that speaking with native speakers can trigger linguistic insecurity and increase the perceived risk of judgement (Allen & Herron, 2003; Woodrow, 2006). Learners often perceive such interactions as high-stakes, particularly when they involve unfamiliar accents, idiomatic expressions, or rapid speech. Similarly, Yılmaz and De Jong (2024) noted that learners feared making mistakes and receiving negative judgements from native-speaking classmates or peers with stronger language skills. In addition, social comparison processes may exacerbate anxiety when learners feel outperformed by peers in communicative fluency (Amini et al., 2025; Kadir et al., 2018).

Aligning with Woodrow (2006) and Wan (2012), beyond academic and interpersonal contexts, practical and service-related situations, such as phone calls, ordering food, or asking for assistance, were also commonly cited as anxiety-inducing. These situations are rarely addressed in formal language instruction but are frequently encountered in immersion contexts. The lack of contextual predictability, time pressure, and potential consequences of miscommunication (e.g. in housing or medical settings) may heighten learners' sense of communicative vulnerability. Such encounters are distinctive to the immersion environment, where daily survival tasks require spontaneous communication outside the classroom.

Collectively, current research indicates that English-speaking anxiety manifests across a range of situational contexts. Academic environments, including classroom speaking assignments, highlight the performance expectations inherent in educational institutions. Interactions with native speakers or more skilled peers highlight the evaluative and comparative aspects of language utilisation. Conversely, practical and service-related interactions bring immersion-specific obstacles associated with daily communicative requirements outside the classroom. Taken together, these findings underscore the context-dependent character of language anxiety (Horwitz et al., 1986). By systematically mapping these contexts, the present study extends the range of situations in which language anxiety is found to arise, moving beyond the classroom to encompass the wider immersion environment. These insights set the stage for examining how students regulate and manage their anxiety in such situations, as discussed in the following section.

6.2.3 Coping with English-speaking Anxiety

This study contributes to the literature on language anxiety by documenting the coping strategies employed by international students in immersive language environments. While prior research has predominantly focused on classroom-based anxiety (e.g. Fujii, 2016; Kondo & Ying-Ling, 2004; Putri et al., 2020), the present findings illustrate that coping with English-speaking anxiety in study-abroad settings involves a broader and more flexible set of strategies, shaped by learners' daily encounter in academic, social, and practical contexts. Drawing on interview data, the present study identified six main types of coping strategies: strengthening language skills, adjustment mindset, preparation, engaging in social practice, seeking support, and resignation. These findings align in part with Kondo and Ying-Ling (2004) well-established typology – particularly the categories of preparation, positive

thinking, peer seeking, and resignation – but they also reveal important expansions and adaptations that reflect the demands of immersion settings.

The strategies described as strengthening language skills – such as shadowing, vocabulary expansion, and regular exposure to authentic materials – represent sustained efforts to build communicative competence over time. In this respect, they align with previous findings that language proficiency is negatively associated with language anxiety (e.g. Dutra & Finger, 2019; MacIntyre et al., 1997). Similarly, Özdemir and Seçkin (2025) found that both students and instructors regarded language enhancement practice, including the improvement of listening skills, grammatical knowledge, and pronunciation, as effective means of coping with speaking-related anxiety within higher education contexts. While these behaviours may appear to overlap with what Kondo and Ying-Ling (2004) described as “preparation”, which refers to improving study strategies to manage impending language class threats, participants in this study framed them differently. Rather than focusing on short-term rehearsal or task-specific mastery (e.g. studying for a lesson or preparing lecture summaries), these strategies reflected broader, self-initiated routines aimed at long-term language development and confidence building. Alongside long-term efforts to develop proficiency, some also described short-term, task-oriented preparation strategies, such as planning what to say before a class discussion or looking up vocabulary before service encounter (e.g. haircut or bank visit). These more immediate actions reflect the “preparation” as a way to reduce perceived communicative risk through advanced planning, which closely align with problem-focused coping (Lazarus & Folkman, 1984). Similarly, Abdurahman and Rizqi (2020) noted that Indonesian university students’ preparation strategies were often confined to practicing sufficiently or studying harder before oral presentation, suggesting that such strategies tend to focus on immediate performance demands rather than broader communicative competence. Notably, the idea of preparation in this study extended beyond

the classroom, encompassing a range of everyday communicative scenarios that participants found anxiety-inducing. Taken together, the findings suggest a distinction between two types of coping effects: one that is tied to specific anticipated events and another that reflects broader, ongoing engagement with language learning. Both were employed by participants to manage English-speaking anxiety in immersion contexts.

Adjusting mindset was another salient approach used to manage internal anxiety responses. Participants described efforts to reframe their interpretation of language learning and speaking performance. For instance, viewing communication as the goal rather than linguistic perfection, or accepting their own accent as legitimate. This findings echo the emotional-focused coping mechanisms identified by Lazarus and Folkman (1984), as well as the positive thinking strategies described by Kondo and Ying-Ling (2004). Similarly, Marwan (2007) found that university students employed positive think strategies to regulate their anxiety in language learning. However, in the present study, such mindset adjustments appeared more deeply rooted in immersion learners' evolving beliefs about language and identity. Moreover, some participants described intentionally engaging in social practice as a way to manage anxiety through repeated exposure. This strategy included initiating conversations in shops, speaking with strangers, or maintaining regular interaction with local peers. Although this behaviour is not explicitly categorised in Kondo and Ying-Ling's framework, it resonates with Oxford's (1990) social and affective strategies and is supported by empirical research indicating that the use of socio-affective strategies is associated with lower levels of language anxiety (e.g. Fatemipour & Ajoudani, 2021; Hernández & Mejía, 2022).

Another strategy involved seeking support – particularly from co-nationals or familiar peers – was also discussed as a way to manage stressful communicative situations.

Participants described these relationships as sources of emotional reassurance, helping them feel less isolated or anxious during difficult encounters. While Kondo and Ying-Ling's (2004) category of peer seeking highlights the role of social comparison in alleviating anxiety by recognising that others share similar difficulties, the present findings extend this notion by underscoring the broader social functions of support in immersion contexts, where learners may rely on their immediate communities not only for emotional reassurance but also for practical assistance. Finally, some responses involved avoidance or withdrawal, such as deliberately remaining silent, steering conversations toward familiar topics, or disengaging from stressful interactions. These patterns resemble the category of *Resignation* in Kondo and Ying-Ling's (2004) typology, which is characterised by learners' refusal to confront anxiety (e.g., giving up, sleeping in class). Similar tendencies were also reported by Nuranifar (2014), who found that Iranian pre-university EFL learners in classroom contexts displayed a degree of resignation, withdrawing from anxiety-provoking situations rather than confronting them. However, the present findings suggest a more nuanced form of resignation: in immersive contexts where target language use is unavoidable, learners may adopt such strategies selectively as a temporary means of coping, rather than as a habitual or permanent withdrawal from communicative challenges.

Overall, the findings highlight a diverse set of strategies that international students employ to cope with English-speaking anxiety in immersion contexts. These strategies range from language-focused practices and cognitive reframing to active engagement, social support, and, at times, avoidance. While several of these approaches align with established typologies such as Kondo and Ying-Ling's (2004) framework, others point to adaptations that are specific to the demands of everyday life abroad, where target language use is both pervasive and unavoidable. This suggests that coping with language anxiety is not limited to the static categories identified in earlier studies but instead reflects a flexible and context-

sensitive repertoire of responses. Such patterns underscore the need to view coping as a dynamic process shaped by the affordances and constraints of immersion settings.

6.2.4 Summary and Conclusion

In summary, Study 1 provided a systematic and comprehensive review of existing research, outlining the current state of knowledge and demonstrating that foreign language anxiety is malleable across different timeframes. The findings of Study 2 reinforce and extend the conclusions drawn from Study 1 by illustrating that English-speaking anxiety is both malleable across time and situationally embedded in immersion contexts. Study 1 highlighted the need for research that goes beyond single temporal scales and single methods, and Study 2 responded to this call through a multi-method design that combined longitudinal questionnaires, weekly state measures, intensive ESM, and qualitative interviews. This integration enabled the detection of both broad developmental trajectories and short-term fluctuations, while also capturing learners' own interpretations of their affective change.

From a dynamic perspective, Study 2 demonstrated that English-speaking anxiety is shaped by initial conditions, situational triggers, and coping strategies, with heterogeneous individual pathways even when group-level patterns indicated convergence. These findings provide further support for the temporal malleability emphasised in Study 1, but also advance the field by specifying how anxiety unfolds differently across formal and informal contexts, and how learners actively regulate their affective experiences during study abroad. The Study 2 contributes in three ways: first, by expanding the empirical scope of language anxiety research beyond the classroom to encompass everyday communicative challenges; second, by systematically identifying situational triggers that elicit anxiety in real-life immersion contexts; and third, by documenting the flexible coping strategies that learners utilise, which both align with and extend existing typologies to reflect the demands of immersion

environments. Collectively, these findings enhance theoretical understandings of language anxiety as a dynamic, situation-specific, and malleable construct, while offering practical implications for supporting international students in their everyday communicative experiences.

6.3 Psychological Adjustment

Psychological adjustment is a complex process, particularly in the context of studying abroad, where international students face various stressors and challenges (Schartner & Young, 2020). Building on the conclusion of Study 1 that foreign language anxiety is malleable, this dynamic perspective is extended to examine whether other constructs of adjustment are likewise malleable across timeframes. The observed variability in psychological well-being and life satisfaction in Study 2 reflects two key indicators of psychological adjustment, encompassing both cognitive evaluation of life and affective adaptation to new settings (Ward et al., 2001). By examining both indicators together, we can gain a more comprehensive understanding of their dynamic fluctuations and how these changes unfold during students' adjustment to their host environment (Schartner & Young, 2020). The findings that both psychological well-being and life satisfaction showed variation at trait (longer-term) and state (short-term) levels provide empirical evidence for the dynamic nature of students' psychological adjustment during their study abroad experience.

6.3.1 Trait-level Changes in Psychological Well-being and Life Satisfaction

6.3.1.1 Psychological Well-being.

At the trait level, both psychological well-being and life satisfaction exhibited distinct patterns over time, providing insights into the overall adjustment process of international students in the immersion environment. In terms of psychological well-being, the results indicated that participants' level remained relatively stable over time, with only a small

decline emerging once group differences were taken into account. This indicates that systematic differences between the two groups may have obscured a modest downward trend, and that, once these differences were controlled for, a subtle decrease in well-being became apparent. Although this decline was limited in magnitude, it may reflect minor negative shifts in students' overall evaluations of their psychological functioning as they progressed through their programmes, even in the face of various academic and social challenges. These findings are broadly consistent with Dewaele and Dewaele's (2021) study, which reported no significant change in mental well-being of 33 Anglophone students who spent between four and twelve months in Francophone countries, as well as Schartner and Young's (2020) finding that the psychological well-being of non-UK students on one-year taught programmes in the UK remained stable over the course of a year. Likewise, in Alharbi and Smith's (2019) longitudinal research involving international students in the United Kingdom, repeated assessments indicated no significant changes in their well-being across the academic year. However, Cemalcilar and Falbo's (2008) longitudinal study have documented notable decline in psychological well-being after completing 3 months of their first year at a large U.S. university. This divergence may be partly explained by differences in study duration, timing of measurement, and the nature of participants' academic trajectories, with shorter observation periods potentially capturing more acute phases of adjustment.

Although the overall trajectory of psychological well-being appeared relatively stable at the group level, multilevel modelling revealed considerable heterogeneity in individual change trajectories. Students began the study abroad experience with differing level of psychological well-being, and while some showed improvements over time, others experienced declines, with a subset remain largely unchanged. These divergent patterns suggest that psychological well-being during study abroad is not uniform process, but rather the results of diverse adjustment experiences that balance each other out when aggregated,

giving rise to the overall picture of stability. Similar observations have been reported by Dewaele and Dewaele (2021), who found that apparent group-level stability in well-being masked divergent individual patterns that effectively cancelled each other out. In sum, although psychological well-being appeared stable at the group level, individual-level analyses reveal diverse adjustment trajectories. This finding underscores the need to look beyond aggregated trends and more carefully to the heterogeneous nature of students' psychological experiences abroad (Hirai et al., 2015).

6.3.1.2 Life Satisfaction.

In contrast to the relative stability of psychological well-being, life satisfaction showed a small but significant increase over time, with this trend remaining consistent across both pre-sessional and non-pre-sessional students. This upward trajectory suggests that, as students spent more time in the host environment, their overall evaluations of life become more positive. Life satisfaction, as a cognitive-evaluative construct, may be sensitive to contextual improvements, such as growing familiarity with the academic system, increased independence, strengthened social networks, and a sense of achievement or belonging (e.g. Hendrickson et al., 2011; Nabavi & Bijandi, 2018; Peng et al., 2023). These factors likely contributed to students' progressively more positive assessments of their overall life circumstances.

These findings contrast with previous research that has generally reported stability in this construct during study abroad. For example, Schartner and Young (2020) found that international students in the UK maintained stable life satisfaction across multiple measurement points. One possible reason for this discrepancy is that students in the present study may have gradually developed greater coping resources and support networks, leading to incremental improvements in their overall evaluation of life, in line with the stress and coping framework (Ward et al., 2001), which views coping resources as key mechanisms

through which individuals adjust to new environments. Beyond the study abroad, longitudinal research in psychology has shown that life satisfaction, though typically stable, can change in response to major life transitions such as marriage, relocation, or job loss (e.g. Fujita & Diener, 2005; Lucas et al., 2004; Luhmann et al., 2012). These findings illustrate that life satisfaction is sensitive to life events and transitions, which can produce subtle but systematic changes over time. From a broader perspective, this pattern refines previous characteristics of life satisfaction as relatively enduring, by showing that it can nonetheless exhibit modest upward shifts as students' progress through their adjustment process. Although the group-level trend indicated a general increase, the individual-level analyses revealed a more complex and dynamic picture. Some students experienced sustained improvements, whereas others reported little change or even declines. Notably, several trajectories exhibited fluctuations across measurement points, suggesting that students may shift in response to changing circumstances and evolving perception over time. These diverse patterns highlight that rising life satisfaction is not a universal experience. Instead, it may depend on students' access to social resources, academic success, language proficiency, and personal expectations, among others (Hirai et al., 2015; Peng et al., 2023). Importantly, Heller et al. (2006) argued for the need to examine within-individual variation in life satisfaction, and my findings address this call by capturing heterogeneous trajectories across participants. This matter because within-individual variability reflects person-situation dynamics rather than random error, capturing how individuals' life satisfaction fluctuates in response to changing contexts (Heller et al., 2006). Such heterogeneity mirrors the findings observed for psychological well-being and reinforces the view that adjustment is not a one-size-fits-all process. These results point to the value of examining life satisfaction longitudinally, as single-time-point assessments may fail to capture its dynamic nature (Singer & Willett, 2003). Acknowledging this variability is essential for a more accurate understanding of how

life satisfaction evolves in response to major life events such as studying abroad, and for designing future research that can better capture individual patterns of change in such context.

6.3.1.3 Summary and Interpretation of Trait-level Changes.

These findings provide significant insights into the temporal progression of trait-level psychological consequences during study abroad experiences. Despite the differing overall trajectories of psychological well-being and life satisfaction, a significant diversity across individual students was a common characteristic. This underscores the constraints of depending exclusively on group-level analysis, which may obscure the variability of individual change patterns. As highlighted by Lucas et al. (2003), examining within-person trajectories can yield insights that complement group-level trends by capturing the unique and systematic processes underlying individual change. Such within-person variability is generally understood not merely as error variance but, at least in part, as reflecting systematic and meaningful processes (Beckmann & Wood, 2020). In the present context, these fluctuations may capture international students' ongoing adaptation to shifting academic, social, and cultural demands during studying abroad, reflecting how they negotiate and reevaluate their experiences over time. A more nuanced, individual-focused perspective may help illuminate the diversity and complexity of psychological change over time. Approaches that move beyond group-level summaries can offer more sensitive tools for identifying individual trajectories and patterns of adaptation, particularly in contexts shaped by ongoing change. Overall, my study supports a dynamic perspective on psychological functioning, showing that even relatively stable constructs may shift meaningfully in response to contextual change. Attending to individual variability over time may thus provide important insights into how students navigate transitional experiences like studying abroad.

6.3.2 State-level Changes in Psychological Well-being and Life Satisfaction

While trait-level analyses reveal longer-term trajectories of psychological well-being and life satisfaction during study abroad, they cannot capture the short-term fluctuations that arise in response to daily events and situational demands. To address this, the present study also examined both constructs at the state level, using intensive longitudinal data to explore their variability over shorter timeframes. To the best of my knowledge, this approach has not yet been applied to psychological well-being and life satisfaction among study abroad students.

6.3.2.1 Psychological Well-being.

The state-level results provide additional insight into how psychological well-being may shift across different temporal frames. In the dataset collected twice per week over ten weeks (WSA dataset), a small but consistent improvement was observed, whereas no significant change emerged in the higher-frequency, seven-day dataset (ESM dataset). Across both datasets, psychological well-being was characterized by relatively high stability, with between-person differences accounting for the majority of the variance. This suggests that students tended to differ more from each other in their general affective balance than they did in their own moment-to-moment or week-to-week fluctuations. In other words, some students consistently reported higher levels of psychological well-being, while others consistently reported lower levels, and these relative positions remained fairly stable throughout the study abroad period (Mroczek et al., 2003). Such findings highlight the enduring role of individual characteristics, suggesting the general levels of psychological well-being remain distinct even within a shared transitional context. At the same time, the subtle upward trend observed in the lower-frequency dataset (WSA) may indicate slow, cumulative adjustment as students become more familiar with their new environment abroad. Finally, the absence of short-term change in the ESM dataset may reflect genuine moment-to-moment stability in psychological

well-being during the study abroad. This pattern is perhaps unsurprising, given that psychological well-being tends to be less reactive to minor day-to-day fluctuations and that the ESM week took place during a relatively stable phase of the academic year, when students may have already adjusted to their routine. Nevertheless, it remains possible that subtle or contextual-specific changes did occur but were not captured by the current design. Future research might benefit from incorporating situationally anchored or event-contingent sampling to further explore the micro-dynamics of psychological well-being.

Nonetheless, the presence of intra-individual fluctuations across sessions points to a degree of flexibility in how students experienced their well-being in short time. While the overall structure was dominated by between-person differences, well-being was not entirely static. These findings align with the view that individuals' well-being is relatively enduring yet malleable, shaped by both their personal characteristics and the contexts they experience over time (Tay & Kuykendall, 2013). Students did experience occasional shifts, possibly in response to variations in academic load, social interactions, or personal mood states, which suggests that psychological well-being retains a dynamic quality even if it is not prone to abrupt or systematic change. Taken together, these results suggest that psychological well-being is characterised by overall stability at the state level, driven primarily by inter-individual differences, but is also capable of subtle, longer-term change. Understanding this dual nature requires careful attention to both the temporal scope of measurement and the psychological mechanisms that may foster gradual emotional adjustment during studying abroad.

6.3.2.2 Life Satisfaction.

Heller et al. (2006) support the notion that life satisfaction can be meaningfully studied at a state level, arguing that ignoring within-subject variation by averaging it out may

limit progress in understanding this construct and that trait-like approaches need to be supplemented with more dynamic designs. In this study, however, the state-level life satisfaction results pointed to a pattern of relative stability, with no significant change observed across either the 10-week or the 7-day period. This pattern suggests that participants' cognitive evaluations of their lives did not systematically shift over the course of the study, even as they navigated the evolving demands of academic and everyday life abroad. Such stability aligns with the view that life satisfaction, as a reflective judgment about one's life as a whole, may not be easily altered by short-term experiences or time-based fluctuations. Some cognitive judgments, once formed, tend to remain stable even across individual occasions, and person-level consistency, although generally modest, can still provide important insight into enduring aspects of a person (Diener & Larsen, 1984; Lucas et al., 2018). The relatively unchanging nature of life satisfaction observed in this study may therefore reflect both the stable structure of cognitive evaluations and the absence of major life disruptions during the observation period.

However, the observed within-person variability – particularly the more pronounced fluctuations over the 10-week period (WSA) compared to the relatively smaller shift within 7-day intensive sampling (ESM) – adds nuance to this picture. While no consistent trend emerged, students' evaluations did vary at both timescales, suggesting that life satisfaction is not entirely fixed but may be sensitive to both accumulated experiences over time and to more immediate contextual influences. The larger within-person changes over 10 weeks may reflect the impact of evolving circumstances, such as academic demands, social integration, or adaptation to the host environment, whereas day-to-day fluctuations likely capture more transient mood states or situational events. These results align with Pavot and Diener's (2008) earlier observations that various situational factors and life circumstances shape an individual's assessment of their life satisfaction, and with the notion that momentary shifts in

mood or immediate context can sometimes influence such judgement. Together, these findings highlight that life satisfaction operates across multiple timeframes, with longer-term processes potentially exerting stronger effects than day-to-day fluctuations.

That said, the predominance of between-person variance, especially in the short-term (7-day) dataset, suggests that much of the variability is attributable to stable individual differences. This implies that while some students may consistently view their lives more positively than others, those internal judgments remain relatively unaffected by day-to-day changes in mood, context, or social interaction. This interpretation aligns with Willroth et al. (2020), who conducted a daily study and found that while between-person differences accounted for most of the variance in life satisfaction, within-person fluctuations also emerged. These day-to-day variations were systematically linked to changes in affect and perceived goal progress, suggesting that short-term shifts in life satisfaction reflect adaptive responses to ongoing experiences rather than random noise. In the context of studying abroad, this may indicate that once students have established their routines and initial adjustments, their overall evaluations of life satisfaction remain relatively consistent despite day-to-day fluctuations. Such stability resonates with previous research highlighting the influence of enduring dispositions, such as personality traits and general life circumstances, on life satisfaction (e.g. Malvaso & Kang, 2022; Pavot & Diener, 2008; Wimmelmann et al., 2020). This observation highlights the need to consider enduring individual characteristics when understanding students' overall adjustment during their time abroad. Overall, state-level findings indicate that life satisfaction remained largely stable during the study abroad period, with individual baselines dominating the overall pattern. Yet trajectories differed across students, with some showing gradual shifts over time. These results underscore the value of examining both mean-level trends and intra-individual variability, suggesting that life

satisfaction operates between stability and plasticity – capable of subtle, context-responsive change while maintaining a relatively enduring core (Lucas et al., 2018; Lysberg et al., 2021).

6.3.2.3 Summary and Interpretation of State-level Changes.

The state-level findings provide a nuanced understanding of international students' psychological adjustment during study abroad. Both psychological well-being and life satisfaction displayed considerable stability, with between-person differences accounting for much of the variance. Recognising these differences is essential for practitioners and researchers, as they reflect the unique characteristics each individual brings to their experience (Mroczek et al., 2003). This suggests that enduring individual characteristics played a dominant role in students' short-term experiences, even within a transitional context. Moreover, this stability is in line with the view that such constructs – particularly when measured at the state level – are shaped by enduring tendencies, and may not respond immediately to everyday fluctuations.

Nonetheless, subtle signs of intra-individual variability, especially in weekly assessments, indicate that these constructs are not entirely static. This intra-individual variability is equally crucial to acknowledge, as it can offer valuable insights into the evolving states of a person's life, helping research capture short-term emotional dynamics and enabling practitioner to identify when students might need additional support (Mroczek et al., 2003). For psychological well-being, small positive trends over time may reflect gradual emotional adjustment. For life satisfaction, modest fluctuations point to ongoing reappraisals of one's circumstances, even in the absence of consistent change. Overall, the findings highlight the value of examining psychological functioning at multiple temporal resolutions, and suggest that shifts in students' adjustment may emerge gradually rather than suddenly during the study abroad experience.

6.3.3 Integrating Trait- and State-Level Findings

Although the trait and state data were drawn from different, partially overlapping samples and spanned distinct timescales, placing them side by side allows for a broader understanding of students' psychological functioning during study abroad. Rather than implying a nested structure, this comparison highlights how broader patterns of stability and change manifest across levels. Overall, the findings across trait and state levels paint a nuanced picture of international students' psychological adjustment development during their time abroad. At the trait level, life satisfaction exhibited a modest upward trend, while psychological well-being remained largely stable, which may suggest that life events such as studying abroad are associated with more pronounced shifts in cognitive evaluation of life than in affective experience (Luhmann et al., 2012). At the state level, psychological well-being showed a small but consistent increase across the 10-week (twice-weekly) dataset, with no systematic change in the 7-day intensive ESM; by contrast, state life satisfaction remained stable in both datasets, with only modest within-person fluctuations.

These patterns suggest that adjustment involves both enduring foundations and gradual change. Trait-level shifts likely reflect cumulative adaptation, in which repeated engagement with academic and social demands gradually reshapes students' overall evaluations. Meanwhile, state-level findings reveal how day-to-day experiences remain anchored by individual baselines, with variability that, while present, rarely accumulates into systematic change. The coexistence of stability and diversity is further illustrated by distinct individual trajectories, some students showing steady improvements, others remaining stable, and some fluctuating over time, highlighting adaptation as a heterogeneous and dynamic process. Methodologically, these findings demonstrate the importance of combining trait- and state-level assessments to capture multiple temporal scales and of adopting person-centred longitudinal approaches that can disentangle stable baselines from cumulative and

individualised patterns of change. Together, they illustrate how enduring dispositions, incremental adaptation, and person-specific variability jointly shape the developmental trajectory of students' psychological functioning abroad.

However, it is essential to interpret these apparent patterns of alignment with caution. The trait- and state-level data were drawn from partially overlapping participant samples, meaning the observed convergence may reflect broader group-level tendencies rather than intraindividual coherence. Moreover, the findings are situated within the specific context of a study abroad programme, which may limit their generalisability to other types of transitional experiences. Future research employing fully integrated longitudinal designs would be better positioned to determine how momentary state fluctuations accumulate into trait-level change, and whether such patterns hold within the same individuals. Even with these limitations, the present study advances understanding of the temporal dynamics of psychological adjustment in study abroad, illustrating how the same constructs can manifest differently across levels and timescales.

