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Sports Teams as Contexts of Cultural Change: The Roles of Culture and Social Identity in Social Dominance Orientations

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Sports Teams as Contexts of Cultural Change: The Roles of Culture and Social Identity in Social Dominance Orientations

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Abstract

Intergroup conflict and inequality are ubiquitous, but a promising pathway for change is at the individual level of social dominance orientations. Culture is one antecedent of social dominance orientations, thus a change at the cultural level could influence a change in social attitudes toward inequality. Ethnographic research has identified sports teams and their identification as a context for cultural change in athletes. The current studies sought to examine sports teams as cultural contexts that are conducive for influencing intergroup attitudes. Three cross-sectional surveys were conducted of athletes from different season times, sport types and competitive levels. Study 1 ($N = 169$) included elite team sport athletes before, during and after competitive season. Study 2 ($N = 250$) expanded to elite, lower elite and intramural level athletes in team and individual sports. The final Study 3 ($N = 50$) assessed offseason team sport athletes across competitive levels. Overall, athletes across all conditions demonstrated higher collectivism, verticality, and lower horizontality in sports contexts regardless of their team identification. Significant mediation of verticality and indirect effects of individualism and horizontality suggest that cultural values in local contexts can potentially influence the cultural antecedents of social dominance orientations, which could then impact intergroup relations.

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1. Introduction

Intergroup conflict and inequality are as salient as ever in the current social, political and cultural landscape. Institutional and societal change is necessary to address the pervasive inequalities experienced in every region of the world. Although this challenge is daunting, societal change can be wrought from the individual level through social dominance orientations (Pratto et al., 1994). Social dominance orientations are an individual's generalized orientation for social inequality through explicit social dominance values and subtler forms such as antiegalitarianist values (Ho et al., 2015). Social dominance orientations are significant predictors of a variety of social behaviours such as policy preference and social ideologies about unequal resource allocation (Sidanius et al., 2016), thus understanding how they can be influenced has the potential to identify contexts in which values for social equality can be fostered. Social dominance orientations are intricately linked to foundational cultural antecedents such as Hofstede's (1980) individualism-collectivism framework, which has extended to include horizontality-verticality (Triandis, 1995). Previous studies have shown that individualism-collectivism and horizontality-verticality are associated with social dominance orientations (Shrunk and Young, 1999; Torelli and Shavitt, 2010), but research has not yet examined social dominance in relation to the dynamic nature of cultural orientations which are amenable to change in local contexts (Greenfield, 1994). Accessible local contexts such as sports teams demonstrate the potential for cultural change at the individual level because of their environmental demands of interdependence and common goals (Greenfield et al., 2002), thus athletes' sporting identities may have a role in more general social attitude change (Kernan and Greenfield, 2005). This thesis conducted three cross-sectional survey studies to explore the relationship between sport and general cultural contexts and how this can predict social dominance orientations. The three studies also assess the role and substructure of team social identification in the subprocess of

internalizing cultural values with the aim of providing evidence that local cultural contexts can influence broader intergroup attitudes.

1.1 Social Dominance Theory and Orientation

Group-based conflict and inequality are virtually ubiquitous across time and cultures. The universal nature of intergroup conflict and inequality is embedded in the fact that societies have been and are consistently organized into social hierarchies based on groups regardless of the society's government system, level of economic and social intricacy or belief systems (Pratto, Sidanius and Levin, 2006). Indeed, Sidanius and Pratto (2001) indicate that any society that has experienced economic surplus has the hallmark feature of resource and power inequality established by group social hierarchy. Group-based social hierarchy is distinguished from individual-based social hierarchy in that an individual achieves or has access to privilege and power due to their group membership (particularly socially constructed group membership) rather than individual characteristics (Sidanius and Pratto, 2004). In such group-based social hierarchies, members of the dominant group have a disproportionately larger share of positive social value, or symbolic and material entities such as political power, wealth, and good quality healthcare (Pratto, Sidanius & Levin, 2006). Subordinate groups, however, possess disproportionately unfavourable negative social value such as low political power, financial instability and low quality or lack of healthcare (Pratto, Sidanius & Levin, 2006).

A prominent theoretical framework in the field of social psychology that was developed to explain the formation and maintenance of group-based social hierarchy is social dominance theory (Pratto et al, 1994). Social dominance theory is a multilevel theory of intergroup relations in which individuals' general attitudes about inequality between social groups operates in tandem with institutional entities to perpetuate system that maintain social inequality (Pratto, Sidanius, Stallworth & Malle, 1994). The theoretical framework is based

on the three assumptions that: social systems have age and gender based hierarchies in addition to arbitrary-set hierarchies (e.g., race and nationality), conflict and oppression are different forms of the same tendency of societies to have group-based social hierarchies, and social systems are influenced by balancing hierarchy-enhancing and hierarchy-attenuating forces (Sidanius & Pratto, 2004). More specifically, social dominance theory posits that group-based social hierarchies are influenced by the three processes of aggregated individual discrimination, aggregated institutional discrimination and behavioural asymmetry (Sidanius & Pratto, 2004). These processes are regulated by hierarchy legitimizing myths, which are espoused by individuals at varying amounts based on a generalized orientation toward group-based social hierarchy called social dominance orientation (SDO). Pratto and colleagues (2006) defined SDO as a, "… generalized orientation towards and desire for unequal and dominant/subordinate relations among salient social groups" irrespective of ingroup domination or subordination (p. 22).

The construct of SDO has been proven to be a significant predictor of various types of intergroup relations such as attitudes, policy preferences and behaviours (Sidanius et al., 2016). For example, SDO is an established predictor of persecution of and generalized prejudice against marginalized groups including ethnic minorities, women, immigrants, refugees, low socioeconomic and queer-identifying people (Altemeyer, 1996; Sidanius & Pratto, 2001; Thomsen, Green & Sidanius, 2008; Asbrock, Sibley & Duckitt, 2010; Costello & Hodson, 2011; Kteily et al., in press). Furthermore, SDO is established as a predictor of social ideologies such as conservatism, nationalism, patriotism, militarism, just world beliefs and the Protestant Work Ethic (Pratto et al., 1994; Sidanius & Pratto, 2001; Hodson, Rush & MacInnis, 2010; Cotterill et al., 2014). SDO also provides support as a predictor of social policies that perpetuate hierarchy, including support for punitive criminal justice, the death penalty, war and opposition to social welfare, affirmative action and humanitarianism

(Sidanius & Pratto, 2001; Federico & Sidanius, 2002; Sidanius et al., 2006; Pratto & Glasford, 2008; Gutierrez & Unzueta 2013; Kteily et al., 2014). In particular, this predictive strength of SDO on social policy supports the overarching social dominance theory which posits that preferences for group-based inequality interact at the interpersonal, societal and institutional level to maintain social hierarchies.