6.3.4 Interview Perspectives on Change of Psychological well-being and Life Satisfaction

The qualitative insights into participants' psychological well-being and life satisfaction complement the quantitative findings by illuminating the concreting the concrete individual experiences underlying broader trends. Across both domains, participants described predominantly positive experiences, yet these were accompanied by notable individual differences and fluctuation over time. This pattern aligns with prior research on international students' adjustment, which has highlighted substantial variability in psychological outcomes associated with individual and environmental factors such as social support, perceived language competence, cultural distance (e.g. Brunsting et al., 2019; Luo et al., 2019; Schartner & Young, 2020; Shafaei et al., 2017; Zhang & Goodson, 2011). For psychological well-being, participants generally reported positive well-being, yet their

accounts also underscored that such positivity was interwoven with moments of stress and strain, which illustrates that well-being during study abroad is not a uniform process but is shaped by combination of personal dispositions and contextual challenges, among others. These findings align with dynamic perspective of adjustment, which emphasise that students' trajectories unfold in diverse ways rather than following a single pathway of adjustment. With respect to life satisfaction, the interviews revealed that most participants expressed a generally satisfying experience of life abroad, which in line with previous studies showing that international students often report relatively high levels of life satisfaction, indicating generally positive adjustment in the host environment (e.g. Sam, 2001; Sam et al., 2015). However, the interviews also highlighted individual differences, with a minority of participants reporting stable or even declining satisfaction over time. Such accounts illustrate that while overall trajectories may be positive, life satisfaction abroad is sensitive to everyday conditions such as academic demands, climate, or cultural differences. This variation underscores the dynamic nature of adjustment and suggests that positive outcomes should not be assumed for all students.

Taken together, these findings highlight the heterogeneous and context-sensitive nature of students' adjustment during study abroad. The quantitative data captured overall patterns of changes in psychological well-being and life satisfaction, while the interviews shed light on how these patterns were experienced and explained by individual students. The integration illustrates the value of a mixed-methods design in providing a more comprehensive understanding of international students' adjustment.

6.3.5 Summary and Conclusion

Overall, the findings on psychological well-being and life satisfaction illustrate that adjustment during study abroad encompasses both stability and variability. By integrating trait and state-level perspective, the study demonstrates the value of examining these

constructs across multiple temporal scales and with complementary methodological approaches. Beyond methodological implications, the findings also point to the need for student support that acknowledges diversity in adjustment experiences: while many students adapt positively, others face ongoing stressors that can undermine well-being and satisfaction. Tailored interventions that promote social integration, provide academic guidance, and address everyday challenges may therefore be especially beneficial in fostering sustainable adjustment.

6.4 Personality

The findings on English-speaking anxiety, psychological well-being, and life satisfaction reveal considerable variability in how students experienced their time abroad, with some showing improvement, other stability, and some fluctuation over time. This raises the question of why students with similar external conditions nevertheless report different patterns of emotional and evaluative experiences. Personality provides one possible explanation. At the trait level, prior research indicates that personality characteristic associated with emotional experiences, cognitive evaluations of life, and susceptibility to language-related anxiety (e.g. Dewaele & Al-Saraj, 2015; Hamed et al., 2015; Hosseinkhanzadeh & Taher, 2013; Malvaso & Kang, 2022; Ruini et al., 2003; Wimmelmann et al., 2020). In Study 2, personality was therefore considered as a moderator of trajectories of English-speaking anxiety, psychological well-being, and life satisfaction. At the same time, personality can also manifest in momentary states that represent a person's behaviour, thoughts, and feelings at a given point in time (Baumert et al., 2017; Beckmann & Minbashian, 2011). Moreover, research on personality dynamics demonstrates that states fluctuate in response to situational demands (Beckmann & Wood, 2017; Columbus & Strandsbjerg, 2025; Sherman et al., 2015; Zager Kocjan et al., 2024), and the present study extends this line of work by examining whether personality states shift across different

language-use contexts. The following sections address these two perspectives in turn, considering personality trait first as a moderator of English-speaking anxiety and psychological adjustment trajectories, and then as a state-level construct responsive to language use.

6.4.1 Personality as a Moderator of Change Trajectories

The present findings extend previous work by demonstrating that personality traits not only linked to initial levels of affective functioning but also moderate their trajectories over time. This responds to calls to move beyond static trait-outcome associations and examine how enduring dispositions interact with processes of change (Hill et al., 2014). In line with this view, the moderating role of personality traits in this study underscores the complex interplay between relatively stable individual dispositions and dynamic psychological constructs during studying abroad. Rather than exerting uniform effects, different traits were associated with distinct patterns of change across main variables in this study, highlighting the importance of considering personality characteristics within a longitudinal framework. A dimension-specific analysis further illuminates how stable tendencies may function either as resources or constraints within dynamic processes of change. Each trait is discussed in turn, focusing on how it relates to different patterns of change over time.

Across dimensions, *neuroticism* emerged as a particularly noteworthy moderator. While it is typically associated with increased sensitivity to stressors, frequent experiences of negative emotions, and maladaptive patterns of behaviour (McCrae & Costa, 1994), individuals higher in neuroticism exhibited more pronounced improvements in both classroom and outside-classroom English-speaking anxiety as well as life satisfaction over time. This pattern suggests that, although neuroticism may heighten initial difficulties, its associated emotional reactivity might also stimulate greater coping efforts when individuals face sustained challenges. Supporting this interpretation, research indicates that emotional

arousal in response to stress can prompt goal-directed efforts (Carver & Scheier, 2011) and that individuals high in neuroticism may actively engage in coping behaviours to manage demanding situations (Bolger & Zuckerman, 1995; Carver & Connor-Smith, 2010). Another explanation for this pattern may lie in baseline levels: individuals high in neuroticism started with substantially elevated English-speaking anxiety and lower life satisfaction, providing greater potential for observable change. It also highlights the value of adopting a longitudinal approach: whereas cross-sectional studies often portray neuroticism as a stable risk factor for poorer well-being (Lahey, 2009), repeated assessments capture the potential for adjustment and even improvement over time. In line with this perspective, Beckmann et al.'s (2013) study shows the momentary elevations in neuroticism can facilitate performance under certain conditions, reinforcing the idea that neuroticism's effects are not only uniformly negative but may shift across situations and time. In this sense, the present findings contribute to a more nuanced understanding of neuroticism, showing that its effects are not uniformly maladaptive but may include pathways toward improvement in the context of sustained immersion abroad.

In contrast, *extraversion* and *conscientiousness* were associated with more favourable starting points – lower baseline English-speaking anxiety (both inside and outside classroom) and higher initial psychological well-being and life satisfaction – but displayed more stable trajectories over time. For extraverted individuals, this stability may reflect their initial advantage: extraversion is associated with higher baseline positive affect and social engagement (e.g. Lucas & Diener, 2001; Vaghei et al., 2025). These tendencies likely facilitated smoother initial adjustment by enabling students to seek out communication opportunities and build supportive networks, which in turn reduced their likelihood of experiencing high levels of English-speaking anxiety. Previous research has demonstrated that extraversion is negatively associated with foreign language anxiety, as individuals with

higher levels of extraversion are more likely to experience positive feelings about themselves and their social interactions (e.g. Erzhanova et al., 2024; Gargalianou et al., 2016). However, Once such advantages were in place, their trajectories over time remained relatively stable, with minimal further reductions in English-speaking anxiety and only a small change in psychological well-being, this pattern may be partly explained by a “ceiling effect” (Wang et al., 2009). In contrast, less extraverted students begin with less favourable profiles but showed greater improvements over time, resulting in a steeper decline in anxiety and comparatively small declines in psychological well-being, suggesting more scope for observable improvement over time. Extraversion therefore functioned as a moderator by shaping the pace and direction of change, with high extraversion securing early advantages but limiting subsequent growth, and low extraversion leaving more scope for longitudinal improvement. Its moderating role was evident for English-speaking anxiety and psychological well-being, whereas no comparable pattern emerged for life satisfaction in the present data.

Conscientiousness also emerged as a significant moderator of trajectories in English-speaking anxiety, psychological well-being, and life satisfaction. For individuals high in conscientiousness, a consistent pattern was observed: while their persistence and self-discipline likely contributed to lower initial English-speaking anxiety and higher psychological well-being and life satisfaction, their trajectories revealed slower reductions in both classroom and outside-classroom English-speaking anxiety, smaller gains in life satisfaction, and a statistically detectable but very small decline in psychological well-being over time. This pattern suggests that conscientiousness shaped not only starting points but also the pace of change, with more conscientious students maintaining favourable profiles but showing fewer affective benefits as time progressed. Given that the effect sizes for well-being trajectories were negligible, these findings should be interpreted with caution and may reflect

ceiling effects rather than substantive deterioration (Wang et al., 2009). At the same time, key characteristics of conscientious individuals – such as strong achievement-striving, dutifulness, and self-discipline (Costa & McCrae, 1992) – may lead them to maintain high personal standards and sustained effort over time, which could preserve a sense of pressure and inhibit further emotional gains despite objective progress. In line with previous research, the link between conscientiousness and language anxiety has not always been consistent (e.g. Gargalianou et al., 2016; Gregersen & Horwitz, 2002; Khouya, 2018), and the present findings add nuance by showing that conscientiousness may lower initial anxiety but shaped its developmental trajectory in more complex ways. In this sense, conscientiousness functioned as both a resource, securing early advantages, and a constraint, restricting the extent of long-term affective benefits during study abroad.

Agreeableness and *Openness* showed more limited moderating effects compared with the other traits. Agreeableness was linked to favourable baseline outcomes but showed limited evidence of moderating change over time. International students higher in agreeableness reported greater psychological well-being and life satisfaction at the outset, which may be explained by their stronger orientation toward prosociality. Agreeable individuals are generally more cooperative, compassionate, and considerate, qualities that help them foster supportive and harmonious relationships (Kallianou, 2024; Shakib, 2024). In the context of study abroad, these interpersonal resources are particularly valuable for establishing new connections and maintaining positive interactions (Soto, 2015). Such relational advantages may therefore contribute to their higher initial well-being and life satisfaction. Existing evidence on the association between agreeableness and language anxiety is inconsistent (e.g. Bialayesh et al., 2017; Hussain et al., 2022). In the present study, agreeableness was unrelated to classroom or outside-classroom English-speaking anxiety trajectories, suggesting that tendencies toward cooperation and harmony did not substantially

alter the course of language related anxiety. Over time, higher agreeableness was associated with a slower increase in life satisfaction and a small decline in psychological well-being. These effects were statistically detectable but negligible in size, and thus should be interpreted with caution. A possible interpretation is that agreeable individuals, although generally satisfied at the beginning, may focus on maintaining interpersonal harmony and avoiding conflict. While this helps them feel comfortable early on, it may also reduce opportunities to assert their own needs or pursue new challenges, thereby limiting further gains in life satisfaction or well-being during study abroad.

In addition, *Openness* showed a similar pattern of initial advantage with long-term limitations. Individuals high in openness reported lower classroom and outside-classroom English-speaking anxiety at baseline, as well as higher psychological well-being and life satisfaction, consistent with evidence that openness promotes cognitive flexibility and effective engagement with novelty (e.g. Fors Connolly & Johansson Seva, 2021; Khouya, 2018; Siegler & Brummett, 2000). Such qualities likely facilitated a smoother entry into the study-abroad context, enabling students to perceive new experiences more positively and to adapt quickly in the early stages. However, openness did not moderate changes in English-speaking anxiety over time, suggesting that its benefits were limited to the initial phase rather than influencing subsequent changes in English-speaking anxiety. Moreover, its significant negative interactions with time for psychological well-being indicate that these early emotional gains diminished as the environment became more familiar and challenges more routine. Taken together, this pattern suggests that openness may support positive initial adjustment but does not necessarily provide sustained protection for psychological functioning in the longer term.

Overall, these findings suggest that personality traits are linked not only to baseline differences but also to the way key affective outcomes develop over time. Traits often associated with vulnerability (e.g. neuroticism) may, under sustained demands, be associated with improvement, while those commonly associated with initial benefits (e.g. extraversion, conscientiousness, agreeableness, openness) may confer early advantages yet show diminishing returns as adaptation progresses. This asymmetry highlights that personality does not exert uniform effects but interacts with temporal processes in complex ways, shaping trajectories of English-speaking anxiety as well as psychological well-being and life satisfaction. More broadly, the findings illustrate that personality functions not merely as a background characteristic but as an active element in how change unfolds over time, echoing calls for research that situates personality within dynamic developmental processes (Hill et al., 2014). From a practical perspective, these results suggest that support strategies could be tailored to personality profiles: for example, students higher in neuroticism may benefit from early reassurance and coping resources that help them capitalise on their capacity for affective growth and emotional adaptation, while those higher in extraversion or conscientiousness may require interventions aimed at sustaining affective benefits beyond the early stages of adjustment.

6.4.2 Personality States and Language Use

While the previous section focused on the role of enduring personality traits in shaping trajectories of affective outcomes, the present analysis shifts attention to personality states. Previous research conceptualises personality not only as stable traits but also as momentary expressions that fluctuate across contexts (e.g. Fleeson & Jayawickreme, 2015; Matz & Harari, 2021; Moore, 2020; Sherman et al., 2015; Wood et al., 2019). Against this backdrop, this section addressed the question of whether speaking a different language is associated with personality state fluctuations over a short time period. Using a daily

measurement approach (ESM; four times a day over seven days), I explored how participants' Big Five personality traits manifested as personality states under different language use conditions: native language (L1), foreign language (L2), and no language (no communication / general).

The findings suggest that personality states, which reflect short-term fluctuation in the Big Five traits, vary across these different language conditions. Such variability underscores how linguistic contexts and situational cues shape the momentary expression of personality states. Harbsmeier (2004) notes that switching to a different language led to a shift in behaviour. In the present study, different language conditions are conceptualised as situational factors, as they create distinct communicative contexts and social expectations that may influence behavioural expression. As Horstmann and Ziegler (2020) notes, the manifestation of a personality trait, or its state, depends not only on multiple characteristics of individual but also on situational cues. In line with this perspective, Baumert et al. (2017) highlight that state dimensions can describe both differences within an individual and differences between individuals, and that these states naturally shift from one moment to the next. Building on these perspectives, the following discussion examines each of the Big Five dimensions in turn, considering how personality states shifted across the three language-use conditions.

6.4.2.1 Extraversion.

The present findings indicate that state extraversion is sensitive to language-use context, with participants reporting lower levels of extraversion when speaking a foreign language or when no language was used, compared with their native language. The difference between the foreign language and no-language conditions was not statistically significant. This pattern appeared broadly across participants, as indicated by relatively small random slope variances for both the foreign language and no-language contrasts. This suggests that the reduction in extraversion in L2 contexts was not driven by a few extreme cases but

reflected a general tendency. Importantly, multilevel results showed that 44% of the variance in state extraversion occurred within individuals, highlighting its susceptibility to situational influences such as language-use context. This resonates with Mischel's (1973) view that much behavioural variation arises from contextual demands rather than stable dispositions.

The observed reduction in extraversion when using a foreign language can be understood in light of research on the cognitive and emotional demands of bilingual communication. Unlike the effortless and automatic processing of a mother tongue, second-language use typically requires greater cognitive control, such as the recruitment of working memory and additional resources, making it more mentally effortful (Abutalebi & Green, 2016; Segalowitz & Hulstijn, 2005). In addition, native languages are often more strongly linked to cultural identity and emotional resonance, whereas second languages may lack this affective grounding, contributing to feelings of strain and fatigue (Balti et al., 2024; Pavlenko, 2012). These combined cognitive and emotional demands may inhibit spontaneity and self-expression, thereby reducing the likelihood of displaying extraverted behaviours in second language context. A similar reduction was observed in the no-language condition, although for different reasons. Here, the absence of communicative opportunities meant that participants had fewer chances to enact outwardly extraverted behaviours, underscoring the situational dependence of personality state. Consistent with Wrzus and Roberts's (2017) view that extraversion is contingent on available social opportunities and triggering contexts, environments lacking interpersonal interaction naturally constrain the expression of extraverted behaviour. The fact that both foreign-language use and no-language conditions were associated with lower extraversion scores suggests that personality expression is not fixed but shaped by communicative affordance: constrained either by the cognitive demands of L2 use or by the lack of interaction altogether. This interpretation aligns variability with the influence of contextual demands on momentary behaviour (Beckmann et al., 2020;

Beckmann & Wood, 2020; Fleeson, 2001; Horstmann & Ziegler, 2020; Mischel, 1973). For international students, such temporary reductions in extraversion may be associated with fewer opportunities to initiate conversations and form supportive social relationships, which are important for adaptation and well-being in study-abroad settings. However, these interpretations should be viewed with caution, as the relatively low item-pair reliability of the state extraversion measure may have attenuated the precision of within-person estimates. Future research may benefit from using slightly longer or multi-method state extraversion assessments to enhance reliability while still capturing rapid within-person dynamics.

6.4.2.2 Agreeableness.

State agreeableness also varied across language-use context. Relative to native-language episodes, participants reported lower agreeableness when using a foreign language and when no language was used, and the two latter conditions did not differ reliably. Although most variance was between persons, a meaningful within component indicates that agreeableness was not fixed but fluctuated within situational affordances. One plausible explanation is that agreeableness, much like extraversion, encompasses significant social components and has been highlighted as a key dimension for understanding how individuals operate within their social environments (Graziano & Eisenberg, 1997; Lindner et al., 2023). Higher levels of agreeableness are consistently linked with more positive relation outcomes, including stronger social ties, greater access to support, and cooperative interaction styles that facilitate harmonious daily exchanges (Branje et al., 2005; Costa & McCrae, 1992; Letzring & Nofle, 2010). From this perspective, it is not surprising that agreeableness was expressed more strongly in the native-language condition, which affords smoother, more emotionally resonant communication and thus greater opportunities for prosocial behaviours.

By contrast, the foreign-language condition may have constrained agreeableness not simply through cognitive demands but through reduced capacity to convey prosocial

intentions, given that agreeableness is positively associated with prosocial behaviour (Wingate et al., 2019). In this sense, lower agreeableness scores may reflect a gap between intention and expression, where prosocial motives remain intact but are not fully realised in interaction due to limited linguistics or pragmatic resources. Prosocial behaviour typically occurs in social settings and requires not only interpersonal motivation but also sufficient social competence to participate in diverse situations (Sun et al., 2019). When communication is conducted in a second language, reduced fluency or pragmatic sensitivity may hinder the enactment of prosocial behaviour, even if the underlying motivation remains strong. Consequently, students may appear less agreeable in L2 contexts, not because they are less oriented toward prosociality, but because the linguistic and cultural demands of the situation restrict the expression of such behaviours. A similar constraint was observed in the no-language condition, though through a different pathway. In the absence of opportunities for interaction, students had fewer chances to enact prosocial behaviour such as cooperation, support, or responsiveness, which are central to the behavioural expression of agreeableness (Costa & McCrae, 1992). Here, the lower agreeableness scores are less about difficulty of communication and more about situational inactivation: when there is no interaction, the trait has little scope for expression. Together, these findings suggest that agreeableness is highly context-dependent (Fleeson, 2001), with foreign-language use may limit the effective expression of prosocial tendencies and no-language contexts restricting opportunities for their enactment.

6.4.2.3 Conscientiousness.

State conscientiousness showed a somewhat different pattern compared to extraversion and agreeableness. Scores were significantly lower in the no-language condition than in either the native- and foreign-language conditions, whereas no reliable differences emerged between native and foreign language use. This suggests that the enactment of

conscientiousness may be less sensitive to the specific language spoken than to the broader presence of communicative engagement. Conscientiousness often manifests through behaviours such as planning, persistence, and self-discipline, which are more readily elicited in structured, goal-directed activities that typically involve communication with others (Costa & McCrae, 1992). Episodes without language use may coincide with less structured or more passive contexts, thereby limiting opportunities to display dutifulness or achievement-striving. In the study-abroad setting, moments of silence or disengagement from communication could reflect isolation or downtime, reducing the salience of conscientious behaviours. By contrast, both native and foreign language use require organisation, focus, and deliberate effort, supporting a more consistent expression of conscientiousness across these conditions. This interpretation aligns with recent findings that state conscientiousness fluctuates with momentary goal activation: engaging in goals consistent with conscientious behaviour is associated with higher subsequent states, whereas disengagement from such goals corresponds to temporary reductions (Di Sarno et al., 2023). Communicative episodes, whether in a native or foreign language, likely foster goal-oriented engagement that involves organisation and self-regulation, whereas no-language contexts lack such motivational cues. Hence, conscientiousness appears to operate as a contextually contingent state, dynamically shaped by situational affordances and goal pursuit (Di Sarno et al., 2023; Fleeson, 2001; Fleeson & Jayawickreme, 2015).

6.4.2.4 Neuroticism.

State neuroticism showed a distinct sensitivity to language-use context. Participants reported significantly higher neuroticism when using a foreign language or when no language was spoken, compared to when using their native language, while no reliable difference emerged between the foreign-language and no-language conditions. This suggests that both communicative challenges in second language contexts and the absence of communication

altogether heightened momentary emotional reactivity. One of the primary reasons bilinguals report feeling more mentally exhausted in such contexts is precisely because of these heightened processing demands (Balti et al., 2024), which may also account for the higher neuroticism scores observed when using a foreign language. Additionally, uncertainties about cultural appropriateness and interpersonal evaluation in L2 may further intensify emotional reactivity. Interestingly, elevated neuroticism was also observed in the no-language condition. This may reflect the psychological strain associated with disengagement from communication. In a study-abroad context, moments without language use can imply reduced opportunities for interaction, social support, or active participation in the host environment, which may foster feelings of isolation and under-stimulation. Moreover, the absence of communicative exchange may encourage greater self-focus and rumination, which have been shown to intensify native affect (Mor & Winquist, 2002). Such processes may help explain why neuroticism scores were elevated when no language was used. From a personality-state perspective, such fluctuations are consistent with the view that situational cues can constrain or amplify the momentary expression of traits (Baumert et al., 2017; Fleeson, 2001). Another possible interpretation is that both the foreign-language and no-language conditions may evoke a reduced sense of control, either because of linguistic uncertainty or communicative absence. Since lack of perceived control is linked to heightened negative affect and stress reactivity at eventual risk (Chorpita & Barlow, 1998), this may help explain why neuroticism states increased under both conditions.

6.4.2.4 Openness.

State openness showed a comparatively stable pattern across language-use contexts. Although mean scores were numerically lower when participants were speaking a foreign language compared to their native language, the difference did not reach statistical significance, and no reliable contrasts were observed among the three conditions. This

suggests that openness, as a personality state, may be less immediately responsive to communicative demands than other dimensions such as extraversion or neuroticism. Instead, openness may reflect a broader cognitive and motivational orientation – spanning imagination, aesthetic sensitivity, receptivity to feelings, willingness to try new actions, intellectual curiosity, and value flexibility (Costa & McCrae, 1992) – that may not be strongly contingent on short-term language-use situations.

Openness appeared to vary across occasions, but these fluctuations were not systematically linked to language-use context. Given that the present design explicitly prompted participants to report on their states under different language-use conditions, the lack of systematic differences across language groups suggests that these within-person fluctuations were not primarily shaped by language use but may instead reflect other situational or temporal influences. Openness may be primarily activated by opportunities for novelty, complexity, or imaginative engagement (Gocłowska et al., 2019), rather than by whether communication takes place in the first and second language. In addition, prior work suggests that openness states can increase in response to experiences involving or affective novelty (Hotchin & West, 2021). From this perspective, language-use situations, though differing in communicative demand, may not have provided sufficient novelty or imaginative engagement to elicit meaningful shifts in openness.

Although using a foreign language may increase cognitive load (Abutalebi & Green, 2016) but does not necessarily diminish opportunities for novel thought or imaginative processing, thereby leaving openness relatively unaffected. Similarly, in the no-language condition, participants were disengaged from communication altogether, yet their openness scores remained comparable to those in communicative contexts. This suggests that, unlike dimensions more directly linked to interpersonal interaction, state openness is not strongly dependent on the presence or absence of social exchange. Finally, the fact that openness was

not elevated in the native-language condition may imply that fluency and familiarity are not sufficient to amplifying its momentary expression either.

A further consideration concerns the unexpectedly low correspondence between trait and state openness measures in this study. This pattern suggests that the state openness composite may not have captured momentary variation in the intended way within this particular sample or context. To explore this issue, sensitivity analyses using the two individual openness items were conducted. The results were mixed: one item showed a small decrease in foreign-language contexts, whereas the other showed no contextual effects. Rather than providing converging evidence, these inconsistent patterns highlight some uncertainty about how reliably openness was assessed at the state level in this study. While they do not contradict the main finding of no systematic differences across language-use contexts, they indicate that conclusions regarding openness should remain tentative. Future research is needed to further examine how state openness functions in language-use situations, as evidence in this specific context remains limited and inconclusive. Overall, the present findings suggest that openness was relatively stable across the language-use contexts examined here, but with sufficient ambiguity to warrant further empirical investigation.

6.4.2.5 General Discussion of Personality States across Language Use Contexts.

The findings demonstrate that personality states are not uniformly sensitive to language-use context but differ in their situational malleability. Extraversion and agreeableness were expressed most strongly in the native-language condition, but showed reductions both when participants used a foreign language and when no language was spoken. Neuroticism showed the opposite pattern, with higher scores in foreign-language and no-language conditions relative to native language use. Conscientiousness was less dependent on the specific language spoken but declined in the absence of communication, suggesting that opportunities for engagement play a key role in its expression. By contrast, openness

remained relatively stable, showing no reliable difference across the three language conditions.