Crucially, research with SDO and novel situations indicates that the SDO is a generalized orientation that can predict attitudes and affective responses to novel social groups and institutions (Kteily, Ho & Sidanius, 2012). The predictive ability of SDO and intergroup relations is not exclusively restricted to support for inequality between known or established social groups. Furthermore, the causal role of SDO in the preference for inequality is attested to by its ability to predict intergroup behaviours, attitudes and personality aspects that endure up to a time period of four years (Thomas et al., 2010; Kteily, Sidanius & Levin, 2011; Sidanius et al., 2013).

The unidimensional construct of SDO irrefutably is a powerful predictor of intergroup relations. Moreover, recent work by Ho et al. (2012) demonstrated that the unidimensional SDO construct can be narrowed to two subdimensions of preference for intergroup dominance (SDO-D) and preference for intergroup antiegalitarianism (SDO-E). Compared to the overall SDO, SDO-D is a more precise predictor of aggressive behaviour toward marginalized groups and belief systems that justify oppression, the latter being referred to by Ho et al. (2015) as "old-fashioned racism." The orientation of SDO-D is therefore considered to be support for violent and active hierarchy maintenance. Indeed, SDO-D is more significantly correlated than SDO-E with blatant types of dehumanization such as outgroup humanity, although both SDO-E and SDO-E are equally correlated with indirect types of dehumanization such as infrahumanization (Leyens et al., 2000; Kteily et al., in press). Furthermore, the subdimension of SDO-E is considered to be a subtler form of hierarchy

maintenance than SDO-D since it is correlated with support for social policies and beliefs that enhance hierarchies in a less blatant approach. Ho et al. (2012) provided evidence that SDO-E is a predictor of ideologies that indirectly support group inequality with economic and meritocratic justifications such as conservatism and opposition to policies such as affirmative action in the United States.

The roles of SDO and its subdimensions of SDO-D and SDO-E as predictors of intergroup attitudes, behaviours and policy support have therefore been well established. Cross-cultural analysis and observed reliability attest to its importance within the psychology of intergroup relations (Lee, Pratto & Johnson, 2011). Moreover, distinguishing the two subdimensions is essential because SDO-D and SDO-E each have greater predictive precision than the unidimensional construct in their respective domains (Jost & Thompson, 2000; Kugler et al., 2010). The distinction of the two is critical to understanding how blatant and subtle forms of hierarchy maintenance are approached at the individual-level of SDO. For this reason, it is important to understand the contexts by which SDO-D and SDO-E form and can be influenced.

Sidanius and Pratto (2001) clarify that SDO is a dynamic construct amenable to change, in contrast to research which has treated SDO as a static orientation (see Fischer et al., 2013). More specifically, Sidanius and Pratto (2001) specify that SDO is influenced at the individual level by group status, gender, temperament and socialization. In a cross-cultural analysis, Sidanius et al. (2000) noted that evidence across six nations indicates that SDO is influenced by these salient contextual, situational and cultural factors especially in arbitrary groups. The role of culture in the socialization of social values and attitudes is therefore pertinent to understanding the development of social dominance orientations and the broader maintenance of social hierarchies.

1.2 Cultural Framework of Individualism and Collectivism

Social dominance theory identifies culture as a factor that can influence the formation of SDO through socialization (Sidanius and Pratto, 2001). A formal operationalization of culture is necessary in order to understand its implications on the development of social attitudes. Kroeber and Kluckhohn (1952) compiled a list of over 150 definitions of culture used in research, indicative of the fact that culture is often discussed yet inconsistently defined. Kroeber and Kluckhon (1952) recommended that culture be considered as a series of "…patterns, explicit and implicit, of and for behaviour acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiment in artefacts" (p. 181). Keesing (1974) further refined the definition of culture into two clusters of adaptive systems and ideational systems. The adaptive system of culture suggests that cultures develop within specific ecological settings and serve societal functions via economic and social organizations and institutions (Fischer, 2011). The other cluster suggests that cultures are ideational systems such as social customs, rituals and religion that are shared among an ingroup through knowledge and symbolic processes (Fischer, 2011). The field of social psychology approaches culture more closely through the ideational system cluster in both the value and personality literature (Hofstede, 1980; Rohner, 1984; Kashima, 2000) and social cognitive literature (Peng and Nisbett, 1999; Hong and Chiu, 2001; Lehman et al. 2004). In psychology, culture is considered "…a 'collective' phenomenon" of psychological content that is implicitly and explicitly "…'shared' among members" of an ingroup (Fischer, 2011; p. 191).

The 'sharing' component of culture alludes to the construction of cultural transmission as a learned process instead of a genetic transmission (though there are theoretical frameworks for microlevel genetic cultural evolution; see Gintis, 2007). Culture is transmitted within groups through socialization, or the intergenerational sharing of values,

knowledge, ideas and symbols at the individual-level (Fischer, 2011). The individual-level of cultural transmission is the process by which cultural meaning systems are either perpetuated or used as a mechanism for cultural change (Fischer, 2011). It is important to emphasize that the potential of cultural change at the individual level attests to the more general concept that culture cannot be reified as a monolithic entity; cultural values do not manifest in all contexts that its members experience (Singelis et al., 1995). Instead, the defining qualities of cultures should be considered "fluctuating pressure of tendencies" that vary within individuals and contexts (Singelis et al., 1995; p. 243).

The manner in which cultural values are socialized is contingent on whether the relationship between an individual and their culture is conceptualized as unidirectional or bidirectional. Traditionally, cross-cultural psychology constructed the individual-culture relationship as unidirectional: culture directly influences individuals' psychological content (Breugelmans, 2011). Difference studies assume that there is a unidirectional relationship in that culture exerts an influence on individuals as evidenced by differences in the behaviour (Breugelmans, 2011). This process does not provide an explanation for how socialization occurs and contrasts with the aforementioned understanding of cultural transmission as both a dynamic and individual-level process. Breugelmans (2011) also argues that the treatment of culture as unidirectional lends itself to studies in which participants serve as cultural representatives (independent variables) and subjects whose psychological content is affected (dependent variable). Matsumoto and Yoo (2006) suggest that such research designs can be improved to account for the dynamic relationship of individual and culture by examining the mediational effects of culture on psychological content. Mediation studies therefore can address the process by which individuals handle cultural information in a bidirectional individual-culture relationship (Breugelmans, 2011; Matsumoto & Yoo, 2006).

More recently, the individual-culture relationship is conceptualized as bidirectional and that socialization occurs via adaption or internalization. Adaptation is the process by which individuals develop self-perceptions, emotions, behaviours and cognitions that are suited for a particular ecocultural context (Breugelmans, 2011). Studies that operationalize culture at the level of a population such as a country frequently use adaptation as the explanatory process (Breugelmans, 2011). An example of the socialization of cultural values via adaptation is a study by Henrich et al. (2004) which found that prosocial behaviours were positively correlated with mode of subsistence: when individuals depended on interacting with strangers in their occupation, they exhibited higher prosocial behaviours and were more likely to punish antisocial behaviours. Henrich et al. (2004) theorized that individuals adapt their prosocial and antisocial behaviours to optimize their functioning in social contexts.

Studies that operationalize culture at individual levels, in contrast, explain socialization as a result of the internalization of cultural information through its integration into individuals' psychological functions (Breugelmans, 2011). Kim and Markus (1999) describe internalization as, "what is culturally desirable appears desirable in the eyes of individuals, and what is culturally meaningful becomes meaningful to these individuals" and results in culturally internalized values and self-construals (p. 199). Internalization is the process by which culture fulfils the role as the software of the mind (Hofstede & Hofstede, 2005). Brouwers et al. (2004) suggest that the internalization of cultural values can be socialized by specific cultural contexts. An example of cultural internalization is the finding of the meta-analysis by Bond and Smith (1996) that individuals with greater collectivist values are more likely to value conformity than individuals with greater individualist values because collectivistic cultures emphasize collective goals and obedience. Although the work of Bond and Smith (1996) contrasted collectivists and individualists, the view that individual

members of cultural groups can have dynamic, internalized cultural orientations is evident in the major cultural framework of individualism and collectivism (Triandis, 2001).

One of the most influential cultural frameworks used in the field of psychology is Hofstede's individualism-collectivism continuum (1980). The individualism-collectivism dimension was defined by Hofstede as, "the degree to which people in a country prefer to act as individuals rather than as members of groups" (1994, p. 5). Individualistic value system emphasizes the importance of individuality, independence, individual achievement, personal self-esteem and self-reliance (Markus & Kitayama, 1991). The collectivistic value system stresses group needs and achievement, interdependence, personal modesty and group obligations (Markus & Kitayama, 1991). The value of individualism also engenders self-determined behaviour and agency in contrast to the collectivistic value of group harmony and adherence to social norms (Triandis, 1995). Hofstede (1980) originally conceptualized individualism and collectivism as opposing sides of a singular continuum, which led research to treat individualism and collectivism as a unidimensional construct where individuals could be either collectivistic or individualistic.

Triandis (1995) and Triandis and Gelfand (1998) argued, however, that the treatment of individualism-collectivism as a dichotomy was insufficient to explore individual-level differences within cultures that were framed as either individualistic or collectivistic. A review conducted by Oyserman, Coon and Kemmelmeier (2002) indicated that individualist and collectivistic cultures consistently differ on psychological constructs like self-concept, attribution and social behaviour, although the cross-cultural differences aggregated at the group level were not reflective of the variations within cultural groups. This was reinforced by Poortinga and van Hemert (2001) reporting a consistent finding that within-culture variation is often greater than between-culture variation.

To address the broad groupings within the individualism-collectivism framework, Triandis (1995) expanded on the typology of individualism-collectivism cultural orientations by theorizing a second dimension that overlapped with the first: horizontality-verticality. Verticality refers to a preference for social hierarchy and structural inequality, represented by the values of social status and rank. Horizontality is a preference characterized by structural egalitarianism and equality among group members. Triandis (1995) depict horizontal (preference for equality) and vertical (preference for hierarchy) subdimensions for both individualism and collectivism. This produces a typology of four cultural orientations: vertical individualism, vertical collectivism, horizontal individualism and horizontal collectivism. On the vertical dimension, the construct of vertical individualism is characterized by its emphasis on hierarchical competition and achievement whereas vertical collectivism emphasizes the prioritization of the ingroup and competition with outgroups (Triandis & Gelfand, 1998). On the horizontal dimension, horizontal collectivism is characterized by interdependence and equality among group members, and horizontal individualism in which individual uniqueness is valued and social status is not (Triandis & Gelfand, 1998). The distinction between the four independent cultural orientations was empirically supported by Singelis et al. (1995) and Triandis and Gelfand (1998), leading to the establishment of the horizontality-verticality subdimension into the broader individualism-collectivism framework.

Since culture is a factor by which social attitudes are influenced (Sidanius & Pratto, 2001), it follows that the individualism-collectivism cultural dimension should predict social dominance orientations especially in consideration of their similar subdimensions. The cultural subdimensions of horizontality (preference for equality) and verticality (preference for hierarchy) presented in Triandis (1995) theoretically relate to the SDO subdimensions of

SDO-D (preference for intergroup dominance) and SDO-E (preference for intergroup antiegalitarianism; Ho et al., 2015).

Strunk and Chang (1999) were the first to assess the relationship between the expanded individualism-collectivism cultural orientations and the unidimensional construct of SDO. A correlational analysis indicated that vertical individualism (but not horizontal individualism) was positively associated with social dominance attitudes and that horizontal collectivism (but not vertical collectivism) was negatively associated with social dominance (Strunk & Chang, 1999). Strunk and Chang (1999) suggested that the subdimension of horizontality-verticality was a better predictor of socio-political attitudes in their study, but nonetheless implicated the role of cultural influences on SDO.

Torelli and Shavitt (2010) more recently explored the relationship between horizontality-verticality, SDO and more general beliefs about power structures. Torelli and Shavitt (2010) replicated the correlational findings of Strunk and Chang (1999) by demonstrating that vertical individualism positively predicted SDO, whereas horizontal collectivism predicted SDO. As in the previous study, horizontal individualism and vertical collectivism were not correlated with SDO.

Strunk and Chang (1999) and Torelli and Shavitt (2010) provide evidence that the cultural values in the collectivism-individualism framework are internalized and predictive of SDO. These findings warrant an expanded understanding of how the individualism-collectivism and horizontality-verticality typology presented by Triandis (1995) relates to the subdimensions of SDO-D and SDO-E. Examining the malleable cultural antecedents to social dominance and antiegalitarianism values could provide an understanding of how to attenuate social inequality through the individual level that interacts with institutional hierarchies (Sidanius & Pratto, 2004). Thus, there is a need to assess the contexts in which individualism, collectivism, horizontality and verticality values can differ in order to understand the effect

that this has on individuals' social dominance orientations. One type of promising, but underexplored, context of cultural change is the sports team.