An additional contribution of the present study lies in the evidence of random slope variability (see Table 25), which adds nuance by showing that individuals did not always react in the same way to contextual changes. For certain states, such as extraversion and neuroticism, the variability in slopes suggested that individuals did not respond uniformly to language-use conditions: while some participants showed marked shifts, others remained more stable. This pattern resonates with person-situation interaction perspectives, which emphasize the effects of situational cues are not uniform but are mediated by individuals' dispositions and the contextual resources available to them (Funder, 2001; Furr & Funder, 2021). In contrast, openness showed little evidence of slope variance, supporting the interpretation that this state is less contingent on immediate situational cues and instead reflects more trait-like orientations toward novelty and complexity. Supporting this interpretation, participants' response to a daily self-reflection item indicated a moderate level of agreement with the idea that they felt like a "different person" when speaking English compared to their native language. Importantly, this aligns with earlier work showing that bilinguals often report changes in personality, identity, and emotional expression across languages (e.g. Dewaele & Nakano, 2013; Pavlenko, 2006; Wedérus, 2017). The average rating was above the scale midpoint, yet responses spanned the full range from strong disagreement to strong agreement, underscoring substantial individual variability in this subjective perception. This aligns with the observed random slope patterns: just as some individuals exhibited marked fluctuations in their personality states across language contexts while others did not, so too did their self-reports reveal differences in the extent to which language switching altered their self-perception. Together, these converging lines of evidence

suggest that the experience of personality state shifts in multilingual settings is not universal but conditional, shaped by both situational affordances and individual-level dispositions.

From a broad perspective, for international students, these findings underscore that language contexts can serve as powerful situational cues that either constrain or amplify the enactment of certain personality dimensions, with potential consequences for social integration, emotional well-being, and academic adjustment. Methodologically, the study highlights the value of considering both between-person differences and within-person fluctuations, as doing so reveals that personality is best understood not as a fixed disposition but as a dynamic system shaped by the ongoing interplay of individual characteristics and situational affordances.

6.5 Theoretical and Methodological Implications

The findings of two studies carry important implication both for the theoretical understanding of affective experiences and methodological approaches used to capture them. By combining a systematic review (Study 1; chapter 4) with a mixed-method empirical investigation (Study 2; chapter 5), the research advances our understanding of how language-related anxiety, psychological adjustment, and personality operate across timescales, while also pointing to ways in which future work can more effectively capture their dynamic nature. Specifically, the findings refine how affective and psychological change during study abroad can be theorised by integrating insights from trait-state dynamics and Dynamic Systems Theory. Across the two studies, evidence consistently showed that constructs often treated as stable traits, such as language anxiety, psychological well-being, and life satisfaction, were not fixed but displayed systematic change over time, alongside meaningful within-person variability, which is consistent with research that acknowledges that traits are not entirely immutable (e.g. Bleidorn, 2024; Endler & Kocovski, 2001; Hamaker et al., 2007). These findings suggest that trait-level constructs should not be conceptualised as static endpoints,

but rather as development trajectories shaped by the accumulation of momentary states over time. In this respect, the results lend support to trait-state models that emphasise the coexistence of relative stability and situational variability, while extending them by demonstrating that even trait-like measures can shift during major life transitions such as studying abroad.

At the same time, the findings resonate with the principles of Dynamic Systems theory, which conceptualises change as emerging from recursive, time-sensitive interactions across multiple levels (Larsen-Freeman & Cameron, 2008; Thelen & Smith, 1994). Study 1 revealed that research has captured malleability of foreign language anxiety across diverse timescales, and Study 2 further illustrated this multi-timescale picture by showing that short-term fluctuations in English-speaking anxiety and psychological adjustment coexist with longer-term developmental shifts. This coexistence of micro-level variability and more enduring trajectories exemplifies DST's emphasis on changes unfolding across multiple, interacting timescales.

Taken together, the two studies extend theoretical perspectives in three interconnected ways. First, they reinforce the importance of moving beyond static accounts of affective constructs, showing that both trait- and state-level measures are subject to temporal change. Second, they highlight the need to conceptualise affective experiences as trajectories that unfold across different timescales, from short-term fluctuations to longer-term developmental trajectories. Third, they point to the need for an understanding of psychological change that incorporates stability, variability, and individual differences, recognising that both enduring disposition on momentary states contribute to diverse developmental pathways. In sum, the findings advance a dynamic theorisation of affective and psychological change during study abroad, emphasising that these experiences are better understood as evolving processes rather than static attributes.

Beyond its theoretical contribution, this thesis also offers methodological insights into how affective and psychological change during study abroad can be captured. Study 1 demonstrated that existing approaches to measuring change in FLA are shaped by methodological choices, with many studies privileging group-level comparisons that risk overlooking fluctuation and individual diversity. Study 2 addressed this gap by adopting a multi-methods design that combined repeated questionnaires, weekly state assessment, experience sampling method, and semi-structured interviews. This strategy showed how different methods capture distinct dimensions of change: repeated questionnaires traced mean-level development across months, weekly state assessments focused on the weekly change, experience sampling method highlighted momentary variability in daily life, and interviews revealed how students interpreted and coped with these experiences. By bringing these strands together, the research illustrated that no single method can adequately capture the complexity of psychological change, but that triangulation across methods can provide a more comprehensive picture, which highlights the importance of methodological pluralism.

Taken together, the two studies suggest three key methodological implications. First, given that methodological choices shape how change is captured and represented, integrating approaches across timescales helps relate short-term variability to longer-term patterns without privileging one level of analysis. Second, in the context of L2 learning and study abroad, integrative approaches that link group-level trajectories with individual-level variability are needed to capture the complexity of learners' experiences. Third, greater attention should be given to the complementarities of quantitative and qualitative methods, which together can provide both breadth and depth in tracing developmental processes. In this way, the thesis advances methodological practice by aligning research designs more closely with theoretical commitments to dynamism and complexity.

Overall, by integrating theoretical perspectives with methodological innovation, this thesis demonstrated that affective and psychological experiences during study abroad are best approached as dynamic processes unfolding across multiple timescales. Study 1 synthesised evidence of the malleability of foreign language anxiety, while Study 2 extended this focus to the immersion context of study abroad, linking language-related anxiety with psychological adjustment and personality. Together, they advance both theoretical and methodological understandings of how international students' experiences evolve over time, highlighting the dynamic and heterogeneous nature of students' affective and psychological experience during study abroad.

Chapter 7. Conclusion

This thesis set out to explore how international students' affective and psychological experiences evolve during studying abroad, focusing on language-related anxiety, psychological well-being, life satisfaction, and the role of personality. Moving beyond the cross-sectional approaches that dominate previous research, it adopted a multi-method, multi-timescale design to capture both broad developmental patterns and moment-to-moment fluctuations. Through the integration of a systematic review (Study 1; chapter 4) and a multi-phase empirical study (Study 2; chapter 5), this research not only charted the dynamic nature of these affective processes but also demonstrated how methodological triangulation can yield a more nuanced understanding of learners' adaptation in immersion contexts.

7.1 Summary of Main Findings

7.1.1 Study 1. Systematic Review

Study 1 synthesised 49 empirical studies to examine how the potential malleability of foreign language anxiety has been investigated over time. This systematic review aimed to address three central questions: the overall scope, theoretical framework, and methodological characteristics of existing research on foreign language across time (RQ1); how change in FLA has been identified and represented in these studies (RQ2); and the extent to which FLA has been shown to be malleable across different timeframes (RQ3). In doing so, the review provided evidence that FLA is not static but dynamic, with patterns of variability observed at macro, meso, and micro timescales. Importantly, it demonstrated that the way change is conceptualised and reported depends on methodological and temporal choices. Macro-level designs, typically based on pre-and post-course questionnaires, tended to frame change in terms of mean-level increases or decreases across groups, while meso-level approaches such as repeated session measures revealed shorter term shifts that highlighted the temporal

dynamics of learners' affective experiences. At the micro-level, tools such as idiodynamic tracking and emotion grids captured moment to moment fluctuations, emphasising the fluidity of learners' experiences in specific tasks or interactions.

By systematically mapping these approaches, the review highlighted both progresses made and the challenges that remain. While diverse methods have advanced understanding, they often operate in isolation, making it difficult to connect short term fluctuation with longer term developmental trajectories. The synthesis therefore underscored the need for integrative, multi timescale designs and methodological pluralism that combines quantitative, qualitative, and even physiological perspectives. Overall, the review supported Gregersen's (2020) argument that FLA as a dynamic construct across timescales, while extending this view by showing how research design shapes what counts as "change". In this way, Study 1 consolidates current evidence and highlights the need for future research to adopt integrative, process-oriented approaches that foreground time, individual variation, and multiple timescales. Such designs would provide a more nuanced understanding of how and why FLA develops, fluctuates, and stabilises.

7.1.2 Study 2. Empirical study

Study 2 employed a multi-method longitudinal design to investigate six research questions about the affective experience and psychological adjustment of international students in the UK. Specifically, it examined how English-speaking anxiety, psychological well-being, and life satisfaction changed over time, whether personality traits were associated with the trajectories of these changes: how momentary fluctuations unfolded in students' daily lives; and how the use of different languages related to shifts in personality states. In addition, the study explored the types of situations in which students experienced English-speaking anxiety and the coping strategies they employed to manage these challenges in immersion contexts. Participants included both students enrolled in pre-sessional language

courses and those who started their academic year directly, which allowed the study to capture a wide range of student experiences. This study involved a cohort of over 400 international students, with 245 participants beginning at the pre-session course stage and 159 at the start of their academic year. Although participants numbers declined across timepoints due to natural attrition, the longitudinal design nonetheless provided rich data to trace both overall trends and individual differences in psychological constructs change. Data collection was organised in two phases and spanned five waves of repeated trait-level questionnaires, integrating weekly state assessments, a seven-day experience sampling method, and two rounds of semi-structured interviews. This multi-faceted design provided a comprehensive account of longer-term developmental trajectories and short-term fluctuations in English-speaking anxiety, psychological well-being, and life satisfaction, thereby deepening understanding of the affective and psychological dimensions of adjustment during study abroad.

Study 2 offered an integrated understanding of how international students' affective and psychological experiences evolve during studying abroad. Over the longer term, the findings revealed differentiated patterns across English-speaking anxiety, psychological well-being, and life satisfaction. English-speaking anxiety showed evidence of adaptation within the immersion context, while psychological well-being remained relatively stable and life satisfaction reflected gradual improvement. In addition, personality functioned as a moderator in international students' English-speaking anxiety and psychological adjustment, shaping how these constructs evolved over time. Rather than exerting uniform effects, different traits altered the pace and direction of change in distinct ways. For example, extraversion and conscientiousness were associated with lower initial levels of English-speaking anxiety but slower reduction over time, whereas neuroticism corresponded to higher initial levels yet steeper decreases, suggesting greater potential for change in immersion contexts. This

moderating pattern highlights that enduring dispositions condition how students adapt affectively and psychologically during study abroad.

After examining longer-term trajectories and the moderating role of personality, the analysis also incorporated state-level data to capture how students' affective and psychological experiences evolved over shorter timescales. Both weekly and daily assessments revealed that participants' experiences were fluid rather than static, showing notable within-person variability across time. While patterns of change differed across constructs and contexts, the findings collectively highlighted that English-speaking and psychological adjustment operates across multiple temporal layers. Building on the evidence of short-term fluctuation in affective experiences, the study also explored whether personality states varied across language contexts. The findings revealed that momentary self-perceptions of personality were context-sensitive, with subtle shifts observed when students engaged in different languages. Participants also demonstrated some awareness of these changes, suggesting that perceived variation in personality reflects an experiential as well as statistical reality. A further contribution of this study lies in identifying the situational nature of English-speaking anxiety and the ways students managed it. Drawing on multiple data sources, the findings showed that anxiety extended beyond academic contexts to everyday interactions, reflecting the pervasive affective demands of living in a second language environment. Students employed a wide range of coping strategies, demonstrating that responses to language-related challenges were context-dependent and individually shaped. These findings suggesting that students may adopt different pathways to manage the affective pressures of immersion.

7.2 Integrated Discussion and Contributions

Taken together, the two studies in this thesis offer a comprehensive perspective on affective and psychological change. Study 1 demonstrated, through a systematic review, that foreign language anxiety is not a fixed trait but a malleable construct whose variability depends on how time and change are framed methodologically. Study 2 built on this foundation by showing how such variability can be captured empirically through a multi-method longitudinal design that traced both longer-term trajectories and shorter-term fluctuations in English-speaking anxiety, psychological well-being, and life satisfaction, while also accounting for the role of personality and coping. This integration advances theoretical understanding in several ways. First, it reinforces that affective and psychological constructs should not be conceptualised as static endpoints, but as trajectories that evolve across different timescales, a perspective consistent with trait-state dynamics and broader dynamic systems approaches (Fleeson, 2001; Fleeson & Jayawickreme, 2015; Larsen-Freeman & Cameron, 2008; Thelen & Smith, 1994). Second, it demonstrates that stability and variability are not mutually exclusive but operate together, with enduring dispositions shaping and being reshaped by momentary experiences. Third, it highlights the importance of individual differences, showing that international students follow diverse adjustment pathways rather than a single normative trajectory.

Beyond these broader insights, the thesis also makes several more specific contributions. It extends the scope of language anxiety research beyond classroom settings to include every day and immersion contexts, offering a more comprehensive understanding of how language-related anxiety manifests across academic, social, and everyday practical domains. It is among the few studies to examine personality as a moderator of developmental trajectories in the study abroad context, while also adopting a dynamic perspective to explore personality states in daily life. In addition, the findings expand existing Kondo and Ying-

Ling's (2004) frameworks of coping by demonstrating that strategies extend well beyond classroom contexts, and they capture the variety of situational triggers that can give rise to language anxiety in real-world interactions.

Taken together, the integration of Study 1 and Study 2 moves the field towards a more dynamic, contextually grounded, and temporally sensitive understanding of international students' affective and psychological adjustment. By combining systematic review with multi-method empirical investigation, the thesis not only consolidates existing knowledge but also provides a framework for how future research might more effectively capture the evolving nature of language anxiety, psychological well-being, and life satisfaction in immersion contexts. At the same time, these advances should be considered alongside several limitations, which also point to promising directions for future work.

In addition to its theoretical and methodological contributions, this thesis also offers practical implications. The findings indicate that English-speaking anxiety is not a fixed learner characteristic but a context-sensitive and changing experience. This has relevance for teaching practice, as it highlights the role of classroom environments, communicative tasks, and interactional conditions in shaping students' emotional experiences when using a second language. The findings also encourage a more nuanced understanding of international students' participation across both academic and everyday settings, where hesitation, avoidance, or reduced willingness to speak may reflect situation-specific anxiety rather than stable deficits. Furthermore, the coping strategies identified in the study provide practical insight into the range of ways students attempt to manage language-related anxiety in real-life communication.

7.3 Limitation, Future Direction

While Study 1 offers a comprehensive overview of how FLA change has been methodologically approached, several limitations should be acknowledged. The review focused exclusively on observational studies and did not include evidence from experimental manipulation, which means that the findings are limited to naturally occurring changes. In addition, the review emphasised how change was identified and represented, rather than analysing the underlying mechanisms or causes of such change. Finally, only studies published in English were included, which may have excluded relevant work conducted in other languages and educational contexts. These limitations reflect the scope and framing of the review but also point to important directions for future research.

In addition, while Study 2 contributes to the understanding of affective and psychological change during study abroad, several limitations should be acknowledged. First, despite the multi-method design, attrition across longitudinal waves reduced the sample size over time, which may have limited the power to detect subtle changes and interactions. Although multilevel modelling allowed missing data to be accommodated without discarding participants, the relatively high attrition across waves remains a limitation. Moreover, because the sample consisted predominantly of Chinese students, the extent to which the findings extend to learners from other cultural backgrounds should be interpreted with caution. Moreover, as longitudinal observation study without a comparison group, the findings are descriptive rather than causal, and changes cannot be directly attributed to the study abroad experience. To advance this line of research, future work should combine larger and more stable longitudinal cohorts with comparative or intervention-based designs to clarify the processes underlying affective and psychological change during study abroad.

Although the design combined repeated questionnaires, weekly state assessment, experience sampling methods, and semi-structured interviews, it did not fully capture the entire temporal continuum. The repeated questionnaires traced broad developmental trajectories, but with relatively long intervals between waves. The WSAs provided valuable mid-level coverage by recording weekly experiences, yet they still left gaps between major transitions and did not capture the immediacy of situational change. The ESM protocol offered fine-grained insights into momentary fluctuations, but were limited in duration and inevitably placed a burden on participants, restricting the number of valid entries. Together, these approaches created a more comprehensive picture than any single method alone, but they did not exhaustively map the full temporal continuum of students' experiences. Moreover, although the integration of quantitative and qualitative methods allowed both breadth and depth, each had constraints. Self-report measures may be affected by recall biases or social desirability (Cochran et al., 2025), while interview data, though rich in detail, were limited to a smaller subset of participants and may not fully represent the diversity of experiences across the wider cohort (Leung, 2015).

Looking forward, future research would benefit from methodological innovations that further bridge timescales. For instance, designs that link intensive short-term monitoring (e.g. idiodynamic approaches, daily diaries, or physiological tracking) with longer-term developmental follow-ups. Future research could therefore extend the contribution of this thesis by testing its insights across different student populations and cultural settings, and by developing more fine-grained methodological tools to capture change. In doing so, it would help to consolidate theoretical accounts of affective and psychological adjustment and strengthen the empirical bases on which they rest.

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Appendix

Appendix A. Systematic Review Sources: Search Databases, String, and Number of Results

Databases	Searching string	Results
Web of science	Topic: (“language anxiety”) OR Topic: (language NEAR/15 anxiety) AND Topic: (longitudinal OR cohort OR repeat OR retest OR “re-test” OR varia* OR stab* OR “pre-post” OR “pre post” OR “over time” OR change* OR prospective OR “follow up” OR “follow-up” OR “multi-wave” OR “multi wave” OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*)	2486
Scopus	Article title, Abstract, keywords: (“language anxiety”) OR Article title, Abstract, keywords: (language W/15 anxiety) AND Article title, Abstract, keywords: (longitudinal OR cohort OR repeat OR retest OR “re-test” OR varia* OR stab* OR “pre-post” OR “pre post” OR “over time” OR change* OR prospective OR “follow up” OR “follow-up” OR “multi-wave” OR “multi wave” OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*)	3244
ERIC	All abstract & summary text (“language anxiety”) OR All abstract & summary text (language N15 anxiety) AND All abstract & summary text (longitudinal OR cohort OR repeat OR retest OR “re-test” OR varia* OR stab* OR “pre-post” OR “pre post” OR “over time” OR change* OR prospective OR “follow up” OR “follow-up” OR “multi-wave” OR “multi wave” OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*)	227
PsycINFO	Title & Abstract (“language anxiety”)	847

	OR Title & Abstract (language N15 anxiety)	
	AND Title & Abstract (longitudinal OR cohort OR repeat OR retest OR “re-test” OR varia* OR stab* OR “pre-post” OR “pre post” OR “over time” OR change* OR prospective OR “follow up” OR “follow-up” OR “multi-wave” OR “multi wave” OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*)	
British Education Index	Title & Abstract (“language anxiety”) OR Title & Abstract (language N15 anxiety) AND Title & Abstract (longitudinal OR cohort OR repeat OR retest OR “re-test” OR varia* OR stab* OR “pre-post” OR “pre post” OR “over time” OR change* OR prospective OR “follow up” OR “follow-up” OR “multi-wave” OR “multi wave” OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*)	187
In Total		6991

Appendix B. Quality Assessment of Included Studies for Study 1

IDs	Study	Screening questions		Set of criteria	MMAT_1	MMAT_2	MMAT_3	MMAT_4	MMAT_5	Reasons for “no” or “can’t tell”
		S1	S2							
1	Alamer and Lee (2021)	Yes	Yes	3	Yes	Yes	Yes	Yes	Yes	
2	Alrabai and Moskovsky (2016)	Yes	Yes	3	Can’t tell	Yes	Yes	Can’t tell	Yes	Male only; only contains the main variables (no control background).
3	Aubrey (2022)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
4	Bielak and Mystkowska-Wiertelak (2024)	Yes	Yes	5	Can’t tell	Yes	Yes	Yes	Yes	Predominantly male participants.
5	Boudreau et al. (2018)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
6	De Ruiter et al. (2019)	Yes	Yes	1	Yes	Yes	Yes	Yes	Yes	
7	Derakhshan and Fathi (2024)	Yes	Yes	3	Yes	Yes	Yes	Yes	Yes	Although there is statistical modelling to control measurement errors, no

										explicit statistical control is performed on background variables (such as gender, grade).
8	Dewaele et al. (2022)	Yes	Yes	3	Yes	Yes	Yes	Can't tell	Yes	The potential impact of confounders was not mentioned.
9	Dewaele et al. (2023)	Yes	Yes	3	Yes	Yes	Yes	Can't tell	Yes	The study did not control for potential confounding variable in the analysis.
10	Elahi Shirvan et al. (2018)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
11	Elahi Shirvan and Taherian (2021)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
12	Elahi Shirvan et al. (2025)	Yes	Yes	4	Yes	Can't tell	Yes	Yes	Yes	A single-case design does not aim for representativeness but idiographic depth.
13	Elahi Shirvan and Talebzadeh (2017)	Yes	Yes	1	Yes	Yes	Yes	Yes	Can't tell	There are explanations for the arrangement of processes and interview structures, but they

										do not reflect on their roles or influences in depth.
14	Gardner et al. (2004)	Yes	Yes	3	Can't tell	Yes	Yes	Can't tell	Yes	There is a certain percentage of the absence, although the sample number changes were explained, the response method or impact on the analysis was not reported; gender imbalanced; this study considered grades but did not systematically control the effects of variables such as gender and language background.
15	Gkonou (2013)	Yes	Yes	1	Yes	Yes	Yes	Can't tell	Yes	There is a lack of clear discussion on the impact of researchers in the data interpretation.
16	Gregersen et al. (2014)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	

17	He et al. (2021)	Yes	Yes	5	Yes	Yes	Yes	Can't tell	Yes	The integration between qualitative and quantitative findings was limited.
18	Hurd (2007)	Yes	Yes	5	Yes	Can't tell	Can't tell	Yes	Yes	The study did not fully integrate the two strands of data in the analysis, they were used in a complementary way to inform interpretation.
19	Huynh (2021)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
20	Jee (2014)	Yes	Yes	3	Can't tell	Yes	Yes	No	Yes	Relatively small sample size; the study did not control for confounding factors.
21	Jin et al. (2015a)	Yes	Yes	3	Can't tell	Yes	Yes	Can't tell	Yes	Gender imbalance; background variables such as grade, gender, and language ability were not controlled in the analysis.
22	Jin et al. (2015b)	Yes	Yes	3	Can't tell	Yes	Yes	Can't tell	Yes	Gender imbalance; use stepwise regression, only core predictor variables are included, and background

										variable control is not added (such as gender/grade/course, etc.).
23	Jin et al. (2017)	Yes	Yes	3	Can't tell	Yes	Yes	Can't tell	Yes	Gender imbalanced; partial confounders consideration; although information such as background and study duration was collected, control variables were not included in the statistical analysis.
24	Kasbi and Elahi Shirvan (2017)	Yes	Yes	1	Yes	Yes	Yes	Yes	Can't tell	Although it shows that the researchers observe the role, they do not reflect on their own deviations and interpretation effects.
25	Koga (2010)	Yes	Yes	3	Can't tell	Yes	Yes	No	Yes	The sample size is relatively small; the study did not account for potential confounding variables.
26	Kruk (2016)	Yes	Yes	5	Yes	Can't tell	Yes	Yes	Yes	Solid mixed methods study capturing sessional changes in

											motivation, boredom, and FLA, though lacking explicit justification for its methodological integration.
27	Kruk (2018)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	Yes	
28	Kruk (2021)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	Yes	
29	Kruk (2022)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	Yes	
30	Li (2024)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	Can't tell	Slightly limited in handling of divergent cases, deeper analysis could be provided.
31	Liu (2014)	Yes	Yes	3	Yes	Yes	Yes	Can't tell	Yes	Yes	Included different proficiency, without considered about other variables.
32	Liu and Dong (2023)	Yes	Yes	3	Can't tell	Yes	Yes	No	Yes	Yes	Sample size is relatively small; although predictive analysis was performed, covariates such as gender, language ability, and background were not included.

33	Liu and Xiangming (2019)	Yes	Yes	3	Yes	Yes	Yes	No	Yes	The study did not control for confounding factors.
34	Liu and Yuan (2021)	Yes	Yes	3	Can't tell	Yes	Yes	Yes	Yes	Gender imbalance.
35	MacIntyre and Gregersen (2022)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
36	Mahmoodzadeh (2015)	Yes	Yes	4	Yes	Can't tell	Yes	Yes	Yes	Although the sample is small, it meets the classroom ecological goals of the study; however, the sample selection method and possible deviations are not explained in detail.
37	Muftah and Alhazmi (2024)	Yes	Yes	1	Yes	Yes	Yes	Yes	Can't tell	Limited discussion of researcher reflexivity.
38	Pan and Zhang (2021)	Yes	Yes	3	Can't tell	Yes	Yes	Can't tell	Yes	The gender ratio was uneven, but the impact was not discussed; although motivation and personality

										were analysed, no other possible confusion variables were controlled.
39	Peng and MacIntyre (2025)	Yes	Yes	3	Yes	Yes	Yes	Yes	Yes	
40	Piniel and Albert (2024)	Yes	Yes	3	Can't tell	Yes	Yes	Yes	Yes	Conceptually strong longitudinal study with appropriate statistical modelling; interpretability somewhat constrained by substantial attrition and limited handling of missing data.
41	Saghafi et al. (2017)	Yes	Yes	1	Yes	Yes	Yes	Yes	Can't tell	Comprehensively contextualised ecological case study of FL writing anxiety, with rich multi-source data, though limited in reflexive reporting.

42	Saghafi and Elahi Shirvan (2020)	Yes	Yes	1	Yes	Yes	Yes	Yes	Can't tell	Inadequate subjective reflection in the interpretation process.
43	Saito et al. (2025)	Yes	Yes	3	Yes	Yes	Yes	Yes	Yes	
44	Sun (2024)	Yes	Yes	1	Yes	Yes	Yes	Yes	Can't tell	Discussion on the impact of researcher identity on interviews/explanations is insufficient.
45	Veenstra and Weaver (2022)	Yes	Yes	3	Yes	Yes	Yes	Can't tell	Yes	Although gender/grade confounding variables such as gender are not explicitly controlled in the statistical model, Rasch analysis are used to reduce individual differences in interference.
46	Wilang and Vo (2018)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	
47	Wu (2011)	Yes	Yes	3	Can't tell	Yes	Yes	No	Yes	Relatively small sample size; the study did not control for confounding factors.