1.3 Sports Teams as Contexts of Cultural Change

Greenfield and colleagues (2002) and Kernan and Greenfield (2005) identified sports teams as contexts of cultural change in an ethnographic study of multi-ethnic high school sports teams in the United States. Using ethnic group as a proxy for individualism-collectivism, Kernan and Greenfield (2005) theorized that multi-ethnic sports teams could operate as cultural microcosms where athletes with different cultural values worked together to develop a team identity with theoretical equal status among group members and a collective goal of winning. In practice, however, the opportunity for cultural change was complicated by instances of ingroup conflict.

The study identified that the sources of intragroup conflict were primarily due to conflicting assumptions of individualistic and collectivistic frames. For example, one common theme of conflict that was identified in athletes' journal entries was the struggle between players vying for a starting position (prioritization of the individual) instead of focusing on team bonding (prioritization of the group; Kernan and Greenfield, 2005). Interventions to foster intercultural understanding by Richland and Greenfield (cited in Kernan & Greenfield, 2005) with sports teams were not effective at increasing athletes' understanding of contrasting cultural values, but the interventions did provide a longitudinal assessment of athletes' sports cultural values at the individual level. Richland and Greenfield (cited in Kernan & Greenfield, 2005) discovered that athletes became more collectivistic during the sports season regardless of their experience with intragroup cultural conflict or, most importantly, their individualist or collectivistic value at the start of the season. Kernan and Greenfield (2005) emphasized that cultural orientations are "dynamic adaptions to real-world situations" (p. 564) and that the ecocultural context of the sports team elicited higher

levels of collectivism. Although the developmental trajectory of individualism was not explicitly discussed, athletes who were high in individualism at the start of the season also became more collectivistic. This suggests that athletes in team contexts adapt their sport cultural orientations to the demands of the team by becoming more collectivistic and less individualistic.

Earlier ethnographic work also conducted by Greenfield and colleagues (2002) with high school sports teams found that arbitrary group differences (e.g., race) between teammates and their disagreement with coaching decisions reinforced hierarchical relations on the team. This resulted in conflict that was observed as physically violent for one of the boys' teams that was in the ethnography and suggests that sports contexts can actually reinforce vertical relations instead of the hypothesized equal status among team members (Kernan and Greenfield, 2005).

Overall, sports teams are contexts in which cultural change can occur because of the ecocultural demands of being on a team in spite of the potential for cultural conflict (Kernan and Greenfield, 2005). On the dimension of individualism-collectivism, sports contexts elicit higher values of collectivism and potentially lower values of individualism. In consideration of horizontality-verticality, a different pattern is apparent in sports contexts. The competitive aspect between teams and within teams can engender higher verticality while horizontality is not explicitly discussed. The findings of Greenfield and colleagues (2002) suggest that the theorized equal status among teammates is not easily achieved in practice, therefore sports horizontality is expected to be lower since there is evidence of hierarchical tendencies in teams. If sports teams are indeed contexts of cultural change, social identification with the team may be the process by which athlete adopt sports-specific values (Kernan and Greenfield, 2005).

1.4. Social Identity

Social identity is defined as the "part of an individual's self-concept which derives from [their] knowledge of [their] membership of a social group… together with the value and emotional significance attached to that membership" (Tajfel, 1981; p. 255). Tajfel and Turner (1979) developed Social Identity Theory (SIT) which posits that individuals are motivated to have and maintain a positive self-concept and that this positivity extends to the evaluation of their social group membership. Brewer (2001) notes that social identification dually entails the incorporation of the ingroup to the self, and the self experienced as a member of the ingroup. In the field of social psychology, social identity is defined as an individual's self-concept that is based on their group membership and the affect associated with that membership (Tajfel, 1974).

Higher identification with a group or organization is associated with the application of group characteristics to the self (Turner et al., 1987) because group membership contributes to an individual's self-concept (Ashforth & Mael, 1989). Thus, if an individual's identification with a group is high, they are more likely to consider values held by the group to be their own personal values. Conversely, if identification is low, the likelihood is lower that groups values will be considered self-values. It is therefore necessary to examine the role of social identity in sports team contexts in order to understand how cultural values on teams can be internalized to be individual values.

Social identity is recognized in the sports domain as an influential aspect of athletes' behaviours, affect and cognitions (Bruner et al., 2014; Rees et al., 2015). For example, athletes' team identification is positively correlated with self-worth, commitment, perceived effort, initiative, social skills (Bruner et al., 2017, Martin et al., 2017) as well as with group outcomes like team performance (Murrell & Gaertner, 1992).

The conceptualization and operationalization of social identity has historically been inconsistent despite its key role in sport research and multiple other domains (Bruner et al., 2014). Social identity was traditionally treated as an overall construct with a single structure in sport, such as in the correlational study of social identification and team performance (Terry et al., 1999; Murrell & Gaertner, 1992). More recently, social identity has been conceptualized as a multidimensional structure (Leach et al., 2008). Bruner et al. (2014) influentially adapted the multidimensional construct of social identity to the domain of sport research by incorporating the model put forth by Cameron (2004) in which social identity has three factors: ingroup ties (perceptions of belongingness with group members), ingroup affect (positive affect related to group membership) and cognitive centrality (importance of group membership).

The three dimensions of social identity conceptualized by Cameron (2004) have demonstrated differential outcomes for athlete and team relationships. Bruner et al. (2017) found that the dimension of ingroup ties positively predicted initiative, social and personal skills among team members more than the other two dimensions. Bruner et al. (2014) further demonstrated that ingroup affect positively predicted team cohesion and prosocial teammate behaviour. Benson et al. (2017) notably reported that of the three dimensions, cognitive centrality was a significant moderator of the relationship between group norms and personal behaviour. Recent standardization of the Social Identity Questionnaire in Sports by Bruner and Benson (2018) provides support for the three-factor structure of social identity in sports contexts but also warrants further investigation into its generalizability samples of athletes outside of competitive season youth athletes on which it was standardized on. If team identification is the mechanism by which athletes' cultural value shift occurs as suggested by Kernan and Greenfield (2005), then understanding the nature of social identity in sports

contexts is important for further analysis of how contextual cultural values are internalized and predictive of generalized social attitudes.

1.5 Research Aims and Hypotheses

The overarching research question that this thesis sought to answer was: do sport teams create a context of cultural change that is conducive for influencing intergroup social attitudes? In order to address the research question, this thesis conducted three questionnaire studies of athletes in different sports contexts (time of season and type of sport season) to address three research aims. First, this thesis investigated if the context of sports teams produces significantly different cultural orientations compared to general orientations. The next research aim was to analyse the structure and role of social identification as a moderator of the relationship between sports and general contexts. Finally, the third aim was to examine sports cultural orientations as a predictor of social dominance orientations as mediated by general cultural orientations.

The first hypothesis addressed the cultural differences between general and sports contexts as quantified by the individualism-collectivism and horizontality-verticality dimensions. Anticipated differences between general and sports contexts were based on the cultural sport ethnographic work conducted by Greenfield and colleagues (2002) and Kernan and Greenfield (2005). Significant differences between the general and sports cultural orientations would provide support that sports teams have the potential to be local contexts of cultural change.

Hypothesis 1: Athletes' cultural orientations in sports contexts will be significantly more collectivistic and vertical and significantly less individualistic and horizontal than in general contexts.

In order to evaluate this hypothesis, this thesis pooled together the values of collectivism, individualism, horizontality and verticality as suggested by Sivadas and

colleagues (2008) instead of using the fourfold typology assessed by Triandis and Gelfand (1998) because the cultural ethnographic research of cultural change in sports contexts considered these dimensions separately. Therefore, Hypothesis 1 was assessed by its four sub-hypotheses:

1a. The value of sport collectivism will be significantly greater than general collectivism.

1b. The value of sport individualism will be significantly less than general individualism.

1c. The value of sport horizontality will be significantly greater than general horizontality.

1d. The value of sport verticality will be significantly greater than general verticality.

The next hypothesis addressed the conceptual structure of social identification in sport. The recent standardization of the Social Identification Questionnaire in Sport warrants corroborating evidence that the hypothesized three-factor structure (ingroup ties, cognitive centrality and ingroup affect) exists because these subdimensions have relevant and differential predictions for team cohesion, prosocial behaviour and most pertinently, the moderation of group norms (Bruner & Benson, 2018).

Hypothesis 2: Athletes' social identification with their teams will have a three-factor structure of ingroup ties, cognitive centrality and ingroup affect.

Next, this thesis addressed the subprocess by which situational sport cultural orientations related to general cultural orientations. Group membership contributes to individuals' self-concept and group identification is associated with the application of group values to individual values (Turner et al., 1987, Ashforth & Mael, 1989). Thus, Hypothesis 3 predicted that team social identification would significantly moderate the relationship between sports cultural orientations and general cultural orientations. moderation is expected

to occur in that high identifiers will more readily incorporate the predicted sports cultural orientations (higher collectivism, lower individualism, lower horizontality, higher verticality) into their general cultural orientations than low identifiers. This thesis used the overall construct of social identification established by Bruner and colleagues (2014) and supported by Bruner and Benson (2018) to examine the hypothesized moderation.

> *Hypothesis 3: Team social identification will significantly moderate the relationship between sport and general cultural orientations.*

The moderations between sport and general cultural orientations were specified as:

> *3a. Social identification will significantly moderate the relationship between sport collectivism and general collectivism.*
>
> *3b. Social identification will significantly moderate the relationship between sport individualism and general individualism.*
>
> *3c. Social identification will significantly moderate the relationship between sport horizontality and general horizontality.*
>
> *3d. Social identification will significantly moderate the relationship between sport verticality and general verticality.*

The fourth hypothesis related to the overarching research aim to identify sports teams as contexts of cultural change for influencing intergroup social attitudes. Mediational analyses were conducted to assess if general cultural orientations mediated the relationship between sports cultural orientations predicting SDO subdimensions. The significant mediation by general cultural orientations would indicate that sports cultural orientations are internalized into general cultural values.

Strunk and Chang (1999) and Torelli and Shivatt (2010) provided support that the horizontality-verticality subdimensions embedded in individualism-collectivism (specifically, vertical individualism and horizontal collectivism) are the general cultural antecedents of

unidimensional SDO. However, SDO's subdimensions of SDO-D and SDO-E have not yet been explored in the literature. This study addressed this gap in the literature by using the overall pooled constructs of collectivism and horizontality to separately predict SDO-E (antiegalitarianism attitudes) and the pooled overall constructs of individualism and verticality to separately predict SDO-D (social dominance attitudes).

Hypothesis 4: General cultural orientations will significantly mediate the relationship between sports cultural orientations and social dominance orientations.

The mediations were specified in the following sub-hypotheses:

4a. General collectivism will significantly mediate the relationship between sport collectivism and SDO-E (antiegalitarianism).

4b. General individualism will significantly mediate the relationship between sport individualism and SDO-D (social dominance).

4c. General horizontality will significantly mediate the relationship between sport horizontality and SDO-E (antiegalitarianism).

4d. General verticality will significantly mediate the relationship between sport verticality and SDO-D (social dominance).

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2. Study 1

2.1 Method

2.1.1. Participants

Participants were elite athletes recruited from the investigator's personal contacts in intercollegiate, semi-professional and professional sports leagues in the United States and the United Kingdom. The operationalization of 'elite athlete' has been contended in the psychological literature along taxonomies of relative skill and success (Swann et al., 2015), and this study makes transparent its consideration that an elite athlete is one who competes at their relative highest intercollegiate, national level, or is funded by playing their sport. In this study, one hundred and seventy-five elite athletes responded to the online survey and five athletes identified themselves as playing individual sports imbedded in team contexts (equestrian, cross-country, track and field). One offseason athlete was removed as an outlier for last playing competitively over twenty years ago. This produced a final participant sample of 169 elite athletes (82 females and 87 males).

Sixty-two athletes (29 females and 33 males; mean age 22.5 years, $SD = 3.06$) reported being in the preseason of their sport at the time for an average of 3.61 weeks ($SD = 3.20$). Eighty athletes (41 female, 39 male; mean age = 22.1 years, $SD = 3.89$) were surveyed during their competitive sport season at a mean of 5.25 weeks ($SD = 4.86$ weeks) into season. Lastly, 27 athletes (12 female, 15 male; mean age = 23.74 years, $SD = 3.37$) were in their sport's offseason for a mean time of 21.67 weeks ($SD = 18.15$). Athletes did not significantly differ in age across the stage of sport season (preseason, competitive season, offseason), $F(2, 166) = 2.186$, $p = .116$.

The thirteen team sports represented in the final sample were volleyball, basketball, netball, water polo, rugby, ultimate Frisbee, cricket, football, American football, rowing,

lacrosse, field hockey and softball. Athletes who played volleyball ($N = 92$), basketball ($N = 27$) and netball ($N = 14$) represented 78.3 % of the surveyed responses.

2.1.2. Design

The current study used a cross-sectional, quantitative questionnaire to analyse the relationship between individuals' cultural orientations, team identification and social dominance orientations. The survey was conducted anonymously online in order to reduce the likelihood of socially desirable responses to the social and cultural questions. Participants first answered non-identifying demographic questions. Next, participants were randomly assigned to complete the general or the sports cultural orientation questionnaire first in order to counterbalance a potential order effect. If participants completed the sports cultural orientation questionnaire first, the second questionnaire was the general cultural orientation one and vice versa. All participants completed the team social identity questionnaire third and concluded with the social dominance orientation questionnaire.