48	Yu et al. (2022)	Yes	Yes	3	Can't tell	Yes	Yes	Yes	Yes	The gender ratio was uneven.
49	Zhang and Wu (2024)	Yes	Yes	5	Yes	Yes	Yes	Yes	Yes	

Appendix C: Study Characteristics of PhD Dissertations for Study 1

References	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/ Interval/ Duration	Analytical methods to indicate change	FLA change results
Isselbaecher (2004)	Japanese	157	Higher Education	FLA	Questionnaire	The Reconstructed language anxiety test by Ando (1999)	2/ half semester/ half semester	Paired samples t-test	Decrease/ stable (2 groups)
Mihara (2022)	English/ Japan	506	Higher Education	FLA	Questionnaires	FLCAS	2/ A year/ A year	Descriptive statistics	Increase
Pathan (2012)	English/ Pakistan	530/15	Higher Education	English class and use anxiety	Questionnaires; interviews	Items from AMTB	2/an English course/ an English course	Descriptive statistics; pair t-test	Decrease
Siridetkoon (2015)	English; Japanese; Chinese/ Thailand	5	Higher Education	FLA	Questionnaires	FLCAS	3/approx. 1.5 years; 0.5 years/ 3 years	Graph	Fluctuate
Shinge (2005)	Franch/ USA	32	Higher Education	FLA	Questionnaire/ observation	FLCAS; items from Spielberg (1972)	2/8 weeks /2 semester	Paired samples t-test	Stable

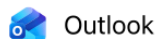
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Appendix D. Durham University Ethical Approval Letter

17/04/2026, 15:37

收件箱 - SUN, QIAN - Outlook



Ethical Approval: EDU-2023-04-21T19_38_49-xgdk84

From Ethics <no-reply@sharepointonline.com>

Date Fri 02/06/2023 12:45

To SUN, QIAN <qian.sun@durham.ac.uk>

Cc ED-ETHICS <ed.ethics@durham.ac.uk>; BECKMANN, NADIN <nadin.beckmann@durham.ac.uk>

Please do not reply to this email.

Dear Qian,

The following project has received ethical approval:

Project Title: *A longitudinal study of English-speaking anxiety and psychological adjustment among international student sojourners in the UK;*

Start Date: *01 June 2023;*

End Date: *10 November 2024;*

Reference: *EDU-2023-04-21T19_38_49-xgdk84*

Date of ethical approval: *02 June 2023.*

Please be aware that if you make any significant changes to the design, duration or delivery of your project, you should contact your department ethics representative for advice, as further consideration and approval may then be required.

If you have any queries regarding this approval or need anything further, please contact ed.ethics@durham.ac.uk

If you have any queries relating to the ethical review process, please contact your supervisor (where applicable) or departmental ethics representative in the first instance. If you have any queries relating to the online system, please contact research.policy@durham.ac.uk.

Appendix E1. Participant information Sheet (Questionnaires) for Study 2

Title: A longitudinal study of English-speaking anxiety and psychological adjustment among international student sojourners in the UK

You are invited to take part in research of international students' English-speaking anxiety and psychological adjustment. Please read this form carefully and ask any questions you may have before agreeing to participate in the study.

This study is conducted by Qian Sun, as part of her doctoral studies at Durham university. This research project is supervised by Prof. Nadin Beckmann (nadin.beckmann@durham.ac.uk) and Dr. Xiaofei Qi (xiaofei.qi@durham.ac.uk), School of Education, Durham University, UK.

The aim of this study is to investigate how international students adapt psychologically across the academic year, focusing on trajectories of English-speaking anxiety inside and outside the classroom, psychological adjustment, and well-being. It also examines how personality traits are associated with these trajectories, and how personality states may vary in daily experiences depending on language use.

If you agree to take part, you will be invited to complete four online questionnaires across the academic year (at the beginning and end of your pre-session course, midway through the academic year, and at the end of the academic year), each taking about 7–15 minutes. In addition, you may be asked to complete very short Weekly State Assessments (WSA), which take around 1–2 minutes and are designed to capture your well-being and experiences in daily life. You may also be invited to participate in an Experience Sampling Method (ESM) study, which involves completing brief surveys on your phone or email several times a day for one week to record your moment-to-moment experiences of English-speaking anxiety, psychological well-being, and life satisfaction in everyday situations.

You are free to decide whether or not to participate. If you decide to participate, you are free to withdraw at any time without any negative consequences for you. All responses you give or other data collected will be kept confidential. The records of this study will be kept secure and private. All files containing any information you give are password protected. In any research report that

may be published, no information will be included that will make it possible to identify you individually.

If you have any questions or concerns about the project that you would like to ask before giving consent or after data collection, please feel free to contact Qian Sun, email at qian.sun@durham.ac.uk or by telephone at + 44(0)7778195301.

This study has been reviewed and approved by the School of Education Ethics Sub-Committee at Durham University (email: ed.ethics@durham.ac.uk or telephone: +44 (0) 1913348403) (date of approval: 02 June 2023, reference number EDU-2023-04-21T19_38_49-xgdk84).

Qian Sun

Durham university

Stockton Road

Durham

DH1 3LE

Appendix E2. Participant Information Sheet (Interviews) for Study 2

Title: A longitudinal study of English-speaking anxiety and psychological adjustment among international student sojourners in the UK

You are invited to take part in research of international students' English-speaking anxiety and psychological adjustment. Please read this form carefully and ask any questions you may have before agreeing to participate in the study.

This study is conducted by Qian Sun, as part of her doctoral studies at Durham university. This research project is supervised by Prof. Nadin Beckmann (nadin.beckmann@durham.ac.uk) and Dr. Xiaofei Qi (xiaofei.qi@durham.ac.uk), School of Education, Durham University, UK.

The aim of this study is to explore the situations in which international students may face difficulties in their psychological adjustment and/or experience English-speaking anxiety. The study also seeks to provide insights into possible underlying factors and coping strategies that students adopt during their stay abroad.

If you agree to be in this study, you will be invited to take part in a 30-45-minute one-to-one interview about your experience as an international student, with a focus on English-speaking anxiety and psychological adjustment. The interviews will take place at the end of your pre-session course and again at the end of the academic year. Participation in this research is entirely voluntary. This research does not involve any form of deception, withdrawal of information or misleading information. Without needing to give any reason, at any time during your participation, you are encouraged to feel comfortable to express to the researcher if you wish to withdraw your participation. The researcher will close the interview and securely store the data.

Our interview will last for about 30-45 minutes and will be recorded. All information collected during the research is confidential and will only be used for the purposes of research. This means your identity will be kept strictly anonymous and I will not divulge your name to any outside parties. Your name will not be revealed in any publications which may result from this research.

If you have any questions or concerns about the project that you would like to ask before giving consent or after data collection, please feel free to contact Qian Sun, email at qian.sun@durham.ac.uk or by telephone at + 44(0)7778195301.

This study has been reviewed and approved by the School of Education Ethics Sub-Committee at Durham University (email: ed.ethics@durham.ac.uk or telephone: +44 (0) 1913348403) (date of approval: 02 June 2023, reference number EDU-2023-04-21T19_38_49-xgdk84).

Qian Sun

Durham university

Stockton Road

Durham

DH1 3LE

Appendix E3. Consent Form for Study 2

- I confirm that I have read and understood the information given to me about the above-named research project and I understand that this will involve me taking part as described above.
- I understand that the purpose of the research is to explore international students' psychological adjustment, English-speaking anxiety in and outside the classroom, personality, and well-being, including the situations in which students may face difficulties, as well as possible underlying factors and coping strategies.
- I have been informed that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- I have been informed that the investigator will answer any questions regarding the study and its procedures. Qian Sun, School of Education, Durham University can be contacted via email: qian.sun@durham.ac.uk or by telephone: +44 (0)7778195301.
- I agree to participate in this study.

Any concerns about this study should be addressed to the Ethics Sub-Committee of the School of Education, Durham University (email: ed.ethics@durham.ac.uk or telephone: +44 (0)1913348403).

Signature _____

Date _____

Appendix F. Trait-level Questionnaire for Study 2

My dear student, I would like to take this opportunity to thank you for taking the first step toward participating in this study which aims to examine how international students' psychological adjustment and English-speaking anxiety in and outside of classroom change over time, and how such change relates to their personality traits and their day to day experiences while studying abroad. The survey will take you approximately 7 – 15 minutes to complete. Please note that your participation is voluntary and you can withdraw at any time you want without any explanation. All the information you provide will remain confidential and will not be seen by anyone except the research team. Furthermore, we will not ask you for any personal information; we will ask you to create a confidential code.

Please keep in mind your responses will be confidential. In order to maintain your anonymity, you will use a confidential code. *To create a code, please think of the first 2 letters of your mother's first name, your date of birth, the first 2 letters of your father's first name, and number of your older siblings.*

*For example, if my mother's first name is **Agatha (AG)**, my date of birth is **1st (01)**, (note: Please add 0 before the numbers 1-9); my father's first name is **James (JA)**, and I have **an older brother and an older sister (02)**, (note: If you don't have an old sibling, then fill in 00). then my confidential code will be "**AG01JA02**". Please write down your confidential code in the following box and keep it in mind."*

Part 1: Demographics.

Please provide personal details here. They will be needed for statistical purposes. Your identity will not be revealed in any publications.

Gender

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Age: _____

Country of origin: _____

First / native language (s): _____

At which university are you studying now? _____

What's your program/subject after the pre-sessional course? _____

How many weeks is the pre-sessional course you are taking right now? _____

What language tests have you taken to enter the pre-sessional course? (If you select "OTHER", specify in the text box)

- IELTS
- TOEFL
- PTE
- OTHER _____

The score of the language test is:

- Overall _____
- Listening _____
- Speaking _____
- Reading _____
- Writing _____

What do you think of your English proficiency?

	Terrible	Poor	Average	Good	Excellent
Overall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speaking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any experience of living / studying / working abroad (excluding travelling)?

- Not at all
- Only a little
- To some extent
- Rather much
- Very much

How long have you lived in the UK so far? _____

Part 2: Personality.

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please read the statements below carefully and tick the appropriate choice to indicate the extent to which you agree or disagree with that statement.

I see myself as someone who....

	Disagree strongly	Disagree a little	Neither disagree nor agree	Agree a little	Agree strongly
Is talkative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tends to find fault with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is depressed, blue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is original, comes up with new ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is helpful and unselfish with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Can be somewhat careless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is relaxed, handles stress well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is curious about many different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is full of energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Starts quarrels with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is a reliable worker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Can be tense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Is ingenious, a deep thinker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generates a lot of enthusiasm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has a forgiving nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tends to be disorganized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worries a lot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tends to be quiet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is generally trusting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Disagree strongly	Disagree a little	Neither disagree nor agree	Agree a little	Agree strongly
Tends to be lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is emotionally stable, not easily upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is inventive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has an assertive personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Can be cold and aloof	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perseveres until the task is finished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Can be moody	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Values artistic, aesthetic experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is sometimes shy, inhibited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is considerate and kind to almost everyone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does things efficiently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Remains calm in tense situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prefers work that is routine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is outgoing, sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Is sometimes rude to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Makes plans and follows through with them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Likes to reflect, play with ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has few artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Likes to cooperate with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is easily distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is sophisticated in art, music, or literature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 3: English-speaking anxiety

3.1 In the classroom.

To what extent do you agree with the following items? The following items ask about your level of English-speaking anxiety that you experience **in classroom atmosphere**. Remember there are no right or wrong answers; just answer as accurately as possible. Please read the statements below carefully and tick the appropriate choice that reflect your level of English language speaking anxiety.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am never quite sure of myself when I am speaking in English.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am afraid of making mistakes in English classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tremble when I know that I am going to be called on in English classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get frightened when I don't understand what the teacher is saying in English.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I start to panic when I have to speak without preparation in English classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get embarrassed to volunteer answers in English classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel nervous while speaking English with native speakers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I get upset
when I don't
understand
what the
teacher is
correcting.

I don't feel
confident
when I speak
English in
classes.

I am afraid that
my English
teacher is
ready to
correct every
mistake I
make.

I can feel my
heart pounding
when I am
going to be
called on in
English
classes.

I always feel
that the other
students speak
English better
than I do.

I feel very self-
conscious
about speaking
English in
front of other
students.

I get nervous
and confused
when I am
speaking in
English
classes.

I get nervous
when I don't
understand
every word my
English
teacher says.

I feel
overwhelmed
by the number
of rules I have
to learn to
speak English.

I am afraid that
the other
students will
laugh at me
when I speak
English.

I get nervous
when the
English
teacher asks
questions
which I
haven't
prepared in
advance.

3.2 Outside of classroom

To what extent do you agree with the following items? The following items ask about your level of English-speaking anxiety that you experience **outside of classroom**. Remember there are no right or wrong answers; just answer as accurately as possible. Please read the statements below carefully and tick the appropriate choice that reflect your level of English language speaking anxiety.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly agree
I feel nervous when I have to ask for street directions in English.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel nervous if I have to order a meal at a restaurant in English.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making an oral request at the bank in English is an easy thing for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not feel nervous when I have to speak English on the phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not feel nervous when I talk to an administrator at the university.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel nervous when I have to communicate in English with a salesperson in a shop.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel nervous when a stranger asks me a question in English.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Chatting with my friends in English out of class does not make me feel nervous.

Having a conversation with the teacher in English out of class does not make me nervous.

I am able to join in a conversation among native speakers with confidence.

Using English to communicate with other foreigners makes me feel uncomfortable.

I am not nervous when I talk to native speakers.

Part 4: Psychological adjustment

4.1 Psychological well-being for each question, please give the answer that is closest to **your feelings** based on your experiences on your study abroad in the UK so far.

4.2 Satisfaction with life Please read the statement below carefully and choose the appropriate choice that reflects your agreement of **life satisfaction** on your study abroad so far.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Disagree Nor Agree	Slightly Agree	Agree	Strongly Agree
In most ways my life is close to my ideal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have gotten the important things I want in life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you have any other comments, please feel free to write them down in the following box.

Appendix G. Weekly State Assessment for Study 2

The purpose of this study is to investigate the psychological adjustment trajectories and daily experiences of international students during their overseas study on a weekly basis, including their English anxiety in and outside of classroom. If you agree to take part in this study, you will be invited to complete a short questionnaire twice per week during the pre-session course, each of which will take you about 1 minute to complete. Please note that your participation is voluntary and you can withdraw at any time you want without any explanation. All the information you provide will remain confidential and will not be seen by anyone except the research team. Furthermore, we will not ask you for any personal information; we will ask you to create a confidential code.

Please keep in mind your responses will be confidential. In order to maintain your anonymity, you will use a confidential code. *To create a code, please think of the first 2 letters of your mother's first name, your date of birth, the first 2 letters of your father's first name, and number of your older siblings.*

*For example, if my mother's first name is **Agatha (AG)**, my date of birth is **1st (01)**, (note: Please add 0 before the numbers 1-9); my father's first name is **James (JA)**, and I have **an older brother and an older sister (02)**, (note: If you don't have an old sibling, then fill in 00), then my confidential code will be "**AG01JA02**". Please write down your confidential code in the following box and keep it in mind."*

Please think about what you have been doing and experiencing this week so far. Then report how much you experienced each of the following **feelings**.

	Very Rarely or Never	Rarely	Sometimes	Often	Very Often or Always
Positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joyful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contented	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

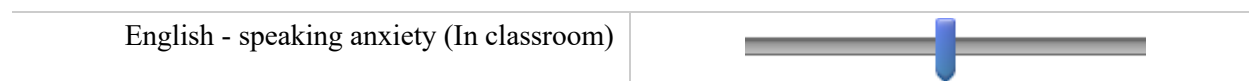
I am satisfied with my life this week so far.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Neither Agree Nor Disagree
- Slightly Agree
- Agree
- Strongly Agree

To what extent did you feel anxious while speaking English in classroom this week so far?

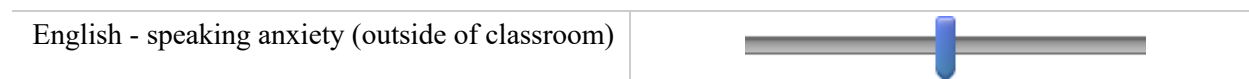
(The higher the number, the more anxious you are)

0 1 2 3 4 5 6 7 8 9 10



To what extent did you feel anxious while speaking English outside of classroom this week so far? (The higher the number, the more anxious you are)

0 1 2 3 4 5 6 7 8 9 10



I have thought that I'm not good at speaking in English-speaking situations this week so far.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Neither Agree Nor Disagree
- Slightly Agree
- Agree
- Strongly Agree

I have been feeling anxious in English-speaking situations this week so far.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Neither Agree Nor Disagree
- Slightly Agree
- Agree
- Strongly Agree

I have tried to avoid speaking in English-speaking situations this week so far.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Neither Agree Nor Disagree
- Slightly Agree
- Agree
- Strongly Agree

Display this question:

*If To what extent did you feel anxious while speaking English in classroom this week so far?
(The hi... [English - speaking anxiety (In classroom)] != 0*

And To what extent did you feel anxious while speaking English outside of classroom this week so far?... [English - speaking anxiety (outside of classroom)] != 0

Please name some situations this week so far when you felt anxious while speaking English
_____. (e.g. Speak to a salesclerk; Order a meal in English; Answer questions in the class...)

Display this question:

*If To what extent did you feel anxious while speaking English in classroom this week so far?
(The hi... [English - speaking anxiety (In classroom)] = 0*

And To what extent did you feel anxious while speaking English outside of classroom this week so far?... [English - speaking anxiety (outside of classroom)] = 0

Please name some situations this week so far when you felt confident while speaking English _____ . (e.g. Speak to a salesclerk; Order a meal in English; Answer questions in the class....)

If you have any other comments, please feel free to write them down in the following box.

Appendix H. Experience sampling methods for Study 2

The purpose of this study is to investigate the psychological adjustment trajectories and daily experiences of international students during their overseas study on a daily basis, including their English anxiety changes over time. If you agree to be in this study, you will be invited to complete a short questionnaire 4 times per day last 7 days, each of which will take you about 1 minute to complete. Please note that your participation is voluntary and you can withdraw at any time you want without any explanation. All the information you provide will remain confidential and will not be seen by anyone except the research team. Furthermore, we will not ask you for any personal information; we will ask you to create a confidential code.

Please keep in mind your responses will be confidential. In order to maintain your anonymity, you will use a confidential code. *To create a code, please think of the first 2 letters of your mother's first name, your date of birth, the first 2 letters of your father's first name, and number of your older siblings.*

*For example, if my mother's first name is **Agatha (AG)**, my date of birth is **1st (01)**, (note: Please add 0 before the numbers 1-9); my father's first name is **James (JA)**, and I have **an older brother and an older sister (02)**, (note: If you don't have an old sibling, then fill in 00). then my confidential code will be "**AG01JA02**". Please write down your confidential code in the following box and keep it in mind."*

Please think about what you have been doing and experiencing until now today. Then report how much you experienced each of the following feelings.

	Very Rarely or Never	Rarely	Sometimes	Often	Very Often or Always
Positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joyful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contented	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am satisfied with my life until now today.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Neither Disagree Nor Agree
- Slightly Agree
- Agree
- Strongly Agree

What language have you been speaking mainly in the last hour?

- Native language
- English
- Other language
- Without saying a word

Display this question:

If What language have you been speaking mainly in the last hour? = English

Where have you mostly spoken English in the last hour?

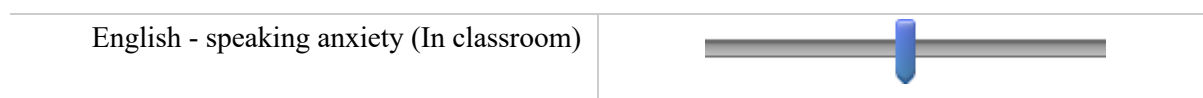
- In classroom
- Outside of classroom

Display this question:

If Where have you mostly spoken English in the last hour? = In classroom

Q15 To what extent did you feel anxious while speaking English in classroom until now today? (The higher the number, the more anxious you are)

0 1 2 3 4 5 6 7 8 9 10

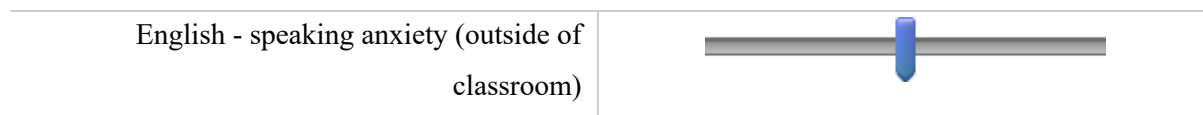


Display this question:

If Where have you mostly spoken English in the last hour? = Outside of classroom

To what extent did you feel anxious while speaking English outside of classroom until now today? (The higher the number, the more anxious you are)

0 1 2 3 4 5 6 7 8 9 10



Display this question:

If What language have you been speaking mainly in the last hour? != Without saying a word

When speaking the language selected above, I see myself as someone who....

	Disagree strongly	Disagree a little	Neither disagree nor agree	Agree a little	Agree strongly
is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is generally trusting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tends to be lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is relaxed, handles stress well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has few artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is outgoing, sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tends to find fault with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display this question:

If What language have you been speaking mainly in the last hour? = Without saying a word

I see myself as someone who....

	Disagree strongly	Disagree a little	Neither disagree nor agree	Agree a little	Agree strongly
is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is generally trusting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tends to be lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is relaxed, handles stress well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has few artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is outgoing, sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tends to find fault with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel like a different person today when I speak English compared to when I speak my native language.

Strongly disagree

Disagree

Slightly disagree

Neither disagree nor agree

Slightly agree

Agree

Strongly agree

Please name some situations until now today when you feel anxious while speaking English _____ . (e.g. Speak to a salesclerk; Order a meal in English; Answer questions in the class....) (If no situations, please fill in N/A)⁷

If you have any other comments, please feel free to write them down in the following box.

⁷ The two questions highlighted with a grey background are only displayed at the end of each day.

Appendix I. Semi-structure Interview Guide for Study 2

Introduction

Now that you have been in the UK for a while, I would like to ask you some questions about your experiences during the past few months. I would like to talk a bit about your well-being, life satisfaction; and speaking and learning English when you are studying and living in the UK so far.

General questions:

1. Could you tell me how long you stay in the UK so far?
2. Please tell me about how you experienced the past XXXX?
 - What were some highlights/ challenges?
3. How have you been feeling over the past XXXX?

Psychological adjustment:

1. Have you been satisfied with your life in the UK?
 - If yes > why? How?
 - If no > what happened?
 - Were there any moments or situations that made you feel un/satisfied?
 - ◆ If yes, could you give me some examples?
2. What factors do you think have affected your satisfaction with your life in the UK over the past xxxx?
3. When you feel that you are not satisfied with your life, have you tried some strategies to overcome it?
 - If yes, then what strategies, do you think it work?
 - If no, what did you do? When you do encounter some difficulties in your life, what do you do, how do you approach that situation?
4. *Do you think your life satisfaction has changed during your time studying and living in the UK?*⁸

Psychological well-being:

1. How would you describe your psychological well-being? ((depending on response > Have you been unwell psychologically over the past xxxx? What happened? Tell me more about it?))
2. What factors do you think have affected your psychological well-being over the past xxxx?

⁸ The questions shaded in grey are included only in the second-round interview.

3. What would you do to improve your psychological well-being? What do you think works or doesn't work?

4. *Do you think your psychological well-being has changed during your time studying and living in the UK?*

English-speaking anxiety:

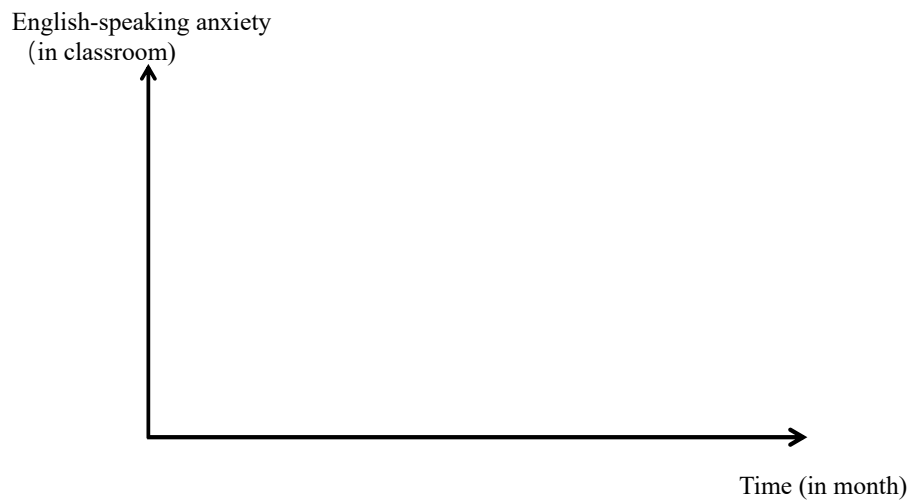
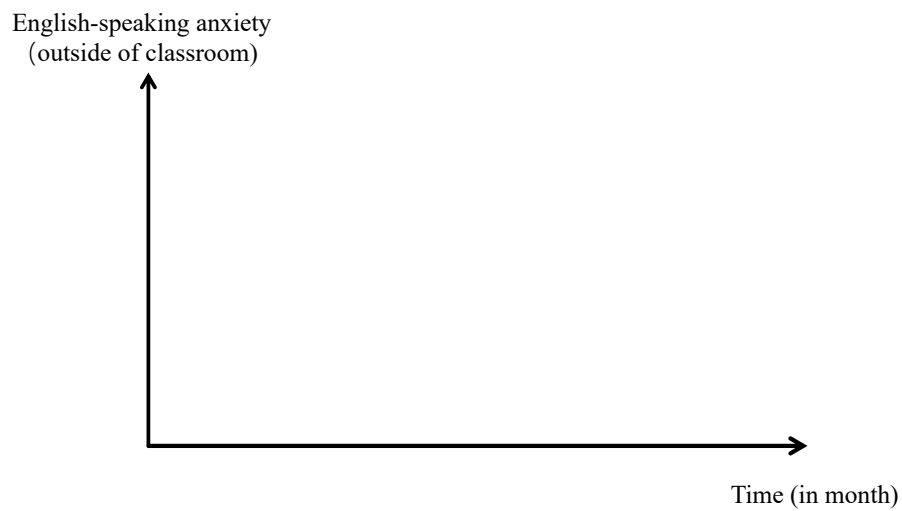
1. What are your feelings when speaking English in the UK? (If anxiety is mentioned, proceed to question 2; if not, ask the following question.)