2.1.3. Measures

The INDCOL Horizontal/Vertical Individualism/Collectivism Scale (INDCOL) is a standardized measurement developed by Singelis et al. (1995) of four cultural orientations: individualism, collectivism, horizontality and verticality (Appendix 5). Each item on the INDCOL has both an individualism or collectivism value and a horizontal or vertical value. These values are averaged to produce four separate cultural orientation scores. This study uses the 14-item INDCOL Scale adapted by Sivadas et al. (2008) which has four horizontal collectivistic, four vertical collectivistic, three horizontal individualistic and three vertical individualistic scores. Participants rate their agreement with cultural statements on a nine-point scale from 1 (Never or Definitely No) to 9 (Always or Definitely Yes). Examples include, "My happiness depends very much on the happiness of those around me" (horizontal collectivism), "I would do what would please my family, even if I detested that activity"

(vertical collectivism), "I enjoy working in situations involving competition with others" (vertical individualism) and, "I enjoy being unique and different from others in many ways" (horizontal individualism).

This study sought to compare general and sports cultural orientations on equivalent measures. To do so, the INDCOL-General was adapted to sports contexts by the researchers to produce the INDCOL-Sport (Appendix 6). The INDCOL-Sport retains the 14-item format with answers indicated on a nine-point scale from 1 (Never or Definitely No) to 9 (Always or Definitely Yes). Equivalent examples of the INDCOL-Sport are, "My happiness depends very much on the happiness of my team" (horizontal collectivism), "I would do what would please my team, even if I detested that activity" (vertical collectivism), "I enjoy being in situations involving competition with other teams" (vertical individualism) and, "I enjoy being unique and different from my team in many ways" (horizontal individualism). A reliability analysis of the 14 items of the INDCOL-Sport produced a Cronbach's alpha of $\alpha = .653$ for the responses in the first study, indicating low but passable reliability.

Next, the Social Identity Questionnaire in Sport (SIQS) is a positively-worded nine-item questionnaire that assesses social identity in relation to sport teams (Appendix 7). The SIQS was adapted from the social identity work conceptualized by Cameron (2004) and first used by Bruner and colleagues (2014; 2015) and Martin and colleagues (2017). The psychometric properties of the questionnaire adapted for sport were assessed by Bruner and Benson (2018) which provided empiric support for both an overall construct of sport identity and a three-component model consisting of ingroup affect, cognitive centrality and ingroup ties.

The Social Dominance Orientation$_7$ Scale (SDO$_7$) is a standardized measure of support for group-based hierarchy and inequality adapted by Ho et al. (2015; Appendix 8) from the unidimensional SDO scale (Pratto et al., 1994). The SDO$_7$ is a 16-item scale with

two subdimensions: preference for social dominance (SDO-D) and preference for antiegalitarianism (SDO-E). SDO-D and SDO-E each have four positively worded and four negatively worded questions that participants respond to by rating their agreement on a seven-point scale from 1 (Strongly Oppose) to 7 (Strongly Favor). For the purposes of this study, SDO-D and SDO-E are used as outcome variables because of the theoretical relationship between individualism and verticality for SDO-D and collectivism and antiegalitarianism for SDO-E.

2.1.4. Procedure

Recruited participants were provided a link to an anonymous online survey hosted on *Qualtrics*. Before the survey began, participants were provided an information sheet about the study (Appendix 1) and provided their consent to take part (Appendix 2). Participants first completed a brief non-identifying demographics section of the questionnaire (Appendix 4) and then completed the cultural, social identification and social attitudes sections. Completion of the survey took approximately five to ten minutes. Participants were debriefed upon completion (Appendix 3) and provided contact details of the lead researcher and their supervisors. This study and its data storage met the ethical guidelines stipulated by the Department of Psychology's Ethics Committee and received its approval.

2.2 Results

2.2.1. Preliminary Analysis

First, athletes' general cultural orientations and sport cultural orientations were respectively compared across time of season (preseason, competitive season, offseason) to test for group differences. Then, a factor analysis was conducted of the Social Identity Questionnaire in Sports (Bruner et al., 2014) to determine if a three-factor structure was supported. Lastly, social identification was compared across time of season.

2.2.1.1. Cultural Orientations

A one-way ANOVA of athletes' general cultural orientations factoring for time of season did not reveal any differences between the groups on the values of general collectivism ($p = .905$), general individualism ($p = .22$), general horizontality ($p = .504$), or general verticality ($p = .272$). Similarly, a one-way ANOVA of sport cultural orientations factoring for time of season did not find any differences between groups in athletes' values for sport collectivism ($p = .352$), sport individualism ($p = .233$), sport horizontality ($p = .108$), or sport verticality ($p = .396$). Across time of season, elite athletes did not differ on either their general cultural value systems or their sport cultural value systems. Thus, comparisons of general and sport cultural orientations hereafter do not subdivide analyses by time of season.

2.2.1.2. Social Identity Factor Analysis

A factor analysis of the Social Identity Questionnaire for Sport (Bruner et al., 2014) using principal component analysis and Varimax rotation was conducted to assess the hypothesized three factor structure of social identity: ingroup ties, cognitive centrality and ingroup affect (Cameron, 2004). This analysis used three methods of factor assessment: the comparison of Eigenvalues to the Kaiser's (K1) criterion, parallel analysis and scree plot (Eigenvalues plotted along the component numbers).

The overall elite athlete sample was used first, therefore the case-to-variable ratio was 169:9 which reduces to 18.78:1, greater than the accepted 10:1 ratio. The correlation matrix found that the determinant = .006 which is greater than .00001, indicating that there was no multicollinearity in the data. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .862, above the acceptable .700 value and was the proportion of variance observed that is explained by underlying factors. Bartlett's Test of Sphericity produced the result that χ^2 (36) = 832.778, $p < .001$. The significant chi-square indicated that the correlation matrix was

significantly different from the identity matrix, demonstrating that there was correlation among variables and that a factor analysis was appropriate. The communalities, or amount of variance shared by a variable with other variables, ranged from .408 to .756; all values were above .200 therefore all variables were kept in the analysis.

Using the K1 criterion, where factors are kept if their Eigenvalue is greater than 1.00, a two-factor structure emerged wherein Factor 1 had an Eigenvalue of 4.692 and accounted for 52.131 % of the variance. Factor 2 had an Eigenvalue of 1.268 and accounted for 14.085 % of the variance. Together, these two factors accounted for 66.215 % of the variance in a two-component structure of social identity.

Random Eigenvalues were generated for a random structure with nine variables, 169 subjects and 150 replications using *Monte Carlo PCA for Parallel Analysis* (Watkins, 2000). The following Table 1 was produced:

Eigenvalue Number	Random Eigenvalue	Standard Deviation
1	1.3643	.0698
2	1.2375	.0431
3	1.1400	.0378

Table 1: Random Eigenvalue table generated by Monte Carlo PCA for Parallel Analysis

Compared to the Eigenvalues obtained in the factor analysis, the Eigenvalue in Factor 1 was greater than the randomly generated Eigenvalue (4.692 > 1.3643). The Eigenvalue obtained in Factor 2 was also greater than the randomly generated Eigenvalue (1.268 > 1.2375). The Eigenvalue obtained for a third factor was not greater than the randomly generated Eigenvalue produced by the parallel analysis (.856 < 1.1400) therefore the comparison suggested a two-factor social identity structure similar to the K1 Criterion.

Lastly, the scree plot in Figure 1 illustrated that the variance accounted for by Eigenvalues leveled out at the third component. Scree plots indicate that the number of factors in a structure is the component number where the line plateaus minus one (e.g, the plot in Figure 1 plateaus at the third component). This scree plot illustrated that there was a two-factor structure of social identity.
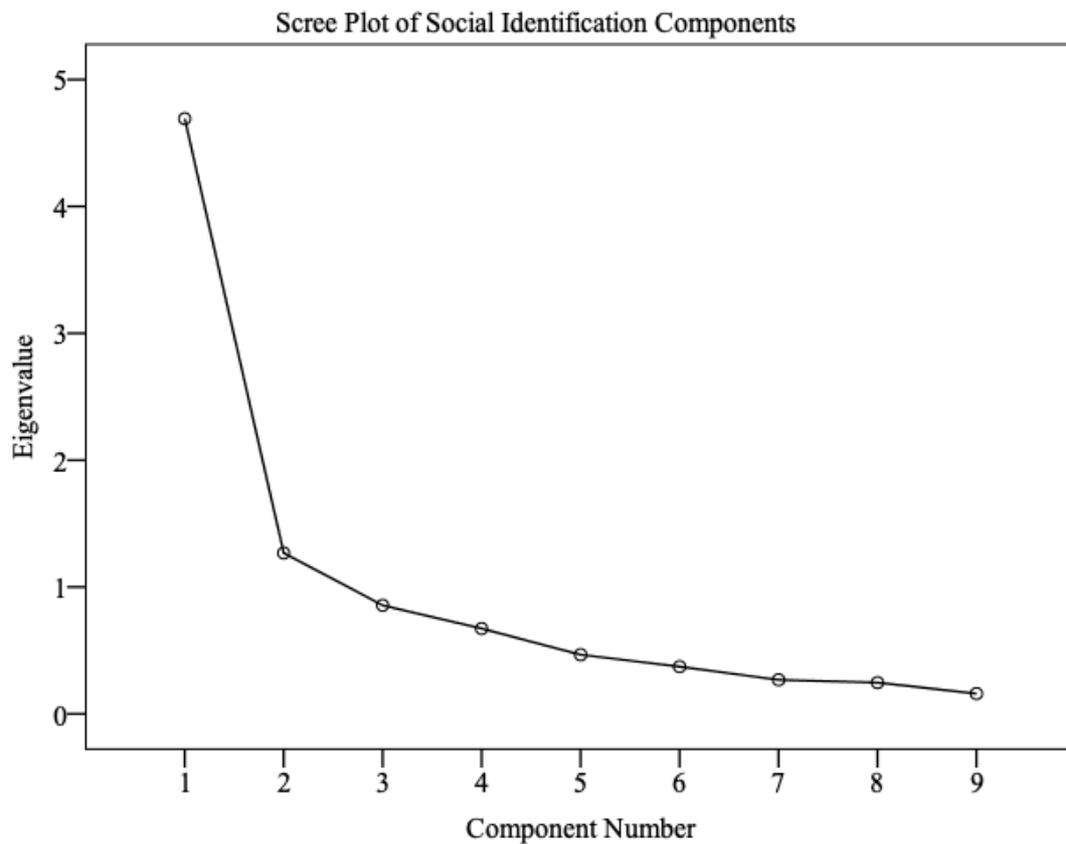

Figure 1: Scree plot of Eigenvalues graphed along the component numbers.

The rotated component matrix illustrated in Table 2 suggested that Factor 1 was ingroup ties and included the hypothesized SIQS Question 1 (.810), Question 2 (.848) and Question 3 (.810). Factor 2 is cognitive centrality and included SIQS Question 4 (.768), Question 5 (.817) and Question 6 (.618).

The remaining three variables with their respective Factor 1 and 2 component loadings were SIQS Question 7 (.746, .374), Question 8 (.784, .372) and Question 9 (.677, .412). These three variables were identified by Bruner and colleagues (2014) as a third, distinct factor of ingroup affect. In this factor analysis, these three questions had higher component loadings with Factor 1 (ingroup ties) which suggested that ingroup affect is not distinct from ingroup ties. Overall, this factor analysis suggested that there was a two-component structure of social identity in sport: affective ingroup ties and cognitive centrality.

	Rotated Component Number	
SIQS Question	1	2
Question 1: I feel strong ties to other members of this team.	.810	
Question 2: I find it easy to form a bond with other members in this team.	.848	
Question 3: I feel a sense of being "connected" with other members in this team.	.848	
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.		.768
Question 5: In general, being a member of this team is an important part of myself-image.		.817
Question 6: The fact that I am a member of this team often enters my mind.		.618
Question 7: In general, I'm glad to be a member of this team.	.746	.374
Question 8: I feel good about being a member of this team.	.784	.372
Question 9: Generally, I feel good when I think about myself as a member of this team.	.677	.412

Table 2: Rotated Component Matrix of the two-factor structure of sport social identity extracted with Principal Component Analysis and Varimax rotation with Kaiser Normalization converged in three iterations.

This analysis of the SIQS using the overall elite athlete sample did not support Hypothesis 2's three-factor structure of social identity in sport. However, the SIQS was standardized based on the re-analysis of data-sets using youth athletes who were in competitive season. When factor analyses were conducted separately for preseason, competitive season and offseason athletes, the two-factor solution depicted in the overall analysis of affective ingroup ties and cognitive centrality appeared for preseason and offseason athletes (see Appendix 9). However, the factor analysis of competitive season athletes' social identity provided evidence in its K1 Criterion and scree plot that a three-factor structure of ingroup ties, cognitive centrality and ingroup affect emerged (see Appendix 9). These results supported the hypothesized structure and suggested that ingroup affect and ties are structurally distinct only during the competitive season (Bruner et al., 2014). Due to the differences in factor structure between seasons, this analysis used the overall construct of social identity hereafter for parity and did not further consider the subdimensions.