Some people feel anxious speaking English, some people don't. How do you feel when you are speaking English in the UK (either in the classroom or outside)

- What do you think are the reasons why you have this kind of feeling (note: anxious or other feeling)?
 - Why do you think that is?
2. If anxiety is mentioned: >> Have you tried some strategies to overcome your anxiety when you are speaking in English? If so, what were the primary strategies you employed? Do you think it works?
 3. What type of situations make you feel either anxious or not anxious (in class or out of class)? Could you give me some examples?
 4. Are you more anxious speaking English in class or out of class? Could you explain why?
 5. *Do you think your English-speaking anxiety (with in the classroom or outside) has changed during your time studying and living in the UK?*

Sketch task

Before the end of our interview, could you review your experience in the UK over the past XXX, draw a sketch diagram to reflect the changes in your English-speaking anxiety in and outside of classroom in months. (one colour for FLA in classroom, another colour for outside of classroom)



Could you tell me a little bit about the Sketch diagram?

This is almost the end of our interview, is there anything we've missed that you would like to talk about?

Appendix J. Sensitive Analysis

Table J1. Item-total statistics for the classroom English-speaking anxiety scale using the combined baseline dataset ($N = 404$).

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
In_1	48.24	239.809	.679	.574	.953
In_2	48.23	236.054	.730	.606	.952
In_3	48.92	238.264	.713	.600	.952
In_4	48.52	236.086	.727	.606	.952
In_5	48.32	233.088	.764	.644	.952
In_6	48.58	236.825	.696	.570	.953
In_7	48.42	236.765	.695	.512	.953
In_8	48.13	237.626	.664	.543	.953
In_9	48.41	232.854	.815	.695	.951
In_10	48.89	239.703	.692	.537	.953
In_11	48.26	233.621	.735	.599	.952
In_12	48.18	237.723	.651	.467	.953
In_13	48.60	238.608	.678	.544	.953
In_14	48.55	233.523	.816	.688	.951
In_15	48.23	235.767	.716	.641	.952
In_16	48.64	238.101	.686	.564	.953
In_17	48.86	236.303	.717	.583	.952
In_18	48.09	234.339	.749	.623	.952

Table J2. Exploratory factor analysis results for the classroom English-speaking anxiety scale (combined baseline dataset, $N = 404$)

Item	Factor 1	h^2
I am never quite sure of myself when I am speaking in English.	.716	.513
I am afraid of making mistakes in English classes.	.765	.586
I tremble when I know that I am going to be called on in English classes.	.749	.560
I get frightened when I don't understand what the teacher is saying in English.	.761	.579
I start to panic when I have to speak without preparation in English classes.	.796	.634
I get embarrassed to volunteer answers in English classes.	.734	.538
I feel nervous while speaking English with native speakers.	.731	.534
I get upset when I don't understand what the teacher is correcting.	.702	.492
I don't feel confident when I speak English in classes.	.842	.708
I am afraid that my English teacher is ready to correct every mistake I make.	.729	.531
I can feel my heart pounding when I am going to be called on in English classes.	.769	.592
I always feel that the other students speak English better than I do.	.689	.475
I feel very self-conscious about speaking English in front of other students.	.716	.512
I get nervous and confused when I am speaking in English classes.	.842	.709
I get nervous when I don't understand every word my English teacher says.	.750	.562
I feel overwhelmed by the number of rules I have to learn to speak English.	.722	.522
I am afraid that the other students will laugh at me when I speak English.	.752	.566
I get nervous when the English teacher asks questions which I haven't prepared in advance.	.781	.610

Table J3. Descriptive statistics and intercorrelations among baseline variables (combined dataset, $N = 404$).

	Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.
1. English-speaking Anxiety (in)	2.85(0.90)								
2. English-speaking Anxiety(out)	2.73 (0.73)	.689**							
3. Psychological Well-being	3.86 (0.67)	-.316**	-.390**						
4. Life Satisfaction	3.30 (0.79)	-.233**	-.257**	.595**					
5. Extraversion	3.04 (0.75)	-.315**	-.302**	.415**	.239**				
6. Agreeableness	3.69 (0.56)	-.050	-.121*	.397**	.231**	.213**			
7. Conscientiousness	3.23 (0.64)	-.213**	-.234**	.435**	.313**	.257**	.281**		
8. Neuroticism	3.14 (0.68)	.363**	.272**	-.400**	-.388**	-.453**	-.239**	-.416**	
9. Openness	3.60 (0.59)	-.251**	-.256**	.306**	.212*	.263**	.134*	.109*	-.081

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Summary. The additional analyses presented in Tables J1–J3 provide further support for the reliability and validity of the classroom English-speaking anxiety scale. Item–total statistics (Table J1) indicated strong internal consistency, with all items demonstrating satisfactory corrected item–total correlations and no meaningful improvement in Cronbach’s alpha if any item was deleted.

Exploratory factor analysis (Table J2) supported a unidimensional structure, with all items loading strongly on a single factor.

Descriptive statistics and intercorrelations (Table J3) further supported construct validity, showing that English-speaking anxiety was positively associated with neuroticism and negatively associated with psychological well-being, life satisfaction, and extraversion.

Taken together, these findings indicate that the scale demonstrates good internal consistency, a coherent underlying structure, and expected associations with related constructs.

Table J4. Item-total statistics for the outside-classroom English-speaking anxiety scale using the combined baseline dataset ($N = 404$).

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Out_3R	29.76	67.348	.410	.280	.871
Out_4R	29.54	65.321	.546	.439	.862
Out_5R	30.03	64.384	.629	.476	.857
Out_8R	30.37	67.028	.460	.372	.867
Out_9R	30.21	64.176	.644	.543	.856
Out_10R	29.50	64.141	.601	.475	.858
Out_12R	29.98	65.563	.532	.384	.863
Out_1	30.18	63.670	.649	.624	.855
Out_2	30.15	63.662	.624	.628	.857
Out_6	30.14	65.463	.596	.547	.859
Out_7	30.06	64.113	.625	.564	.857
Out_11	30.36	69.130	.383	.221	.871

Table J5. Exploratory factor analysis results for the outside-classroom English-speaking anxiety scale (two-factor solution, combined baseline dataset).

Description of the item statement	I	II	h ²
<i>Factor 1: Confidence / comfort in outside-class English interactions (reverse-worded items)</i>			
Making an oral request at the bank in English is an easy thing for me.	.640	.032	.410
I do not feel nervous when I have to speak English on the phone.	.697	.175	.517
I do not feel nervous when I talk to an administrator at the university.	.702	.282	.573
Chatting with my friends in English out of class does not make me feel nervous.	.638	.114	.420
Having a conversation with the teacher in English out of class does not make me nervous.	.782	.209	.655
I am able to join in a conversation among native speakers with confidence.	.680	.269	.535
I am not nervous when I talk to native speakers.	.640	.216	.457
<i>Factor 2: Anxiety in outside-class English-speaking situations</i>			
I feel nervous when I have to ask for street directions in English.	.240	.826	.739
I feel nervous if I have to order a meal at a restaurant in English.	.195	.843	.749
I feel nervous when I have to communicate in English with a salesperson in a shop.	.188	.809	.690
I feel nervous when a stranger asks me a question in English.	.220	.813	.710
Using English to communicate with other foreigners makes me feel uncomfortable.	.114	.561	.328

Note. Gray shading marks the primary loading for each item ($\geq .55$). Yellow shading marks smaller but still notable secondary loadings ($\geq .25$) and relatively low communalities ($h^2 < .45$). Items are shown with their full wording and rotated loadings from the two-factor PCA solution.

Table J6. CFA results for outside-classroom English-speaking anxiety with reverse-worded and non-reverse-worded items

A. Model fit indices

Index	Value
CFI	0.937
TLI	0.911
RMSEA	0.083
SRMR	0.041

B. Standardized factor loadings

Item	Standardised loadings
Reverse-worded items	
Making an oral request at the bank in English is an easy thing for me. (out_3R)	.242
I do not feel nervous when I have to speak English on the phone. (out_4R)	.381
I do not feel nervous when I talk to an administrator at the university. (out_5R)	.458
Chatting with my friends in English out of class does not make me feel nervous. (out_8R)	.274
Having a conversation with the teacher in English out of class does not make me nervous. (out_9R)	.409
I am able to join in a conversation among native speakers with confidence. (out_10R)	.428
I am not nervous when I talk to native speakers. (out_12R)	.363
Non-reverse-worded items	
I feel nervous when I have to ask for street directions in English. (out_1)	.842
I feel nervous if I have to order a meal at a restaurant in English. (out_2)	.844
I feel nervous when I have to communicate in English with a salesperson in a shop. (out_6)	.770
I feel nervous when a stranger asks me a question in English. (out_7)	.790
Using English to communicate with other foreigners makes me feel uncomfortable. (out_11)	.455

Summary. The additional analyses presented in Tables J4–J6 provide further evidence regarding the reliability and structure of the outside-classroom English-speaking anxiety scale. Item–total statistics (Table J4) indicated acceptable internal consistency, with all items demonstrating satisfactory corrected item–total correlations and no substantial improvement in Cronbach’s alpha if any item was removed.

Descriptive statistics and intercorrelations (Table J3) provided additional support for construct validity, with outside-classroom English-speaking anxiety showing positive associations with neuroticism and negative associations with psychological well-being, life satisfaction, and extraversion.

Exploratory factor analysis (Table J5) suggested a two-factor structure, with reverse-worded items and non-reverse-worded items loading on separate factors. This pattern is consistent with wording-related method effects rather than substantively distinct constructs.

Confirmatory factor analysis (Table J6) further supported this interpretation, showing that a model accounting for item wording demonstrated acceptable fit. Taken together, these findings indicate that, although wording effects are present, the scale retains a coherent underlying structure.

Table J7. Sensitivity analyses: Multilevel models examining changes in outside-classroom English-speaking anxiety across alternative item specifications

Outcome	Predictor	β	SE	df	t value	95% CI	<i>p</i>	Effect size (magnitude)
English-speaking anxiety (out) (All 12 items)	Time	-0.221	0.029	235.148	-7.635	[-0.279, -0.165]	.000 ***	small
Reversed items	Time	-0.199	0.029	225.909	-6.948	[-0.265, -0.148]	.000 ***	small
Non-reversed items	Time	-0.177	0.029	256.923	-6.008	[-0.235, -0.119]	.000 ***	small

Note. These models examine changes in outside-classroom English-speaking anxiety over time. Sensitivity analyses were conducted using alternative operationalisations of the scale (full 12-item composite, reverse-worded items, and non-reverse-worded items) to ensure that the observed time effects were not driven by item wording. Results were consistent across specifications, indicating robust changes over time.

Table J8. Sensitivity analyses: Multilevel modelling results examining personality as a moderator of changes in outside-classroom English-speaking anxiety

Outcome	Model (M)	Predictor	β	SE	df	t value	95% CI	<i>p</i>	Effect size (magnitude)
English-speaking anxiety (out) 12 items	M1	Time	-0.220	0.028	233.608	-7.847	[-0.275, -0.165]	.000 ***	small
		Extraversion	-0.181	0.045	301.309	-4.046	[-0.268, -0.093]	.000 ***	small
		Time \times Extraversion	0.127	0.029	243.361	4.446	[0.071, 0.183]	.000 ***	small
	M2	Time	-0.220	0.029	2343.741	-7.613	[-0.277, -0.164]	.000 ***	small
		Agreeableness	-0.111	0.046	299.438	-2.426	[-0.201, -0.021]	.016 *	small
		Time \times Agreeableness	0.030	0.029	234.581	1.049	[-0.026, 0.087]	.295	negligible
	M3	Time	-0.220	0.029	243.260	-7.631	[-0.276, -0.163]	.000 ***	small
		Conscientiousness	-0.148	0.046	295.707	-3.248	[-0.237, -0.059]	.001 **	small
		Time \times Conscientiousness	0.089	0.029	236.079	3.069	[0.032, 0.146]	.002 **	negligible

	M4	Time	-0.224	0.028	233.853	-7.919	[-0.279, 0.169]	.000 ***	small	
		Neuroticism	0.162	0.044	303.173	3.653	[0.075, 0.249]	.000 ***	small	
		Time × Neuroticism	-0.115	0.028	266.387	-4.033	[-0.170, -0.059]	.000 ***	small	
	M5	Time	-0.222	0.029	238.001	-7.676	[-0.279, -0.165]	.000 ***	small	
		Openness	-0.190	0.045	294.244	-4.196	[-0.278, -0.101]	.000 ***	small	
		Time × Openness	0.040	0.029	228.914	1.398	[-0.016, 0.097]	.163	negligible	
	Reversed items	M1	Time	-0.204	0.029	220.775	-7.075	[-0.261, -0.148]	.000***	small
			Extraversion	-0.169	0.044	297.248	-3.865	[-0.254, -0.083]	.000***	small
			Time × Extraversion	0.107	0.029	229.640	3.637	[0.049, 0.165]	.000***	small
M2		Time	-0.204	0.030	225.158	-6.930	[-0.263, -0.147]	.000***	small	
		Agreeableness	-0.093	0.045	394.665	-2.080	[-0.181, -0.005]	.038*	negligible	
		Time × Agreeableness	0.052	0.030	225.094	1.747	[-0.006, 0.109]	.082	negligible	
M3		Time	-0.203	0.030	231.114	-6.897	[-0.261, -0.146]	.000***	small	
		Conscientiousness	-0.112	0.045	289.321	-2.511	[-0.200, -0.025]	.013*	small	
		Time × Conscientiousness	0.074	0.030	222.769	2.497	[0.016, 0.133]	.013*	negligible	
M4		Time	-0.207	0.029	222.627	-7.118	[-0.264, -0.150]	.000***	small	
		Neuroticism	0.134	0.044	299.613	3.087	[0.049, 0.220]	.002**	small	
		Time × Neuroticism	-0.095	0.029	258.859	-3.247	[-0.153, -0.038]	.001**	negligible	
M5		Time	-0.206	0.030	226.688	-6.953	[-0.264, -0.148]	.000***	small	
		Openness	-0.173	0.044	287.733	-3.910	[-0.260, -0.086]	.000***	small	
		Time × Openness	0.024	0.030	219.451	0.798	[-0.034, 0.081]	.426	negligible	
Non-reversed items	M1	Time	-0.176	0.029	260.502	-6.079	[-0.233, -0.119]	.000***	small	
		Extraversion	-0.142	0.046	302.784	-3.107	[-0.232, -0.053]	.002**	small	

	Time × Extraversion	0.111	0.029	270.677	3.766	[0.053, 0.168]	.000***	small
M2	Time	-0.175	0.029	257.540	-5.974	[-0.233, -0.118]	.000***	small
	Agreeableness	-0.101	0.047	301.224	-2.173	[-0.193, -0.010]	.031*	small
	Time × Agreeableness	-0.006	0.029	257.289	-0.214	[-0.064, 0.051]	.830	negligible
M3	Time	-0.175	0.029	263.849	-5.978	[-0.232, -0.118]	.000***	small
	Conscientiousness	-0.148	0.046	298.698	-3.197	[-0.239, -0.057]	.002**	small
	Time × Conscientiousness	0.082	0.030	256.966	2.777	[0.024, 0.140]	.006**	negligible
M4	Time	-0.179	0.029	259.236	-6.196	[-0.236, -0.123]	.000***	small
	Neuroticism	0.149	0.045	305.798	3.284	[0.060, 0.237]	.001**	small
	Time × Neuroticism	-0.103	0.029	290.356	-3.558	[-0.160, -0.046]	.000***	small
M5	Time	-0.177	0.029	260.176	-6.012	[-0.234, -0.119]	.000***	small
	Openness	-0.154	0.046	296.715	-3.326	[-0.245, -0.063]	.000***	small
	Time × Openness	0.050	0.029	251.102	1.715	[-0.007, 0.107]	.087	negligible

Note: These models examine whether personality traits are associated with the trajectory of changes in outside-classroom English-speaking anxiety. Multilevel models include time, personality traits, and their interaction terms, with random intercepts and slopes for time.

Summary. The sensitivity analyses presented in Tables J7–J8 further examined the robustness of the findings across alternative operationalisations of the outside-classroom English-speaking anxiety scale. Multilevel models using the full 12-item composite, reverse-worded items only, and non-reverse-worded items only (Table J7) showed highly consistent results, with the direction, magnitude, and statistical significance of the time effects remaining unchanged across specifications.

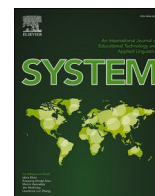
Similarly, analyses examining personality as a moderator (Table J8) yielded comparable patterns across models, with no substantive differences in interpretation.

These findings indicate that the results are robust to item wording and do not depend on the specific item composition of the scale, supporting the validity of the conclusions despite the presence of wording-related method effects.

Table J9. Standardised Fixed Effects and Post-hoc Comparisons of Language-Use Context on Openness Items across the ESM Period

Item	Predictor	β	SE	df	t value	95% CI	p	Effect size (magnitude)
BFI_5R	Foreign vs. Native	0.025	0.058	60.822	0.431	[-0.117, 0.167]	.668	negligible
	No language vs. Native	-0.002	0.066	62.705	-0.030	[-0.161, 0.157]	.976	negligible
	Foreign vs. No language	0.027	0.068	66.500	0.402	[-0.135, 0.189]	.915	negligible
BFI_10	Foreign vs. Native	-0.216	0.064	52.393	-3.364	[-0.371, -0.061]	.001**	small
	No language vs. Native	-0.042	0.064	61.602	-0.653	[-0.196, 0.113]	.516	negligible
	Foreign vs. No language	-0.174	0.071	68.500	-2.476	[-0.344, -0.006]	.041*	small

Note. N (obs/participants) = 1736/79. Results are based on sensitivity analyses using single-item openness indicators. The native-language condition was the reference group. Confidence intervals are Tukey-adjusted pairwise contrasts. Effect sizes were interpreted following Cohen's (1988) guidelines: $|\beta| < .10$ negligible, .10–.29 small, .30–.49 medium, $\geq .50$ large. * $p < .05$, ** $p < .01$, *** $p < .001$.



Review

Is foreign language anxiety malleable? A systematic review of longitudinal observation studies

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ABSTRACT

Background: Foreign language anxiety (FLA) has long been a focus in language learning research, with increasing attention paid to how it changes over time. Recognising FLA as a dynamic construct, this review examines how FLA change has been empirically examined, focusing on temporal frameworks, methodological approaches, and evidence of malleability.

Methods: Longitudinal observation studies published in English since 1986 were included if they used a within-person design with at least two measurement points. A systematic search was conducted of the ERIC, British Education Index, PsycINFO, Scopus, and Web of Science databases. Study quality and risk of bias were assessed using the Mixed Methods Appraisal Tool (MMAT). The findings were narratively synthesised according to temporal design (macro-, meso-, micro-timescales), data collection tools, and analytic approaches.

Results: Forty-nine studies met the inclusion criteria. Macro-level designs primarily used self-report questionnaires at extended intervals to capture broad developmental trends. Meso- and micro-level studies employed denser sampling, including repeated ratings, idiodynamic procedures, and physiological measures, to reveal short-term fluctuations. Few studies used multi-timescale designs, but the findings reflected both gradual and momentary changes, indicating that FLA can vary across temporal frameworks. While most studies met at least three MMAT criteria, the observed changes in FLA did not differ systematically by study quality.

Discussion: The findings confirm the dynamic nature of FLA. Its variability across timeframes underscores the need for future research to employ multi-timescale and mixed-methods designs to more effectively capture the complexity of FLA development.

1. Introduction

The American Psychological Association *Dictionary of Psychology* defines anxiety as “an emotion characterised by apprehension and somatic symptoms of tension in which an individual anticipates impending danger, catastrophe, or misfortune” (APA, 2018). Anxiety

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plays a key role in many forms of learning and is closely associated with foreign language learning, a process that is strongly affected by emotional factors. This connection has led to the concept of “foreign language anxiety” (FLA; Öztürk & Gürbüz, 2014), which is “the feeling of tension and apprehension specifically associated with second language contexts, including speaking, listening, and learning” (MacIntyre & Gardner, 1994, p. 284).

Since 1986, a substantial body of research has focused on FLA. Most studies have employed a cross-sectional design (e.g. Baroi et al., 2020; Chen & Chang, 2008; Lileikiene & Danileviciene, 2016; Liu & Jackson, 2008). Although they have provided valuable insights into the prevalence and correlates of FLA across various learner populations, cross-sectional studies limit our understanding of how FLA unfolds or fluctuates across different timescales during the language learning process. As Singer and Willett (2003) discuss, understanding how individuals change over time necessitates taking repeated measurements to capture the dynamics of development. In response to such critiques, an increasing number of researchers have adopted time-sensitive approaches to exploring how FLA develops and fluctuates over time. Not only have scholars begun to question whether learners experience FLA, but also when and how this anxiety emerges, intensifies, or diminishes throughout different phases of foreign language learning. These questions have prompted researchers to adopt various study designs that allow for repeated observations, which has enabled them to more effectively capture the temporal dimensions of FLA (e.g. Boudreau et al., 2018; Elahi Shirvan et al., 2025; Gkonou, 2013; Kruk, 2022; Pan & Zhang, 2021).

Numerous systematic reviews on FLA exist in the literature (e.g. Akkuş, 2021; Al-Shboul et al., 2013; Hsiao & Tseng, 2022; Ji et al., 2022; Teimouri et al., 2019; Toyama & Yamazaki, 2021; Xiong et al., 2024), including those that focused on skill-related anxiety. For instance, a recent review explored the conceptualisation and measurement of foreign language *listening anxiety* (Ji et al., 2022), while a meta-synthesis specifically examined qualitative studies on foreign language *speaking anxiety* in the twenty-first century within the Turkish context (Akkuş, 2021). Additionally, several studies have reviewed the literature or used meta-analysis techniques to explore FLA and its association with academic achievement (Al-Shboul et al., 2013; Teimouri et al., 2019). Several reviews have incorporated studies involving repeated measurements, thus engaging with the temporal dimension of FLA to some extent. For example, Toyama and Yamazaki (2021) synthesised numerous classroom interventions aimed at reducing FLA, focusing solely on experimental studies (typically with a pre/post-test design). These interventions were categorised as either individual or interactional, depending on whether they targeted learners’ internal processes or classroom social dynamics in foreign language learning. Similarly, Xiong et al. (2024) conducted a meta-analysis of experimental studies that used a pre/post-test design to evaluate the effectiveness of an FLA intervention, revealing an overall decrease in FLA. In another meta-analysis, Hsiao and Tseng (2022) investigated the stability of language anxiety over time by synthesising findings from test-retest studies that used existing FLA scales. Their results indicate that, although language anxiety is context-dependent, it demonstrates a level of temporal consistency comparable to that of broad personality traits. However, the authors emphasised that language anxiety is not a personality trait per se, arguing that current measures mainly reflect its stable, trait-like component. Consequently, they highlighted the need for new instruments that are capable of capturing its more dynamic, state-level variation.

While these reviews engaged with the temporal dimension of FLA to varying degrees, their primary aim was to evaluate the effectiveness of FLA interventions or the trait-like stability of FLA. As such, they did not systematically examine how change in FLA is operationalised, what temporal frameworks have been adopted, or how different studies captured and interpreted change, whether at the group or individual level. To address this gap, the present systematic review focuses specifically on empirical studies that tracked changes in FLA over time, regardless of whether the change was assessed through group-level comparisons (e.g. mean score differences across sessions) or intra-individual analyses (e.g. within-person fluctuations). Hence, this review synthesises research that incorporates repeated measurements of FLA across various timescales, from several months or weeks to shorter time intervals, including even real-time assessments. By emphasising how change has been measured and conceptualised, this review seeks to (1) clarify whether and how FLA has been treated as a dynamic construct and (2) map the temporal designs and analytical approaches employed in the field.

2. Literature review

A substantial and expanding body of research indicates that emotional factors play a significant role in the mechanics of foreign language acquisition. Anxiety is regarded as a key affective factor influencing the foreign language learning process and is one of the most extensively researched affective factors in this field (Horwitz, 2001; Pan & Zhang, 2021). Anxiety is generally categorised into two main types: trait anxiety and state anxiety. Trait anxiety refers to a stable aspect of the personality, indicating a predisposition to feel anxious across various situations; this type of anxiety is considered to be a long-term characteristic that is fundamentally embedded in an individual’s personality (Spielberger et al., 1983). Individuals with high trait anxiety are prone to experiencing anxiety more frequently and intensely, regardless of the specific circumstances. In contrast to trait anxiety, state anxiety is transient and can vary in intensity based on the perceived threat or challenge in a given moment (Spielberger et al., 1983); for example, a language learner might experience heightened state anxiety when speaking in front of an audience, but this feeling may diminish upon task completion. MacIntyre (1999) argues that FLA is a form of situation-specific anxiety and defines it as “the worry and negative emotional reaction aroused when learning or using a second language” (p. 27). Similarly, Horwitz et al. (1986) define FLA as “a distinct complex of self-perception, beliefs, feelings and behaviours related to classroom language learning arising from the uniqueness of the language learning process” (p. 128).

Gregersen (2020) suggests that FLA, as an affective factor, is dynamic rather than static, and presents three reasons to support this view. Firstly, she argues that “it exists on different time scales; that is to say, we can talk about it as a trait, a state, as situation-specific, and as fluctuating on a moment-to-moment basis” (p. 68). Secondly, she views FLA as part of a system of interrelated variables that are continuously shifting; researchers suggest that FLA both affects and is affected by other individual difference factors, including

motivation, willingness to communicate, and self-concept. Lastly, she argues that opposing conditions can coexist within this framework; for example, learners experiencing FLA can simultaneously feel a sense of anxiety and enjoyment. Building on the idea that FLA can be situated within and change across multiple timescales (Gregersen, 2020), it becomes necessary to consider how such change is studied.

When addressing the concept of change, the Oxford English Dictionary (2024) provides the following definition: “to make or become different, to undergo alteration, modification or transformation”. This definition suggests that change can involve differences in form, intensity, or frequency and may occur in various ways across time. In the FLA context, rather than assuming that FLA remains stable, researchers have become increasingly interested in whether and how it varies over time. Investigating such change requires repeated measurements collected at two or more time points, which allows for the examination of both individual-level variation and overall group trends. To address the temporal aspects of FLA, many recent studies have incorporated a longitudinal component into their research designs, which has provided a basis for identifying the developmental patterns or short-term temporal fluctuations in FLA (Vaus, 2001). As Singer and Willett (2003) argue, following the same participants across time allows for a more direct investigation of change than is possible with cross-sectional snapshots. These methodological approaches have opened up new possibilities for studying the temporal nature of FLA, prompting the need to review and synthesise the existing body of research.

In light of these developments, the present systematic review provides a narrative synthesis of empirical studies that have examined changes in FLA within the same individuals across different timescales. This review was inspired by Gregersen’s (2020) view that FLA is dynamic and operates across multiple timescales and that since language learning also unfolds over overlapping timescales, conclusions about FLA need to be understood in relation to the timeframe in which they are drawn. Accordingly, this review focused on empirical studies incorporating a longitudinal component, either through repeated measurements of FLA or temporal coding designed to track changes in FLA over time. By synthesising the methodological characteristics of these studies, we aimed to explore how changes in FLA have been studied across various timescales. In addition, we examined how change has been measured and whether findings suggest that FLA is malleable. The overall goal of this review is to offer an integrative perspective on the temporal dynamics of FLA and inform future research on affective variables in language learning. Hence, the following research questions (RQs) were addressed:

- RQ1. What are the overall scope, theoretical frameworks, and methodological characteristics of existing empirical studies investigating foreign language anxiety across time?
- RQ2. How is change in foreign language anxiety identified and represented across empirical studies?
- RQ3. To what extent is foreign language anxiety shown to be malleable across different timeframes?

3. Methods

3.1. Eligibility criteria

Studies were included based on the eligibility criteria outlined in Table 1, which cover topic, context, publication date, study design, participants, language, and outcome reporting. Broadly, we included empirical, non-intervention, longitudinal studies published in peer-reviewed English-language journals from 1986 onwards, reflecting the emergence of systematic FLA research (Horwitz et al., 1986; Young, 1986). Participants were required to be academic learners aged six or above, aligning with the typical age at which formal education and structured language instruction begin. Eligible studies examined or reported changes in FLA through repeated measurements within a consistent academic setting. Studies that did not meet the publication or methodological criteria, were not fully accessible, or that were primarily designed to evaluate instructional effectiveness or the impact of pedagogical interventions were excluded,² as the aim of this review was to capture naturally occurring changes in FLA rather than treatment effects.

3.2. Information sources

In November 2023, a comprehensive search was conducted of the ERIC, British Education Index, PsycINFO, Scopus, and Web of Science electronic databases, using keywords related to FLA and longitudinal study components. An updated search was conducted in early April 2025 to ensure the inclusion of the most recent studies.

3.3. Search strategy

The search strategy was developed in consultation with our institution’s librarian to ensure comprehensiveness and relevance. Specifically, for the construct of FLA, we adopted a broader term “language anxiety” to ensure a more inclusive and comprehensive search. This decision was based on variations in terminology across the literature and aimed to capture relevant studies even if

² The initial scope of this review included all longitudinal studies, both intervention and observational. A considerable number of intervention studies were identified during screening, but were excluded for the purpose of the current manuscript to reduce conceptual complexity and focus on naturally occurring changes in FLA. This refinement happened during the review process and is documented in the registered protocol [https://osf.io/mfk9t/?view_only=e1be4485cd8245c5aabc3a03228489c2]. Studies using experimental designs have been retained for a planned meta-analysis of the longitudinal effects of instructional interventions on FLA.

Table 1
Eligibility criteria.

Included	Excluded
<p>Topic: Foreign language anxiety (FLA; in a language other than mother tongue), including general FLA, foreign language classroom anxiety, or skill-specific anxiety (i.e. speaking, writing, listening, reading).</p> <p>Context:</p> <ul style="list-style-type: none"> • Academic context (i.e. school, university, educational institution). • Repeated measurements must be within the same context. <p>Date: From 1986 onwards.</p> <p>Publication status: Peer-reviewed journal articles.</p> <p>Study design:</p> <ul style="list-style-type: none"> • Non-interventional empirical designs only. • Longitudinal designs with at least two timepoints for the same individuals. • Studies using repeated measurements to track change in FLA. <p>Participants: Academic learners only (school-age children \geq six years, adolescents, or adults).</p> <p>Language: English</p> <p>Outcomes: Studies that report on change in FLA across timepoints, irrespective of the type or outcome of the reported change.</p>	<p>Topic: Anxiety not related to FLA, anxiety not associated with language, anxiety in non-foreign language contexts (i.e. dialectal or heritage languages).</p> <p>Context:</p> <ul style="list-style-type: none"> • Non-academic context (i.e. immigration, workplace). • Studies comparing different contexts (e.g. classroom vs. outside class) are excluded. <p>Date: Before 1986.</p> <p>Publication status: Book chapters, dissertations, conference papers, and other grey literature. Non-peer-reviewed sources or publications not in the public domain.</p> <p>Study design:</p> <ul style="list-style-type: none"> • Single-measurement or cross-sectional designs. • Interventional studies aimed at reducing FLA. • Pseudo-longitudinal studies (i.e. repeated cross-sectional designs) • Review articles or theoretical pieces without empirical data. <p>Participants: Teachers, parents, non-learners, children below school age (< six years).</p> <p>Language: Any language other than English.</p> <p>Outcomes: Studies that do not report any evidence of change.</p>

“foreign” was not explicitly mentioned. For the “longitudinal” study component, we examined previous empirical studies and systematic reviews to identify how longitudinal designs were typically described in the literature. Drawing on these insights, we formulated the following search terms: “language anxiety” OR “language NEAR/15 (W/15; N15) anxiety” AND “longitudinal OR cohort OR repeat OR retest OR “re-test” OR varia* OR stab* OR “pre-post” OR “pre post” OR “over time” OR change* OR prospective OR “follow up” OR “follow-up” OR “multi-wave” OR “multi wave” OR trajector* OR track* OR trend* OR dynamic OR predict* OR progress* OR increase* OR decrease* OR reduc* OR rise OR drop OR fall OR fluctuat* OR improv* OR worsen*. The search was piloted in Scopus to evaluate its sensitivity and precision. To ensure consistency across platforms, the search terms were entered into relevant fields in each database, according to their specific search functionalities (the search strings are provided in [Appendix A](#)). To supplement the database searches, we also screened the reference lists of all included studies to identify further eligible studies.

3.4. Selection process

The study selection process involved multiple stages; the initial and subsequent reviewers each conducted separate searches of the databases and then verified whether their search results aligned. All retrieved records were imported into Rayyan, where duplicates were removed automatically and manually verified.

Initially, two reviewers independently screened all the titles to eliminate clearly irrelevant records. In the second stage, both reviewers assessed the titles and abstracts of potentially eligible studies to determine their relevance. For studies that passed this stage, full-text articles were retrieved and examined to confirm eligibility. To ensure consistency in applying the inclusion and exclusion criteria, a random sample of 20 full-text studies was screened by both reviewers in the initial phase; instances of disagreement were discussed to reach a consensus on all inclusion decisions at this stage. Following this, the remaining full-text articles were screened independently by the first reviewer. In cases where eligibility was uncertain or the outcome data were ambiguous, the full text was reviewed jointly by both reviewers, and final decisions were made through discussion and consensus among three reviewers. Finally, the reference lists of all included studies were manually screened to identify additional eligible studies.

3.5. Data collection process

Once the final set of studies was determined, data extraction was conducted by the first reviewer using a structured form designed to record key study characteristics, participant information, FLA measures, and reported changes over time. The extracted data were then independently checked for accuracy and consistency by the second reviewer. Any discrepancies were resolved through discussion.

3.6. Data items

For each included study, we extracted information on (1) reference details, (2) theoretical framework of FLA change, (3) target language and country of study, (4) sample size, (5) research context, (6) type of FLA (e.g. general, or skill-specific), (7) methods for measuring FLA repeatedly, (8) instrument used, (9) number of timepoints, intervals, and study duration, (10) analytical methods used to indicate change, and (11) reported FLA change results. These data items were selected to address the review questions and to facilitate the narrative synthesis of how FLA change was measured and evidenced.

3.7. Study risk of bias assessment

A crucial part of the review involved assessing the quality of each study to gauge the level of confidence in the results (El Soufi & See, 2019). The Mixed Methods Appraisal Tool (MMAT, 2018) was used to evaluate the quality of the included studies (Hong et al., 2018). This tool was selected due to its flexibility in appraising studies with diverse designs and methods, including qualitative, quantitative, and mixed-methods approaches (Hong et al., 2018), which was appropriate for the range of methodologies represented in the included studies.

Each study was first screened using the two MMAT screening questions, which assess whether the study has clearly stated research questions and whether the data collected are appropriate to address those questions. Only studies rated “Yes” on both screening questions proceeded to full appraisal. Each study was then categorised into one of MMAT’s five methodological domains (qualitative, quantitative randomised controlled trials, quantitative non-randomised, quantitative descriptive, mixed methods) based on its design, stated aims, and data collection procedures.

For each study, the first reviewer independently assessed the five core MMAT criteria relevant to its category, assigning a rating of “Yes”, “No”, or “Can’t tell” to each item. These judgements were based on explicit information in the published report, and justification for each item rated as “Can’t tell” or “No” was recorded in a structured coding table (see Appendix B). For mixed-methods studies, we followed MMAT guidelines by assessing both the integration of methods and the relevant qualitative and/or quantitative components separately, based on the study design. This enabled us to judge whether each component met the quality standards of its respective methodological tradition. To ensure consistency, a second reviewer independently assessed 25 % of the studies. Disagreements were resolved through discussion and consensus.

Following MMAT guidance, we did not calculate total scores. However, we did record the number of criteria met by each study to offer a general sense of quality. Quality appraisal was not employed as an inclusion or exclusion criterion. Instead, the MMAT ratings were later used to contextualise the synthesis of findings, particularly when evaluating the credibility and relevance of evidence regarding the malleability of FLA. Full MMAT rating, category assignments, and justification notes are provided in Appendix B.

3.8. Synthesis methods

Drawing upon our preliminary understanding of the literature and considering the specific nature of the research questions, we anticipated substantial heterogeneity among the eligible studies with respect to the study characteristics and the measurement approaches utilised. Hence, we prioritised understanding how FLA change was framed and investigated, rather than focusing on quantitative analysis, which led us to favour a narrative synthesis approach over a statistical approach, such as meta-analysis. To address RQ1, we extracted details from the included studies, such as the publication year, target language, country where the study was conducted, sample size, number of measurement time points, time intervals, and theoretical framework. In response to RQ2 and RQ3, we synthesised the research designs, methods, and findings from the included studies to understand how change in FLA has been measured and empirically evidenced in prior research. Particular attention was given to the temporal structure of each study, such as the number of measurements and timescale involved (e.g. seconds, hours, days, weeks, months, or across academic terms). We recorded both the presence and direction of the reported change (e.g. increase, decrease, fluctuation). Where applicable, the methods used to assess and present change were noted, including the statistical procedures (e.g. paired samples t-tests, repeated-measures ANOVA [analysis of variance], latent growth curve modelling) and visual trajectories (i.e. graphs). Throughout the synthesis, the studies were compared on their timeframe, design type, and analytic strategy. These procedures provided a structured basis for interpreting how FLA change was approached and evidenced across the included studies.

4. Results

4.1. Study selection

The initial database search yielded 6991 records. After the removal of 3578 duplicates, 3413 records remained for title and abstract screening. Of these, 2986 records were excluded based on irrelevance to the research questions, leaving 427 articles for full-text review. Following a detailed eligibility assessment and reviewer discussion, 48 studies were deemed to meet all the inclusion criteria; all these studies were retrieved and included in the final synthesis. In addition, one eligible study by Mahmoodzadeh (2015) was identified through reference list screening, bringing the total number of included studies to 49. The study selection process is illustrated in the PRISMA flowchart (Page et al., 2021), presented in Fig. 1.

4.2. Study characteristics

4.2.1. Scope of the included studies

4.2.1.1. Publication year. The 49 studies included in the final synthesis were published between 2004 and 2025. While several earlier studies were identified, only eight were published between 2004 and 2014 (i.e. Gardner et al., 2004; Gkonou, 2013; Gregersen et al., 2014; Hurd, 2007; Jee, 2014; Koga, 2010; Liu, 2014; Wu, 2011). The majority appeared within the past decade (e.g. Alrabai & Moskovsky, 2016; Aubrey, 2022; Jin et al., 2015a; Liu & Dong, 2023; Liu & Xiangming, 2019; Pan & Zhang, 2021; Saghafi & Elahi

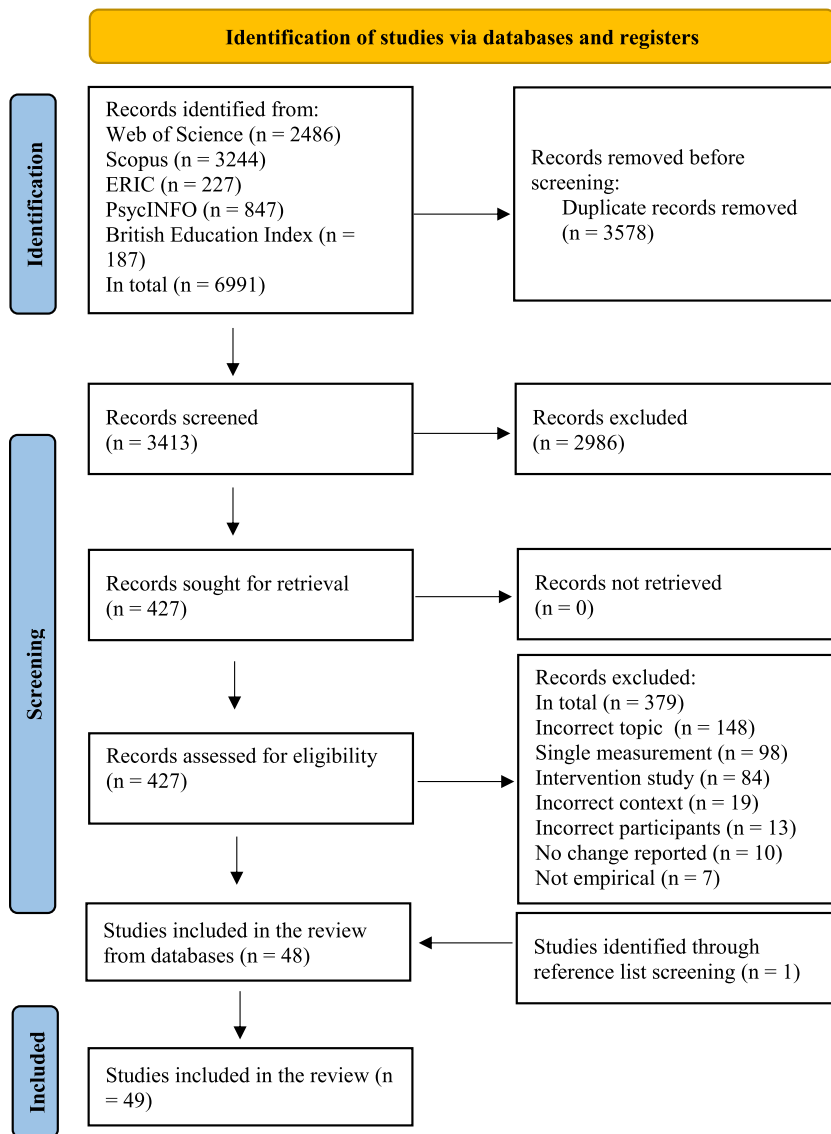


Fig. 1. PRISMA 2020 flow diagram of study selection process.

Shirvan, 2020; Saghafi et al., 2017; Sun, 2024; Wilang & Vo, 2018), which indicates increasing scholarly attention to this topic in recent years.

4.2.1.2. Sample size. Furthermore, the sample sizes across the 49 included studies varied considerably, reflecting differences in methodological orientation. 18 studies involved small samples of one to 10 participants, typically in qualitative or fine-grained design studies (e.g. Aubrey, 2022; Elahi Shirvan & Talebzadeh, 2017; Gkonou, 2013; Mufath & Alhazmi, 2024), 12 studies included 11 to 100 participants (e.g. Liu & Dong, 2023; Mahmoodzadeh, 2015; Pan & Zhang, 2021), while 11 studies featured medium-sized samples of 101–300 (e.g. Alamer & Lee, 2021; Liu & Yuan, 2021). Eight studies involved relatively larger samples exceeding 300 participants (e.g. Dewaele et al., 2022; Liu & Xiangming, 2019), with the largest sample comprising 879 (Derakhshan & Fathi, 2024) and 1115 (Peng & MacIntyre, 2025) participants.

4.2.1.3. Target language. In this review, the target language is defined as the language that participants were in the process of learning and on which their anxiety was measured. Accordingly, the FLA investigated in the included studies was directly associated with the learning of these languages, which varied. The majority of the included studies (n = 39) focused exclusively on English (e.g. De Ruiter et al., 2019; Huynh, 2021; Saito et al., 2025; Zhang & Wu, 2024), while a small number (n = 5) investigated English alongside another language (i.e. Dewaele et al., 2022, 2023; Jin et al., 2015a, Jin et al., 2015b, 2017). In addition, five studies examined languages other than English as the primary target, including French (n = 3; Boudreau et al., 2018; Gardner et al., 2004; Hurd, 2007), Spanish (n = 1;

Gregersen et al., 2014), and Korean (n = 1; Jee, 2014). An overview of the included studies in terms of publication year, target language, and sample size is presented in Table 2.

4.2.1.4. Geographic context. The studies included in this review were conducted in a variety of countries. As shown in Fig. 2, the majority were conducted in East Asian contexts, particularly in China, including studies conducted in mainland China, Taiwan, and Hong Kong (n = 16), followed by Iran (n = 10) and Poland (n = 5). Other studies were conducted in countries such as Canada, Saudi Arabia, Japan, the United States, and Kuwait, with fewer in locations like the United Kingdom, Thailand, Greece, Vietnam, and Hungary.

4.2.1.5. Instructional context. The included studies were conducted in a variety of instructional contexts. The majority took place in higher education settings, where participants were enrolled in formal language courses as part of their regular university programmes (e.g. Alrabai & Moskovsky, 2016; Liu & Dong, 2023; Liu & Xiangming, 2019). These language courses were typically embedded into the academic calendar and reflected naturalistic classroom conditions. In addition to these mainstream academic environments, several studies were situated in laboratory-based contexts (e.g. Aubrey, 2022; MacIntyre & Gregersen, 2022), where learners engaged in oral communication tasks such as dyadic conversations, monologues, or interviews, allowing for precise measurement of moment-to-moment fluctuations in FLA. Beyond higher education, a smaller number of studies were conducted in other types of learning environments: high school settings (n = 4; Kruk, 2018; Peng & MacIntyre, 2025; Piniel & Albert, 2024; Saito et al., 2025), private language institutes or English centres catering to adolescent and adult learners (n = 6; e.g. Gkonou, 2013; Mahmoodzadeh, 2015; Saghafi & Elahi Shirvan, 2020), and virtual environments (n = 3; Kruk, 2016, 2021, 2022) such as Second Life, which simulates language interaction through avatars. Two studies took place in online learning settings (Huynh, 2021; Liu & Yuan, 2021), which are often shaped by COVID-19 pandemic-related adaptations.

4.2.2. Theoretical frameworks informing the study of FLA change

The theoretical grounding of the 49 studies included in this systematic review exhibited considerable variability in both presence and depth. While 21 studies explicitly referenced a theoretical framework related to the dynamics of FLA, the remaining 28 lacked such grounding. Among the most theoretically sophisticated approaches, a cluster of 21 studies adopted **complex dynamic systems theory** (CDST; Larsen-Freeman, 1997; Larsen-Freeman & Cameron, 2008) to conceptualise FLA as a **nonlinear, context-sensitive, and emergent** phenomenon (e.g. Aubrey, 2022; Kruk, 2022; MacIntyre & Gregersen, 2022; Piniel & Albert, 2024; Zhang & Wu, 2024). Some studies extended CDST with **ecological perspectives**. For instance, Kasbi and Elahi Shirvan (2017) integrated Bronfenbrenner's (1979, 1993) **ecological systems theory**, highlighting the influence of nested social systems on learners' emotional experiences, while Saghafi et al. (2017) explicitly adopted Bronfenbrenner's (1979, 1993) nested ecosystems model to examine writing anxiety among EFL learners, offering an ecological perspective on how such anxiety develops and fluctuates. The findings of these two studies provide compelling evidence for the fluctuating nature of writing anxiety, demonstrating how it is shaped by the dynamic interplay between individual characteristics and environmental influences.

Another group of seven studies (Alamer & Lee, 2021; Derakhshan & Fathi, 2024; Gardner et al., 2004; Hurd, 2007; Koga, 2010; Saito et al., 2025; Sun, 2024) approached FLA through broader motivational and emotional theories, treating it as one component within a larger network of affective and cognitive variables. These included motivational frameworks such as Gardner's socio-educational model (e.g. Gardner et al., 2004), positive psychology (e.g. Sun, 2024); the L2 Motivational Self System (e.g. Saito et al., 2025), and self-determination theory (e.g. Alamer & Lee, 2021), as well as emotional frameworks such as Fredrickson's (2001) broaden-and-build theory of positive emotions (e.g. Derakhshan & Fathi, 2024). Rather than focusing primarily on FLA, these studies explored its associations with constructs such as motivation, enjoyment, and academic performance.

A considerable number of studies (n = 19) in this review (e.g. Alrabai & Moskovsky, 2016; Jee, 2014; Liu & Xiangming, 2019) adopted established definitions of FLA to guide their investigation of change. These studies commonly referenced foundational

Table 2

Characteristics of the included studies (N = number of studies).

Category		N		N
Publication year	2025	3	2016	2
	2024	7	2015	3
	2023	2	2014	3
	2022	6	2013	1
	2021	7	2011	1
	2020	1	2010	1
	2019	2	2007	1
	2018	4	2004	1
	2017	4		
	Sample size	1–10	18	101–300
11–100		12	>300	8
Target language	English	39	Korean	1
	French	3	English, Japanese.	3
	Spanish	1	English, German.	2
			Spanish, French.	

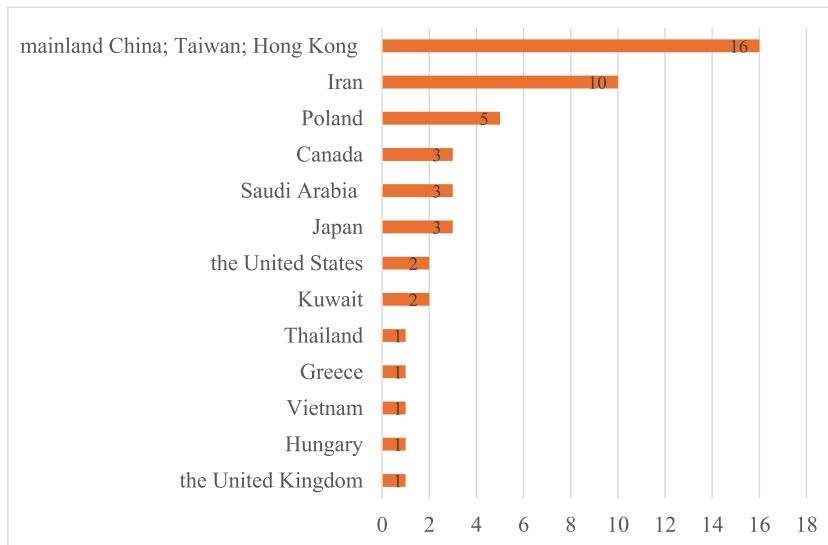


Fig. 2. Country of study implementation (N = 49).

concepts by [Horwitz et al. \(1986\)](#), [MacIntyre and Gardner \(1994\)](#), and [MacIntyre \(1999\)](#) and other related works, which describe FLA as a distinct type of anxiety arising in language learning contexts. Building on these definitions, subsequent researchers have implemented repeated-measures designs to observe whether levels of FLA shifted over time. These variations in theoretical grounding have shaped how researchers approach and frame the investigation of FLA change across time.

4.2.3. Methodological characteristics

All of the included studies employed observational, non-intervention research designs (see the Eligibility criteria, [Table 1](#)). While just over half adopted relatively longer-term longitudinal designs ($n = 27$), collecting data at two or more time points over extended periods (e.g. [Gkonou, 2013](#); [Jee, 2014](#); [Jin et al., 2017](#); [Pan & Zhang, 2021](#)), 13 studies focused on short-term fluctuations using real-time or high-frequency data collection methods (e.g. [Boudreau et al., 2018](#); [Saghafi & Elahi Shirvan, 2020](#); [Wilang & Vo, 2018](#)). Differences in data collection timeframes and intervals underpin the temporal classification adopted in this review. In reviewing the temporal designs of the included studies, this review adopts a three-tiered classification of macro-, meso-, and micro-timescales to describe the durations and granularity at which FLA was investigated. This classification was developed inductively based on the reported total study duration, the time spacing between measurement points, and the intended temporal resolution of each study.

Just over half of the studies ($n = 27$) employed a *macro-level* timeframe, focusing on changes in FLA over extended periods ranging from months to years. Most used two measurement points, typically before and after a certain period, making this the most common design (e.g. [Derakhshan & Fathi, 2024](#); [Liu, 2014](#); [Liu & Yuan, 2021](#); [Veenstra & Weaver, 2022](#)). Some studies incorporated additional measurement occasions, with a modest number of time points spaced across a study period. For instance, data were collected on six occasions over one year ([Yu et al., 2022](#)) or four times during a single academic semester ([Dewaele et al., 2022](#)). Moreover, a smaller number of macro-level studies adopted a denser sampling design over a moderately extended period. For example, [Gkonou \(2013\)](#) measured anxiety weekly over eight consecutive weeks, allowing for a more nuanced understanding of affective trajectories without spanning an entire academic term. One particularly intensive longitudinal study ([Elahi Shirvan et al., 2025](#)) collected 264 daily measurements over a year, combining long-term tracking with high temporal resolution.

Only a small number of studies ($n = 4$) were categorised as employing a *meso-level* timescale ([Kruk, 2016, 2021, 2022](#); [Saghafi et al., 2017](#)). These studies focused on FLA fluctuations across intermediate durations, which typically spanned several sessions. Rather than examining long-term trajectories, these meso-level designs emphasised the rhythmic unfolding of FLA across short but structured intervals. For instance, in a virtual learning environment, two studies ([Kruk, 2021, 2022](#)) assessed FLA at every visit to the virtual world of Second Life (at the beginning, middle, and end of each session).

A distinct subset of studies ($n = 13$) operated at the *micro-level*, targeting moment-to-moment changes in anxiety within individual language-use episodes (e.g. [He et al., 2021](#); [Li et al., 2024](#); [Zhang & Wu, 2024](#)). These studies focused on how FLA fluctuated over an extremely short timeframe, often at the level of seconds or minutes. High temporal resolution data were collected through physiological monitoring methods or second-by-second ratings using the idiodynamic method, a technique that allows participants to self-assess their FLA continuously while reviewing recorded performance. For example, [Saghafi and Elahi Shirvan \(2020\)](#) and [Boudreau et al. \(2018\)](#) both used idiodynamic procedures to trace learners' FLA trajectories across the duration of a speaking task.

In addition to the studies classified under a single temporal level, five studies ([Elahi Shirvan et al., 2018](#); [Elahi Shirvan & Taherian, 2021](#); [Kasbi & Elahi Shirvan, 2017](#); [Kruk, 2018](#); [Mahmoodzadeh, 2015](#)) incorporated more than one timeframe in their design. These studies typically employed different instruments to capture FLA across varying durations; for example, [Elahi Shirvan and Taherian \(2021\)](#) collected data across several weeks, interspersed with multiple intermediate observations and more frequent measurements

during language learning activities, allowing for the examination of both general trends and situated fluctuations over time. Overall, the studies included in this review varied considerably in how they structured time, spanning macro-, meso-, micro-, and mixed timescales to capture different aspects of FLA malleability.

4.2.4. Measurement instruments

In addition to differences in timescale, the included studies also varied in how they assessed changes in FLA. Many studies relied on established self-report questionnaires administered at multiple time points; the most commonly used tool was the Foreign Language Classroom Anxiety Scale (FLCAS; Horwitz et al., 1986). A large proportion of studies (e.g. Elahi Shirvan et al., 2025; Huynh, 2021; Jin et al., 2017; Liu & Xiangming, 2019) employed the full-scale original (or slightly modified) FLCAS. For example, Jee (2014) used the full FLCAS (Horwitz et al., 1986) to assess FLA among 12 Korean language learners at two time points. Other studies (e.g. Dewaele et al., 2022; Dewaele et al., 2023) adapted the measure by selecting specific items to suit their research aims or practical constraints. For instance, Pan and Zhang (2021) repeatedly used selected FLCAS items to assess FLA among 55 Chinese EFL students.

Items from the Attitude/Motivation Test Battery (AMTB; Gardner, 2010; Gardner, 1985) were also adopted in some studies, such as Gardner et al. (2004) and Alamer and Lee (2021), while the Foreign Language Reading Anxiety Scale (Saito et al., 1999) was used in studies by Elahi Shirvan et al. (2018) and Liu and Dong (2023), and the Foreign Language Listening Anxiety Scale, adapted from Zhang (2013), was used by Liu and Yuan (2021). Beyond self-report questionnaires, some studies employed simplified numeric or visual tools to capture changes in FLA over time. For example, Kruk (2021, 2022) asked participants to self-assess their FLA three times during each language learning session using a 7-point scale ranging from 1 (lowest) to 7 (highest). Moreover, Elahi Shirvan et al. (2018) employed “motometers” – thermometer-shaped visual scales ranging from 0 to 100 – and asked learners to report their anxiety levels every 10 min during 90 min classroom sessions. Similar visual rating tools were also employed by Elahi Shirvan and Taherian (2021), Saghafi et al. (2017), and Kasbi and Elahi Shirvan (2017).

Building on these simplified rating tools, some studies employed even more temporally sensitive and fine-grained techniques to capture FLA fluctuations within specific tasks or sessions, the most prominent of which was the idiodynamic method developed by MacIntyre and Legatto (2010). This approach involves participants rating their emotional state on a second-by-second basis while viewing a video of their own language performance, typically using software such as Anion variable tester. This method has been widely used to investigate anxiety dynamics during speaking tasks or classroom episodes, as seen in studies by Saghafi and Elahi Shirvan (2020), Boudreau et al. (2018), MacIntyre and Gregersen (2022), Bielak and Mystkowska-Wiertelak (2024), Muftah and Alhazmi (2024), Elahi Shirvan and Talebzadeh (2017), Aubrey (2022), He et al. (2021), and Li et al. (2024).

Complementing the use of temporally sensitive self-report techniques, several studies also incorporated physiological indicators, such as heart rate monitoring (Gregersen et al., 2014; Wilang & Vo, 2018), to assess affective responses during language use. Although less frequently used, these physiological approaches provided complementary insights into the short-term dynamics of FLA. Moreover, Mahmoodzadeh (2015) employed an event-contingent tool to track real-time fluctuations in FLA; student participants were equipped with handheld mini-stopwatches and instructed to press a button whenever they experienced anxiety during classroom sessions.

In addition to structured and temporally sensitive instruments, several studies employed open-ended, interpretive tools to explore learners' experiences of FLA over time. These included learner diaries, as well as interviews and classroom observations used in a supplementary capacity, all of which were implemented at least twice in the studies reviewed, thereby enabling the examination of change across time. For instance, Sun (2024) and Gkonou (2013) asked participants to reflect regularly on their FLA experiences during the course of their language learning, providing time-linked qualitative diary data that revealed individual variation in FLA. Interviews and classroom observations, by contrast, were typically used to support or elaborate on findings from other data sources. Studies such as those by Elahi Shirvan and Taherian (2021) and Kruk (2018) conducted interviews at multiple time points to gain a deeper understanding of learners' self-reported changes, while Kasbi and Elahi Shirvan (2017) incorporated repeated classroom observations to identify behavioural and non-verbal behaviours indicating the learner's FLA state. Overall, the instruments used across the included studies varied considerably in format, temporal sensitivity, and degree of structure, reflecting that a wide range of approaches are being used to examine how FLA changes over time.

4.2.5. Indications of change in foreign language anxiety

The studies reviewed employed a variety of quantitative analytical techniques to examine changes in FLA, which were primarily based on repeated self-report questionnaire data. Most commonly, FLA change was assessed through traditional comparisons of FLA scores over time using descriptive statistics (e.g. Jin et al., 2017; Pan & Zhang, 2021), paired-sample *t*-tests (e.g. Liu & Xiangming, 2019; Liu & Yuan, 2021), and repeated-measures ANOVA (Dewaele et al., 2023; Kruk, 2018), among others. These methods primarily focused on detecting whether numerical differences occurred in participants' reported anxiety levels at different stages of learning. For example, Veenstra and Weaver (2022) applied Rasch modelling to track the variability in FLA across two time points using a shared logit scale, using a repeated-measures ANOVA to confirm the statistical significance of the observed change. To model change more systematically across multiple measurements, several studies (e.g. Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021) adopted latent growth curve modelling (LGCM), which allowed researchers to estimate initial levels and rates of change in anxiety across multiple time points. Peng and MacIntyre (2025) used a random intercept cross-lagged panel model (RI-CLPM) to examine within-person processes involving FLA at three time points; although primarily designed to model the reciprocal relationships among variables over time, this model also captured the temporal stability of FLA through autoregressive paths, offering indirect evidence on whether and how FLA changed at the individual level. Furthermore, in an intensive longitudinal design, Elahi Shirvan et al. (2025) applied dynamic P-technique factor analysis to examine intra-individual emotional patterns and variability in FLA, based on data collected across 264 daily measurement points.

In studies using simplified rating tools such as emotion grids and motometers, change in FLA was typically indicated through visual and descriptive means rather than formal statistical modelling. Learners' repeated self-ratings were plotted across sessions or within-session intervals to illustrate fluctuations in FLA intensity (e.g. Kruk, 2018, 2021, 2022). In studies employing the idiodynamic method, dynamic FLA ratings were represented using bitmapped graphs (e.g. MacIntyre & Gregersen, 2022; Saghafi & Elahi Shirvan, 2020), which visually mapped second-by-second fluctuations in FLA intensity across the duration of a task. In one study, Kohonen's Self-Organizing Maps (SOMs; Kohonen, 1982) were used to detect changes in FLA by clustering repeated emotional ratings into distinct states over time, offering another visual approach to indicating variations in FLA profiles (De Ruiter et al., 2019). Beyond self-reported visual ratings, a smaller number of studies utilised physiological data to more objectively capture real-time changes in FLA. In studies that incorporated physiological indicators, changes in FLA were indicated through shifts in biological responses that aligned with specific moments of language use. For example, heart rate data (Gregersen et al., 2014; Wilang & Vo, 2018) were recorded continuously during language use tasks, with real-time fluctuations in physiological signals used to indicate moment-by-moment changes in FLA.

In addition to numerical and physiological indicators, several studies drew on qualitative data to examine how FLA changed over time or across learning events. In studies that used qualitative approaches such as interviews, learner diaries, and classroom observations, FLA change was indicated through participants' verbal or written reflections, as well as through observable classroom behaviours. These studies typically applied content (e.g. Gkonou, 2013; Saghafi et al., 2017) or thematic analysis (e.g. Sun, 2024), or grounded theory approaches (e.g. Elahi Shirvan & Taherian, 2021), to analyse recurring references to FLA and compare how it was expressed or described at different points in time. Together, these approaches illustrate the diverse ways in which changes in FLA have been identified, ranging from statistical comparisons and visual trajectories to physiological responses and narrative qualitative accounts. To provide a concise overview of the included studies, Table 3 presents a consolidated summary of their key characteristics. While the specific data items were detailed in the methods section, this table serves to visually integrate the studies' core features and support the presentation and interpretation of results throughout the paper.

4.3. Risk of bias in studies

All included studies met the two MMAT screening criteria: they clearly stated the research questions and collected data appropriate to addressing those questions. This ensured a minimum level of conceptual and methodological coherence across the included studies. In terms of methodological classification, the included studies were distributed across four of the five MMAT categories. Specifically, eight studies were qualitative, 22 were quantitative non-randomised, two were quantitative descriptive, and 17 employed mixed methods. No studies fell into the randomised controlled trials category. This distribution reflects the eligibility criteria of the review, which focused exclusively on observational studies examining changes in FLA. Regarding the number of MMAT criteria met, all included studies fulfilled at least three of the five quality indicators. Of these, 17 studies met five criteria, 21 met four, and 11 met three, which indicates that the overall methodological quality was moderate to high. Overall, the included studies were of adequate quality to inform the analysis of FLA change.

4.4. Understanding the dynamic nature of FLA: timeframes and quality considerations

4.4.1. Variation regarding temporal scope

In addition to the methodological characteristics and indicators of change previously described, this section focuses on the outcomes reported in the included studies. In relation to timescales, the included studies were previously categorised as adopting macro-, meso-, or micro-level temporal scopes, and the outcome patterns varied across these categories. Among the studies using macro-level timescales, such as semester- or programme-length designs, a majority reported gradual decreases in FLA (e.g. Liu & Xiangming, 2019; Yu et al., 2022), while some described stable levels of anxiety across the study period (e.g. Alamer & Lee, 2021; Dewaele et al., 2022; Dewaele et al., 2023), a smaller number noted increases (e.g. Jee, 2014). Studies employing meso-level timescales, such as those tracking changes across sessions or days, more frequently identified fluctuating patterns of FLA (e.g. Kruk, 2021, 2022). In the micro-level studies, which focused on within-task or moment-to-moment shifts, the most commonly reported outcome was fluctuation. These studies (e.g. Aubrey, 2022; He et al., 2021; Li, 2024; Zhang & Wu, 2024) often captured anxiety as varying in real time, in response to specific interactional or task-related features. Overall, changes in FLA were reported across all temporal scopes, although the forms and patterns of change differed according to the level of granularity afforded by the study design.

4.4.2. Variation regarding methodological quality

This section further explores how reported changes in FLA may related to the methodological rigour of the included studies, as assessed using the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018). All studies addressed change in some form, but the ways in which FLA changed differed substantially across studies. To provide a more nuanced understanding, the reported changes in FLA are examined in relation to methodological quality. Specifically, studies that met four or five MMAT criteria ($n = 38$) consistently described some form of change in FLA. These changes included fluctuations during classroom interactions or tasks (e.g. Boudreau et al., 2018; Gregersen et al., 2014; Wilang & Vo, 2018), gradual decreases over time (e.g. Liu, 2014; Liu & Xiangming, 2019; Veenstra & Weaver, 2022), and patterns of relative stability across timepoints (e.g. Liu & Yuan, 2021; Saito et al., 2025). Several studies also revealed that trajectories of FLA varied considerably across individuals, which reflects the dynamic and person-specific nature of FLA development (e.g. Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021). Studies that met three MMAT criteria ($n = 11$) reported diverse trajectories in FLA, including stable levels across the study period (e.g. Alrabai & Moskovsky, 2016), decreases (e.g. Wu, 2011),

Table 3
Characteristics of included studies.

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/Interval/ Duration	Analytical methods to indicate change	FLA change results
1	Alamer and Lee (2021)	Broader Affective-Motivational Frameworks	English/ Saudi Arabia	160	Higher Education	FLA	Questionnaire	10- item scale assessing language anxiety (Gardner, 2010)	3/10 weeks; 7 weeks/ 17 weeks	Descriptive statistics; a cross-lagged panel analysis	Stable
2	Arabai and Moskovsky (2016)	Conceptualisation of FLA	English/ Saudi Arabia	252	Higher Education	FLA	Questionnaire	10 items (learner anxiety)	2/3 months/One semester	Descriptive statistics; <i>t</i> -test	Stable (transient nature)
3	Aubrey (2022)	CDST	English/ China (Hong Kong)	4	University-level L2 learners performing a 3 min monolog task (laboratory)	State FLA	Idiodynamic approach	Idiodynamic self-rating	Continuous during task (180)/A second/ 3 min	Idiodynamic self-rating score (graph)	Fluctuated
4	Bielak and Mystkowska-Wiertelak (2024)*	Conceptualisation of FLA (CDST-informed)	English/ Poland	10	Higher Education	State FLA	Idiodynamic approach	Idiodynamic self-rating (Anion Variable Tester V2 software)	272-600 times (M = 479.4)/1 s/272-600 s	Idiodynamic self-rating score (graph)	Fluctuated
5	Boudreau et al. (2018)	CDST	French/ Canada	10	Oral communication tasks (Higher Education) (Laboratory)	State FLA	Idiodynamic approach	Idiodynamic self-rating (software: Anion variable tester V2)	2 idiodynamic self-rating sets/1 s/Each task: 3-5 min	Idiodynamic self-rating score (graph)	Fluctuated
6	De Ruiter et al. (2019)	CDST + Ecological Psychology	English/ Iran	2	Higher Education (Conversation)	Foreign language classroom anxiety	Behavioral coding mapped to time series	Kohonen's Self-Organizing Maps (SOMs) (Tanagra software program)	Continuous coding during 8 min interaction/1 s/8 min	Kohonen's self-organizing Maps (SOM)	Fluctuated
7	Derakhshan and Fathi (2024)*	Broader Affective-Motivational Frameworks	English/ Iran	879	Higher Education	FLA	Questionnaire	8-item FLA scale adapted from Jiang and Dewaele (2019)	2/6 months/6 months	Cross-lagged panel analysis via SEM; Autoregressive path	Relatively stable
8	Dewaele et al. (2022)	Conceptualisation of FLA	English, German, Spanish and French/ Kuwait	360	Higher Education	FLA	Questionnaire	The 8-item scale extracted from FLCAS	4/2 weeks/One semester	Descriptive statistics; Linear mixed-effects modelling	Stable
9	Dewaele et al. (2023)	Conceptualisation of FLA	English, German, Spanish and French/ Kuwait	360	Higher Education	FLA	Questionnaire	The 8-item scale extracted from FLCAS	4/Following the course calendar/One semester	Descriptive statistics; repeated measures ANOVA; Linear mixed-effects modelling	Stable
10	Elahi Shirvan et al. (2018)	CDST	English/ Iran	367/4	Higher Education	FLA	Questionnaire; motometer; journal	4 items from Saito, Garza, and Horwitz (1999) FLRAS	4 times (questionnaire); 9*4 (motometer); 4 times (journal)/2 weeks; 10 min; 2 weeks/8 weeks	Descriptive statistics; latent growth curve modelling	Decrease; variance (across person)
11	Elahi Shirvan and Taherian (2021)	CDST	English/ Iran	367/4	Higher Education	Foreign language classroom anxiety	Questionnaires; motometer; journal; interview	The 8 items from the well-establishes FLCAS; The motometer were	4 times (questionnaire); 9*4 (motometer); 4 times (interview; journal)/	Latent growth curve modelling; qualitative analysis	Decrease; Significant variance (Qual)

(continued on next page)

Table 3 (continued)

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/Interval/ Duration	Analytical methods to indicate change	FLA change results
12	Elahi Shirvan et al. (2025)*	CDST	English/ Iran	1	Private Institute	FLA	Questionnaires	adopted from Waning et al. (2014) Daily repeated FLCAS over 12 months	2 weeks; 10 min; 2 weeks/8 weeks 264/A day/1 year	via grounded theory Dynamic P-technique factor analysis; autoregression; cross-lagged modelling	Dynamism
13	Elahi Shirvan and Talebzadeh (2017)	CDST	English/ Iran	2	University EFL learners in recorded oral interview tasks (Laboratory-like setting)	State foreign language learning anxiety	Idiodynamic approach	Video-stimulated recall and real-time self-rating (-5 to +5 scale)	4 tasks * second-by-second measurement/A second/4 tasks	Idiodynamic self-rating score (graph)	Fluctuated
14	Gardner et al. (2004)	Broader Affective-Motivational Frameworks	French/ Canada	91/57	Higher Education	French class anxiety; use anxiety; state anxiety	Questionnaire; thermometer (state)	AMTB (Gardner, 1985) included French class anxiety & French use anxiety; thermometer; state anxiety items	2; 4/6 months; a month/6 months	Single factor repeated-measures analyses of variance (ANOVA)	Decrease (French class anxiety); Stable (French use anxiety); some variation in state anxiety (the fluctuations are relatively subdued)
15	Gkonou (2013)	Conceptualisation of FLA	English/ Greece	8	Private language school (adults)	FLA	Diaries	Diaries	8/A week/8 weeks	Content analysis	Not remained constant (fluctuated)
16	Gregersen et al. (2014)	CDST	Spanish/ USA	6	Higher Education	State FLA	Idiodynamic approach; heart rate monitor	Idiodynamic self-rating; wristwatch heart monitors with a chest strap	42 times/5 s/3.5 min	Idiodynamic self-rating score (graph); heart rate in beats (graph)	Fluctuated
17	He et al. (2021)	CDST	English/ China	4	Higher Education	State FLA	Idiodynamic approach	Idiodynamic self-rating (Anion Variable Tester V2 software)	Continuous during task/A second/90 min	Idiodynamic self-rating score (graph)	Fluctuated
18	Hurd (2007)	Broader Affective-Motivational Frameworks	French/UK	145	Higher Education	FLA	Questionnaires	Researcher-designed questionnaire based on MacIntyre and Gardner (1994)	2/8 months/8 months	Descriptive Statistics (frequencies)	Directionally mixed change
19	Huynh (2021)	CDST	English/ Vietnam	21	Higher Education (online; Covid-19)	FLA	Questionnaire; journal	FLCAS; journal	5/A week/5 weeks	Descriptive statistics; Friedman test; thematic analysis	Stable (overall); fluctuate (individual)
20	Jee (2014)	Conceptualisation of FLA	Korean/ USA	12	Higher Education	FLA	Questionnaire	FLCAS	2/Around 2 semesters/2 semesters	Descriptive statistics; paired samples t-test	Increase (total)
21	Jin et al. (2015a)	Conceptualisation of FLA	English; Japanese/ China	146	Higher Education	FLA	Questionnaire	FLCAS (English and Japanese)	2/2 months/2 months	Descriptive statistics; paired sample t tests	English (stable); Japanese (decrease)
22	Jin et al. (2015b)	Conceptualisation of FLA	English; Japanese/ China	146	Higher Education	FLA	Questionnaire	FLCAS (English and Japanese)	2/2 months/2 months	Descriptive statistics	English (stable); Japanese (decrease)

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Table 3 (continued)

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/Interval/ Duration	Analytical methods to indicate change	FLA change results
23	Jin et al. (2017)	Conceptualisation of FLA	English; Japanese/ China	146	Higher Education	FLA	Questionnaire	FLCAS (English/ Japanese)	2/2 months/2 months	Descriptive statistics	English (stable); Japanese (decrease)
24	Kasbi and Elahi Shirvan (2017)	The Nested Ecosystems Model (Bronfenbrenner, 1979, 1993) & CDST	English/ Iran	4	English Institute	FLSA (speaking)	Motometer; semi-structured interview; observation	Motometer; semi-structured interview; observe verbal and non-verbal behaviours	9 times * 5 (not all 9 times in each session); 5 times/ Every 10 min; every session/From January to February 2016; during 5 sessions of 90 min	Graphs; ecosystem system; qualitative analysis	Fluctuated (individual differences)
25	Koga (2010)	Broader Affective-Motivational Frameworks	English/ Japan	93	Higher Education	FLA	Questionnaires	Items used in Schmidt and Watanabe (2001)	2/4 months/4 months	Descriptive statistics; paired t-tests	Decrease
26	Kruk (2016)	Conceptualisation of FLA	English/ Poland	16	Virtual world (second life); Higher Education	FLA	Grids	Grids (Self-rating scale)	3 for each session (3–8 sessions)/1/3 session/A summer semester	Graphs; paired sample t-test	Stable
27	Kruk (2018)	Conceptualisation of FLA	English/ Poland	52/12	High School	FLA	Questionnaire; Grid; evaluation questionnaire; interview	FLCAS; a foreign language anxiety grid (a scale ranging from 1 to 7); evaluation questionnaire (indicated their feelings with regard to FLA that they experienced in each lesson)	FLCAS (3 times); Grid (4 times/each lesson; 30 lessons in G1; 26 in G2; 31 in G3; 34 in G4); An evaluation form (each lesson) interview (3 times)/ FLCAS (at the beginning, middle and end of the study); Grid (10 min); Evaluation questionnaire (Each lesson); interview (at the beginning, middle and end of the study)/A semester	Descriptive statistics; ANOVA with repeated measures; thematic analysis	Fluctuated across different group (G1; G2; G3; G4); decrease (from beginning of class to end, 10 min interval); fluctuated from one lesson to next (most conspicuous patterns had been mentioned); fluctuated (interview)
28	Kruk (2021)	Conceptualisation of FLA	English/ Poland	1	Virtual world (Second Life); Higher Education	FLA	Grids	A self-rating scale range from 1 to 7	3*14/Each visit the virtual world (at the beginning, middle and the end of each session)/14 sessions over a period of one semester	Descriptive statistics	Fluctuated (some changes both during her visits to Second Life and from one session to the next)

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Table 3 (continued)

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/Interval/ Duration	Analytical methods to indicate change	FLA change results
29	Kruk (2022)	CDST	English/ Poland	2	Virtual world (Second Life); Higher Education	FLA	Grids	A self-rating scale range from 1 to 7	3*7; 3*8/Every visit the virtual world of second life (at the beginning, middle and the end of each session)/7 sessions; 8 sessions	Descriptive statistics	Fluctuated (changes in the levels of the variables in question both during single visits and from one visit to another)
30	Li (2024)*	CDST; Emotional dynamic modelling	English/ China	5	Higher Education	FLA	Repeated dynamic self-ratings via AVT software during video-recall	Anion Variable Tester (AVT) software	Continuous during task/A second/300 s	Emotional curves (graph)	Fluctuated
31	Liu (2014)	Conceptualisation of FLA	English/ China (Taiwan)	143	Higher Education	FLA	Questionnaire	FLCAS	2/One academic year/One academic year	Descriptive statistics; ANOVA repeated measure; multivariate analysis of variance (MANOVA) a paired-samples <i>t</i> -test	Decrease
32	Liu and Dong (2023)	Conceptualisation of FLA & FLRA	English/ China	71	Higher Education	FLRA (reading)	Questionnaire	Foreign language reading anxiety scale (Saito et al., 1999)	3/4 weeks/One semester	Descriptive statistics; parallel latent growth models; cross-lagged regression analyses.	Increase (T1-T2); Decrease (T2-T3)
33	Liu and Xiangming (2019)	Conceptualisation of FLA	English/ China	324	Higher Education	FLA	Questionnaire	ELCAS	2/10 weeks/10 weeks	Descriptive statistics; paired samples <i>t</i> -test results	Decrease
34	Liu and Yuan (2021)	Conceptualisation of FLA & FLLA	English/ China	182	Higher Education (Covid-19); (online teaching and learning environment)	FLA; FLLA (listening)	Questionnaire	FLCAS; 20-item foreign language listening anxiety scale (FLLAS) was adopted from that used in Zhang (2013)	2/13 weeks/A semester	Descriptive statistics; paired sample <i>t</i> -test	Stable (no statistically significant differences occurred in any of the scales)
35	MacIntyre and Gregersen (2022)	CDST	English/ Canada	9 same-sex dyads (reported 2 dyads)	Higher Education (Conversation) (Laboratory)	State FLA (communication anxiety)	Idiodynamic approach	Idiodynamic self-rating (software)	One session per participant (3–4 min); (180/181)/1 s/ A conversation (3–4 min)	Idiodynamic self-rating score (bitmap graph)	Fluctuated

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Table 3 (continued)

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/Interval/ Duration	Analytical methods to indicate change	FLA change results
36	Mahmoodzadeh (2015)	CDST	English/ Iran	33	Language Institution	Foreign language classroom anxiety	Mini-stopwatches; Grids	Mini-stopwatches/ Grids	Ongoing; 18/ Ongoing; 15 min/A week; 270 min	Temporal scattergram; Descriptive statistics	Fluctuated
37	Muftah and Alhazmi (2024)*	CDST	English/ Saudi Arabia	4	Higher Education	State FLA	Idiodynamic approach	Idiodynamic self-rating (software)	Continuous during task/A second/4 min	Reported qualitatively without figures	Fluctuated
38	Pan and Zhang (2021)	Conceptualisation of FLA	English/ China	55	Higher Education	FLA	Questionnaire	8 items from FLCAS	42/Each session/14 weeks	Descriptive statistics	Fluctuated during the 42 times
39	Peng and MacIntyre (2025)*	CDST	English/ China	1115	Senior High School	FLA	Questionnaires	The short-form foreign language classroom anxiety scale	3/approx. 1 month (September, November, December)/a semester	RI-CLPM (Random Intercept Cross-Lagged Panel Model)	Fluctuated (early) then stabilised
40	Piniel and Albert (2024)*	CDST	English/ Hungary	101	High School	FLA	Questionnaire	5-item FLA scale	4/Each academic semester (approx.6 months)/2 years	Latent Growth Curve Modelling	No significant mean-level change; quadratic slope model fit best; significant individual variation in change trajectories
41	Saghafi et al. (2017)	The Nested Ecosystems Model (Bronfenbrenner, 1979, 1993)	English/ Iran	4	A Language Institute	FLWA (writing)	Journal; task-motometer; semi-structured stimulated recall interviews	Journal; task-motometer; interview	10/One session/10 sessions	Qualitative content analysis; nested ecosystems model (analytical framework)	Fluctuated
42	Saghafi and Elahi Shirvan (2020)	CDST	English/ Iran	4	Private Institute	State FLA	Idiodynamic approach	Idiodynamic self-rating (software: Anion variable tester)	4 idiodynamic self-rating sets/1 s/4 recordings	Idiodynamic self-rating score (graph)	Fluctuated (across different students and topic)
43	Saito et al. (2025)*	Broader Affective-Motivational Frameworks	English/ Japan	121	High School	Foreign language classroom anxiety	Questionnaire	8-item FLCA scale first used by Dewaele and MacIntyre (2014)	3/Approx. 6 months/ 1.5 year	Descriptive statistics; repeated measures ANOVA	Stable
44	Sun (2024)*	Broader Affective-Motivational Frameworks	English/ China	12	Higher Education	FLA	Weekly reflection	Weekly reflective journals	14/A week/One semester	Thematic analysis	Change; fluctuated and divergence (FLA decreased mid-semester for most students, then diverged by individual toward the end; change was clearly documented through participant narratives)

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Table 3 (continued)

IDs	References	Theoretical framework of FLA change	Target Language/ Study Country	Sample Size	Context	Type of FLA	Methods for Measuring FLA repeatedly	Instruments	Timepoints/Interval/ Duration	Analytical methods to indicate change	FLA change results
45	Veenstra and Weaver (2022)	Conceptualisation of FLA	English/ Japan	341	Higher Education	FLSA (speaking)	Questionnaire	18 items were selected from PSCAS (Yaikhong & Usaha, 2012) and the FLCSAS (Apple, 2013); a number of items are adaptations of items found in the FLCAS and the SLSAS (Cheng, 2017).	2/15 weeks/15 weeks	Descriptive statistics; a repeated measures ANOVA; Rasch Rating Scale Model	Decrease (overall); items (stable; varied)
46	Wilang and Vo (2018)	CDST	English/ Thailand	6	Higher Education	State FLA (speaking)	Idiodynamic approach; heart rate monitor observation	Idiodynamic self-rating (software: Anion variable tester); heart rate monitor (wristwatch; Vivosmart HR 3.30)	Moment-by-moment during speaking tasks/5 s/One speaking session	Idiodynamic self-rating score (graph); heart rate in beat (graph)	Fluctuated (across different person)
47	Wu (2011)	Conceptualisation of FLA	English/ China (Taiwan)	91	Higher Education	FLA; FLRA (reading)	Questionnaire	FLCAS FLRAS (Saito et al., 1999)	2/8 weeks/8 weeks	Descriptive statistics; two separate dependent t-tests	FLA (decrease); reading anxiety (stable)
48	Yu et al. (2022)	CDST	English/ China	176	Higher Education	FLA	Questionnaire	8 items	6/2 months/12 months	Latent growth curve modelling; Growth mixture modelling	Decrease (overall); decrease; increase; stable (across different classes)
49	Zhang and Wu (2024) *	CDST	English/ China	5	University EFL listening tasks (Higher Education)	State FLA (listening)	Idiodynamic approach	Idiodynamic self-rating (Anion Variable Tester V2 software)	Continuous during task/A second/2 tasks	Idiodynamic self-rating score (graph)	Fluctuated

Note. Studies are numbered and listed in alphabetical order by the first author's surname. An asterisk (*) indicates studies that were identified and included during the early April 2025 search update.

or increases (e.g. Jee, 2014), or fluctuation (e.g. Pan & Zhang, 2021). Taken together, the included studies reported various outcomes related to FLA, including fluctuations, gradual decreases or increases, relative stability, and mixed patterns. No obvious difference was observed between the outcomes of studies that met four or five versus fewer MMAT criteria.

Study quality did not appear to predict the direction or presence of FLA change. The similar findings that emerged across studies of varying methodological quality strengthen confidence in the overall conclusions. Despite variation in research design and analytic approach, most studies characterised FLA as a construct that changes over time, rather than one that remains fixed. These results support a moderate level of certainty that FLA is malleable and responsive to temporal variation.

5. Discussion

This systematic review examined how FLA has been investigated as a dynamic construct, with particular attention paid to the research designs and methods used to capture variability. By synthesising the findings of empirical studies in this field, this review aimed to evaluate and elaborate on Gregersen's (2020) proposition that FLA unfolds across multiple timeframes and further investigate the view that FLA is malleable.

5.1. RQ1: what are the overall scope, theoretical frameworks, and methodological characteristics of existing empirical studies investigating foreign language anxiety across time?

5.1.1. Overall scope

Upon reviewing the 49 studies included in this review, it was clear that most focus on language anxiety related to English^(1, 2, 3, 4, 6, 7, 10, 11, 12, 13, 15, 17, 19, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49),³ with a small number examining FLA changes in other target languages (i.e. Boudreau et al., 2018; Gardner et al., 2004; Gregersen et al., 2014; Hurd, 2007; Jee, 2014). This emphasis corresponds to the widespread role of English in global language education, yet it constrains our understanding of how FLA may evolve in the context of learning other languages. Only a few studies explicitly examined learners using more than one target language (i.e. Dewaele et al., 2022, 2023; Jin et al., 2015a, Jin et al., 2015b, 2017), and comparative approaches remain under-represented in the literature. The countries in which the studies were conducted spanned multiple continents, yet there was a clear concentration in East and West Asia, especially China^(3, 17, 21, 22, 23, 30, 31, 32, 33, 34, 38, 39, 44, 47, 48, 49) and Iran^(6, 7, 10, 11, 12, 13, 24, 36, 41, 42). In contrast, contributions from North America (i.e. Boudreau et al., 2018; Gardner et al., 2004; Gregersen et al., 2014; Jee, 2014; MacIntyre & Gregersen, 2022) and Europe^(4, 15, 18, 26, 27, 28, 29, 40) were more limited. Notably, no studies were identified from African or Oceanic regions. This geographical distribution highlights the need for broader representation to examine how FLA develops in different instruction systems and research environments.

Most studies were situated in university classrooms, reflecting the dominance of higher education contexts in FLA research^(1, 2, 4, 6, 7, 8, 9, 10, 11, 14, 16, 17, 18, 19, 20, 21, 22, 23, 25, 30, 31, 32, 33, 34, 37, 38, 44, 45, 46, 47, 48, 49). Although less common, studies conducted in laboratory settings (i.e. Aubrey, 2022; Boudreau et al., 2018; Elahi Shirvan & Talebzadeh, 2017; MacIntyre & Gregersen, 2022), language institutions (i.e. Elahi Shirvan et al., 2025; Gkonou, 2013; Kasbi & Elahi Shirvan, 2017; Mahmoodzadeh, 2015; Saghafi et al., 2017; Saghafi & Elahi Shirvan, 2020), virtual environments (i.e. Kruk, 2016, 2021, 2022), and high school (i.e. Kruk, 2018; Peng & MacIntyre, 2025; Piniel & Albert, 2024; Saito et al., 2025) point to a growing interest in examining FLA across more diverse educational contexts. However, research on FLA beyond higher education remains relatively limited, and future studies are needed to better understand how FLA unfolds in different learning contexts. At the same time, the sample sizes varied across the included studies, generally reflecting their methodological focus. Smaller samples were typical of qualitative or fine-grained designs^(3, 4, 5, 6, 12, 13, 15, 16, 17, 24, 26, 28, 29, 30, 35, 37, 41, 42, 44, 46, 49), while larger surveys were used to capture broader trends^(1, 2, 7, 8, 9, 10, 11, 14, 18, 21, 22, 23, 25, 31, 32, 33, 34, 39, 40, 43, 45, 47, 48). However, including a longitudinal component in the study design posed a significant challenge in maintaining consistent participation across various testing phases (Abshire et al., 2017). Consequently, studies with relatively large sample sizes were rare (i.e. Derakhshan & Fathi, 2024; Peng & MacIntyre, 2025), which is likely due to the difficulties in ensuring continuous engagement over time (Maurice et al., 2017).

5.1.2. Theoretical framework

The reviewed studies demonstrated varied forms of theoretical and conceptual engagement with the dynamic nature of FLA. A large proportion were guided by conceptual understandings that framed FLA as a situation-specific and potentially variable emotional construct^(2, 4, 8, 9, 15, 20, 21, 22, 23, 26, 27, 28, 31, 32, 33, 34, 38, 45, 47). These studies often referred to foundational definitions and early longitudinal research to support the idea that FLA can change over time. Although they did not always invoke formal theories or propose mechanisms of change, nonetheless, they reflect a growing empirical interest in capturing the temporal dynamics of anxiety and contribute to the field's shift away from static representations. Some studies^(1, 7, 14, 18, 25, 43, 44) approach FLA through broader affective or motivational frameworks, offering useful insights into how anxiety interacts with other psychological variables and how learners' emotions may evolve as part of their broader motivational and affective development. While these studies were not always primarily focused on FLA, they supported a view of it as a dynamic component of the learner's experience.

In the reviewed studies, the most common theoretical framing of FLA drew on CDST (complex dynamic systems theory)^{(3, 5, 6, 10, 11,}

³ Superscript numbers indicate the study IDs, which correspond to the full list of included studies provided in Table 3.

12, 13, 16, 17, 19, 24, 29, 30, 35, 36, 37, 39, 40, 42, 46, 48, 49), which emphasises the role of time, contextual interaction, and systemic complexity in shaping emotional trajectories (Kruk, 2022; Larsen-Freeman & Cameron, 2008). CDST thus provides a valuable foundation for framing FLA as a temporally unfolding and systemically embedded phenomenon. Some studies further expand this perspective by incorporating ecological models (Bronfenbrenner, 1979, 1993), which makes visible the nested and interdependent nature of learners' environments. From this standpoint, changes in FLA are seen as co-constructed through interactions at multiple contextual levels, including classroom practices, institutional structures, and sociocultural settings (Saghafi et al., 2017). Collectively, these theoretical and conceptual orientations reflect an expanding recognition that FLA is not fixed, but varies across different times and contexts. Whether through formal theory or conceptual framing, the studies reviewed contribute to a more dynamic understanding of anxiety in language learning.

5.1.3. Methodological characteristics

The reviewed studies revealed a broad range of methodological strategies for examining the temporal dimension of FLA. This variation underscores the diverse ways in which researchers have approached the question of how FLA may evolve across different timeframes. While there is no single consensus on how FLA change should be studied, the diversity of designs suggests a growing methodological openness to capturing the dynamics of FLA.

Studies with macro-level timescale designs, which were the most common in this review, typically involved two or more measurement points spaced across several months or academic terms. These types of studies play an important role in challenging static conceptions of FLA by documenting longer-term changes, often in relation to broader educational or developmental experiences. Most of the macro-level studies (1, 2, 7, 8, 9, 12, 14, 18, 19, 20, 21, 22, 23, 25, 31, 32, 33, 34, 38, 39, 40, 43, 45, 47, 48) adopted self-report questionnaires administered at relatively wide time intervals, a design choice that aligns with trait-oriented perspectives. As a result, while these studies provide valuable evidence of change, their relatively low measurement density limited the extent to which fluctuation, reversals, or nonlinearity could be observed and offered only a partial view of the temporal complexity involved in learners' affective experiences (Elahi Shirvan & Talebzadeh, 2017).

In contrast, studies situated within meso- or micro-level timescales adopted methods attuned to temporal dynamics; measuring anxiety either across several sessions or within discrete moments of language use, these studies captured shorter-term shifts that would be missed by macro-level timescale designs. A range of tools – including grid, motometer, and idiodynamic procedures – facilitated this higher temporal resolution (3, 4, 5, 13, 16, 17, 26, 28, 29, 30, 35, 37, 41, 42, 46, 49). In particular, the use of idiodynamic methods enabled researchers to detect highly individualised, moment-to-moment shifts in learners' FLA, revealing nuances that might be missed in broader temporal analyses (Elahi Shirvan & Talebzadeh, 2017). In addition, several studies employed physiological measures such as heart rate monitoring, offering alternative and non-verbal indicators of affective change (Wilang & Vo, 2018). While these approaches varied in intensity and scope, they collectively provide valuable insights into the short-term dynamics of FLA and expand the methodological repertoire available for capturing FLA at finer timescales.

A small number of studies combined multiple timeframes within a single study, capturing both longer-term trends and short-term fluctuations in FLA. By integrating tools such as questionnaires, repeated-session ratings, and journals, these studies (i.e. Elahi Shirvan et al., 2018; Elahi Shirvan & Taherian, 2021; Kasbi & Elahi Shirvan, 2017; Kruk, 2018; Mahmoodzadeh, 2015) provide a more nuanced understanding of how anxiety changes over time. Although the instruments employed were not necessarily intended to produce consistent or unified results in the ways that linear approaches might, the use of multiple data sources at the individual level, even within relatively brief time periods, enabled researchers to capture meaningful aspects of the dynamic nature of FLA (Wilang & Vo, 2018). For example, Kruk (2018) demonstrated that while FLA appeared to change gradually over the course of a semester, its patterns across and within individual lessons often diverged, highlighting the distinct insights offered by exploring different temporal frames. These approaches remain rare but illustrate the potential of viewing FLA as a multi-scale phenomenon rather than a single-track process.

In addition, qualitative methods, including interviews, learner diaries, and classroom observations, were featured in several studies. While often used to complement quantitative data, a smaller group of studies (i.e. Gkonou, 2013; Sun, 2024) employed them as the primary means of tracking changes in FLA over time. Temporally structured diaries and interviews offered insights into learners' emotional experiences that might not easily be accessed through structured instruments. However, qualitative research remains relatively limited in the domain, and its findings, while rich in contextual and individual detail, are typically drawn from small samples, which may limit their transferability to broader populations. Still, such studies contribute meaningfully to the literature by revealing the subjective and contextualised nature of FLA fluctuations, underscoring the need for more interpretive approaches alongside statistical ones.

Overall, the reviewed studies demonstrate increasing methodological sensitivity to the temporal dimension of FLA. The use of varied timeframes and a wider range of data collection tools has enabled more detailed observations of how FLA may shift over time. Nonetheless, relatively few studies have attempted to systematically connect changes occurring at different temporal levels or examine how patterns observed at one measurement scale may relate to those at another. The following section explores how change has been operationalised, indicated, and interpreted across the reviewed studies.

5.2. RQ2: how is change in foreign language anxiety identified and represented across empirical studies?

Change in FLA is not simply observed, it is shaped by how researchers choose to define, measure, and represent it. In the reviewed studies, different approaches constructed change in different ways, reflecting varied assumptions about what counts as meaningful variation over time. Many studies indicated change through statistical comparisons across time points, typically using repeated-

measures methods to assess whether FLA increased, decreased or remained stable (2, 8, 9, 14, 18, 19, 20, 21, 22, 23, 25, 27, 31, 33, 34, 38). This approach provided clear evidence of whether change occurred but often treated change as linear, generalisable, and centred on group averages. Although these methods challenge the notion of FLA as a fixed trait, they tend to conceptualise change in a uniform and unidirectional manner, offering limited insight into fluctuation, instability, or non-normative developmental pathways. Traditional statistical methods are designed to capture overall group performance and offer a broad perspective, but gaining a more profound understanding of the language acquisition process requires paying close attention to the nuanced, often messy details of individual experiences (De Bot et al., 2007).

A smaller set of studies took a more process-oriented approach by applying techniques such as LGCM (latent growth curve modelling) (i.e. Elahi Shirvan & Taherian, 2021; Liu & Dong, 2023; Piniel & Albert, 2024; Yu et al., 2022) or dynamic P-technique factor analysis (Elahi Shirvan et al., 2025), which enabled them to trace intra-individual patterns of emotional variability across time. Similarly, several studies (i.e. Alamer & Lee, 2021; Derakhshan & Fathi, 2024; Peng & MacIntyre, 2025) applied cross-lagged panel models, which inferred change in FLA through the strength and significance of autoregressive paths, offering insights into the degree of temporal stability or variability across measurement points. In light of this, employing a dynamic and nonlinear analytical approach is essential for gaining deeper insights and a more comprehensive understanding of the fluctuations in learners' FLA (He et al., 2021). However, while these models offer more nuanced insights into individual-level trajectories, much of the research continues to represent change in simplified terms, leaving limited space for capturing the full complexity, fluctuation, and diversity of learners' emotional experiences over time.

Graphical representations of change, such as emotion grids (i.e. Kruk, 2016, 2018, 2021, 2022), motometers (i.e. Elahi Shirvan et al., 2018; Kasbi & Elahi Shirvan, 2017; Saghafi et al., 2017), and idiodynamic graphs (3, 4, 5, 13, 16, 17, 30, 35, 42) offer another way of making change visible. These approaches emphasise moment-to-moment responsiveness, and in this context, they were often used to align changes in FLA with task-level events; but while they provided an intuitive sense of fluctuation, they were often descriptive and focused on individuals, offering valuable insights into within-person variability. However, the highly individualised nature of these approaches often limits the extent to which findings can be transferred to other learners or contexts. In many cases, they presented variation as evidence of dynamism without addressing how such variation relates to broader developmental patterns.

Physiological measures offered yet another way of indicating change, using real-time data such as heart rate (i.e. Gregersen et al., 2014; Wilang & Vo, 2018) to capture embodied responses during language use. These tools provide high temporal resolution and bypass self-report biases, but their interpretation remains challenging. In the included studies, without integration with subjective or contextual data, it was often unclear what the changes in FLA represented. Additionally, promising physiological indicators were rarely linked to broader timescales, limiting their usefulness in understanding how FLA evolves across different temporal levels. Alongside these approaches, the qualitative studies (i.e. Gkonou, 2013; Sun, 2024) introduced a different set of assumptions. Rather than measuring change, they traced how learners narrated, made sense of, and redefined their anxiety experiences across time. These approaches emphasised meaning and subjectivity, often revealing emotional shifts that would not necessarily appear in numeric trends. However, the lack of systematic temporal framing made it more difficult to integrate these findings with models that address how change unfolds over time.

In summary, these diverse strategies reveal that identifying change is not merely about detecting statistical differences, but is about shaping how change is conceptualised, measured, and evaluated. Whether derived from self-reported data, physiological recordings, visual materials, or narrative accounts, each type of data highlights certain dimensions of experience while leaving others less visible. Moving forward, more integrative approaches are needed. These should span timescales, attend to both individual-level variability and broader group-level patterns, and critically reflect on the assumptions embedded in how change is measured and represented.

5.3. RQ3: to what extent is foreign language anxiety shown to be malleable across different timeframes?

Although the reviewed studies document a wide range of change patterns, the malleability of FLA appears to be empirically supported. Evidence of change is observed across all timeframes, from longer-term developments captured through macro-level designs to momentary shifts revealed by dense, short-interval sampling. These findings underscore the temporal complexity of FLA, with changes unfolding over minutes, weeks, and months aligning with Gregersen's (2020) claim that FLA operates across multiple timescales and reflects a fundamentally dynamic process. However, the nature of this change varied considerably in the included studies. Micro- and meso-level studies often emphasise dynamic, individualised trajectories that unfold across tasks or sessions, while macro-level studies tend to capture more gradual, directional patterns over weeks or months. Across these different designs, consistent evidence of change suggests that FLA is not a fixed construct but one that displays variability across time. Different timescales and methodological approaches illuminate distinct dimensions of this variability, highlighting the dynamic and multifaceted character of FLA.

Importantly, the observed patterns of change were not simply artefacts of measurement. The credibility of the observed changes in FLA is supported by the methodological adequacy of the included studies, nearly all of which met the two universal MMAT (Hong et al., 2018) screening criteria and at least three of the five quality indicators. Rather than producing change, methodological design shaped the types of change that became observable. As such, findings from diverse studies suggest that the malleability of FLA may not solely reflect the influence of specific instruments but could also be a feature of the construct itself, as observed across different methods, timeframes, and research designs. In the included studies, variability in FLA appeared to differ according to how it was operationalised. From this perspective, methodological diversity has the potential to enhance, rather than undermine, the field's understanding of FLA as a temporally sensitive and multidimensional phenomenon. At the same time, it is important to note that some studies reported little or no observable change in FLA (1, 2, 7, 8, 9, 19, 26, 34, 43). However, such findings should not be taken as definitive evidence that FLA is

inherently stable or unchanging. From a dynamic perspective, what appears to be stability may represent a particular phase in an ongoing, evolving process. Such moments of relative consistency might reflect temporary equilibrium, emotional self-regulation, or contextual alignment. Apparent stability, therefore, does not necessarily contradict the potential for change; rather, it can be seen as one possible expression of affective behaviour within a broader landscape of fluctuation, adaptation, and transformation. Acknowledging both stability and variability as potentially meaningful dynamic states may offer a more nuanced understanding of how FLA can develop across different timescales.

In order to explore the potential impact of publication bias⁴ on these findings, in early April 2025, we searched for PhD dissertations in the ProQuest Dissertations & Theses database and reviewed five dissertations (Isselbaecher, 2004; Mihara, 2022; Pathan, 2012; Shinge, 2005; Siridetkoon, 2015) that met the same inclusion criteria as outlined in Table 1 (see Appendix C). While these dissertations were not formally incorporated into the synthesis, the PhD results closely aligned with those of the reviewed journal articles and revealed a similar range of FLA trajectories over time, including increases, decreases, fluctuations and periods of stability. The convergence of findings across both sources helps to reduce potential concerns regarding publication bias and further supports the review's overall conclusions.

In summary, the findings of the included studies indicate that FLA is not a fixed attribute but a dynamic construct that varies across different timescales. A more integrated approach that connects short-term fluctuations with long-term trajectories may be necessary to capture the full complexity of FLA development and further explore the underlying mechanisms of FLA change.

6. Conclusion

This systematic review synthesised 49 empirical studies to examine how the potential malleability of FLA has been investigated over time. The findings provide empirical support for the view that FLA is a dynamic construct, with variability across multiple timescales. Different methodological approaches and temporal framings were found to shape how change is detected and interpreted. Macro-level designs typically used wide-interval self-report measures, while meso- and micro-level designs employed more temporally sensitive tools such as repeated-session ratings and idiodynamic tracking. While diverse approaches have advanced understanding, further methodological development is needed to fully capture the temporal complexity of FLA. Future studies should adopt integrative approaches that foreground time, process, and individual variation. Such designs would enable a more nuanced understanding of how and why FLA develops, fluctuates, and stabilises.

The patterns synthesised in this review lend support to Gregersen's (2020) claim that FLA operates as a dynamic construct across multiple timescales, with changes unfolding at varying levels of granularity depending on how research is temporally framed. Future research might aim to verify Gregersen's (2020) claims that FLA interacts dynamically with other individual difference variables and that opposing emotions can coexist.

While this review offers a comprehensive overview of how FLA change has been methodologically approached, several limitations should be acknowledged. The review focused exclusively on observational studies and did not include evidence from experimental manipulation, which means that the findings are limited to naturally occurring changes. In addition, the review emphasised how change was identified and represented, rather than analysing the underlying mechanisms or causes of such change. Finally, only studies published in English were included, which may have excluded relevant work conducted in other languages and educational contexts. These limitations reflect the scope and framing of the review but also point to important directions for future research.

CRedit authorship contribution statement

Qian Sun: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Abdullah Alhowail:** Writing – review & editing, Methodology, Data curation. **Nadin Beckmann:** Writing – review & editing, Supervision, Methodology, Conceptualization.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.system.2025.103782>.

⁴ We thank the anonymous reviewer for encouraging us to give careful consideration to grey literature in this review. To maintain consistency in publication type and methodological reporting, this review mainly focused on peer-reviewed journal articles. However, we also reviewed five PhD dissertations that met our inclusion criteria. Although these were not incorporated into the formal synthesis, they are discussed in the main text to address potential concerns about publication bias.

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