2.2.1.3. Social Identification

A one-way ANOVA comparing athletes' overall social identification scores found a significant effect of season time, $F(2, 166) = 7.855$, $p = .001$. A Scheffe post-hoc test showed that as hypothesized, preseason athletes ($m = 0.77$, $SD = 0.13$) identified less with their teams than competitive season athletes ($m = 0.83$, $SD = 0.11$), $p = .008$. Contrary to the hypothesis, however, was that preseason athletes also identified less with their teams than offseason athletes ($m = 0.87$, $SD = 0.08$), $p = .003$. Furthermore, competitive season athletes did not differ on their social identification compared to offseason athletes, $p = .461$. The difference in social identification warrants subdividing preseason athletes and a combined competitive season and offseason athletes for the moderation analyses in which social identity is the moderator.

2.2.2. Cultural Orientation Analysis

The first section of the analysis examines the hypothesized differences between the sports and general cultural orientations. A series of two-tailed paired samples t-tests were conducted to compare the cultural orientation values of all elite athletes in a general context (INDCOL-G) and in a sports context (INDCOL-S). First, t-tests were conducted on the subdimension of individualism-collectivism and then on the subdimension of verticality-horizontality.

As hypothesized, elite athletes were significantly more collectivistic in sports contexts (*m* = .757, *SD* = .098) than in general contexts (*m* = .705, *SD* = .106), $t(168)$ = -6.16, *p* < .001. The results also supported the hypothesis for verticality, whereby athletes had greater verticality scores in sports (*m* = .756, *SD* = .103) than in general contexts (*m* = .682, *SD* = .114), $t(168)$ = -7.66, *p* < .001. Approaching significance was that elite athletes had greater scores of horizontality in general contexts (*m* = .761, *SD* = .087) than in sports contexts (*m* = .750, *SD* = .08), $t(168)$ = 1.94, *p* = .054. Although individualism values were hypothesized to be lower in sports contexts, no significant difference was found in athletes' individualism scores in general (*m* = .745, *SD* = .101) than in sports contexts (*m* = .747, *SD* = .01), $t(168)$ = -.344*, p* = .732.

2.2.3. Moderation Analysis

The preliminary analysis identified preseason athletes' social identification with their teams as significantly lower than competitive season and offseason athletes. This moderation analysis will therefore analyse moderation in the overall sample, the preseason sample and a combined competitive and offseason sample because the latter two were not significantly different from each other.

Moderation analysis was conducted using Hayes (2017) *PROCESS* (Model 1; 5000 iterations) to test if overall sports identification moderated the relationship between sports

cultural orientations and general cultural orientations. The moderation analysis showed that the overall relationships between sports cultural orientations and general cultural orientations were significant for collectivism, $F(3, 165) = 11.33$, $p < .001$, individualism, $F(3, 165) = 41.78$, $p < .001$, horizontality, $F(3, 165) = 27.57$, $p < .001$, and verticality $F(3, 165) = 7.66$, p $< .001$.

In order for a significant moderation to exist, the interaction between sport cultural orientations and the hypothesized moderator of team social identification had to be significant while predicting general cultural orientations. The following Table 3 provides the significance of the interaction variables produced during moderation analyses.

Interaction Variables	Overall Social Identity		Preseason Social Identity		Competitive and Offseason Social Identity	
	F-value	p-value	F-value	p-value	F-value	p-value
Sport Collectivism	.12	.73	9.25	.004	2.59	.11
Sport Individualism	.87	.35	.89	.35	1.43	.23
Sport Horizontality	1.17	.28	4.44	.04	.19	.67
Sport Verticality	1.23	.27	2.97	.09	.19	.67

Table 3: The *F* and *p*-values of the interaction variables obtained during moderation analysis of sport cultural orientations predicting general cultural orientations as moderated by social identification.

The current study was focused on testing an overall hypothesized moderated mediation effect of general culture moderated by sport social identification mediating the

relationship between sport culture and social attitudes. The overall hypothesized moderations of social identity between sport and general cultural orientations were not supported, but significant interactions were found when the sample was narrowed to preseason athletes.

Preseason Collectivism

The *PROCESS* moderation analysis (Hayes, 2017) indicated that the interaction variable between preseason athletes' social identification and sport collectivism was significant when predicting general collectivism, $F(3, 58) = 9.25$, $p = .004$. The conditional effects of sport collectivism are examined when focalized on social identification values identified as low (0.667), medium (.0.778) and high (.905). At low levels of social identification, the effect of sport collectivism predicting general collectivism was significant, $b = 0.413$, $p = .013$, 95 % CI [0.09, 0.73]. At medium levels of social identification, the effect of sport collectivism was also significant, $b = 0.663$, $p < .001$, 95 % CI [0.39, 0.94]. Lastly, the effect of sport collectivism at high levels of social identification was significant, $b = 0.949$, $p < .001$, 95 % CI [0.62, 1.28].

The interaction plot in Figure 2 illustrated that lower levels of sport collectivism predicted lower levels of general collectivism significantly more when social identification was high than when social identification was low. Similarly, higher levels of general collectivism were predicted from high sport collectivism when social identification was higher compared to lower. This moderation indicated that as hypothesized, the relationship of sport and general collectivism was greater under circumstances of high sport collectivism and high team identification.

Figure 2: Moderation of the relationship between sport collectivism and general collectivism at low, medium and high levels of social identification.

Preseason Horizontality

   Additionally, the interaction variable between preseason athletes' social identification and sport horizontality was significant while predicting general horizontality, $F(1, 58) = 4.44$, $p = .04$. The conditional effects of sport horizontality are examined when focalized on social identification values identified as low (0.667), medium (.0.778) and high (.905). At low levels of social identification, the effect of sport horizontality predicting general horizontality was significant, $b = 0.465$, $p = .004$, 95 % CI [0.16, 0.77]. At medium levels of social identification, the effect of sport horizontality was also significant, b = 0.668, p < .001, 95 % CI [0.39, 0.95] Lastly, the effect of sport collectivism at high levels of social identification was significant, b = 0.900, p < .001, 95 % CI [0.51, 1.29].

   The interaction effect illustrated in Figure 3 reveals a similar moderation in that lower levels of sport horizontality predicted lower levels of general horizontality significantly more when social identification was high than when social identification was low. Similarly, higher

levels of general horizontality were predicted from sport horizontality when social identification was higher compared to lower. As hypothesized, this indicated that sport horizontality was more closely related to general horizontality under the conditions of high sport horizontality and high social identification.
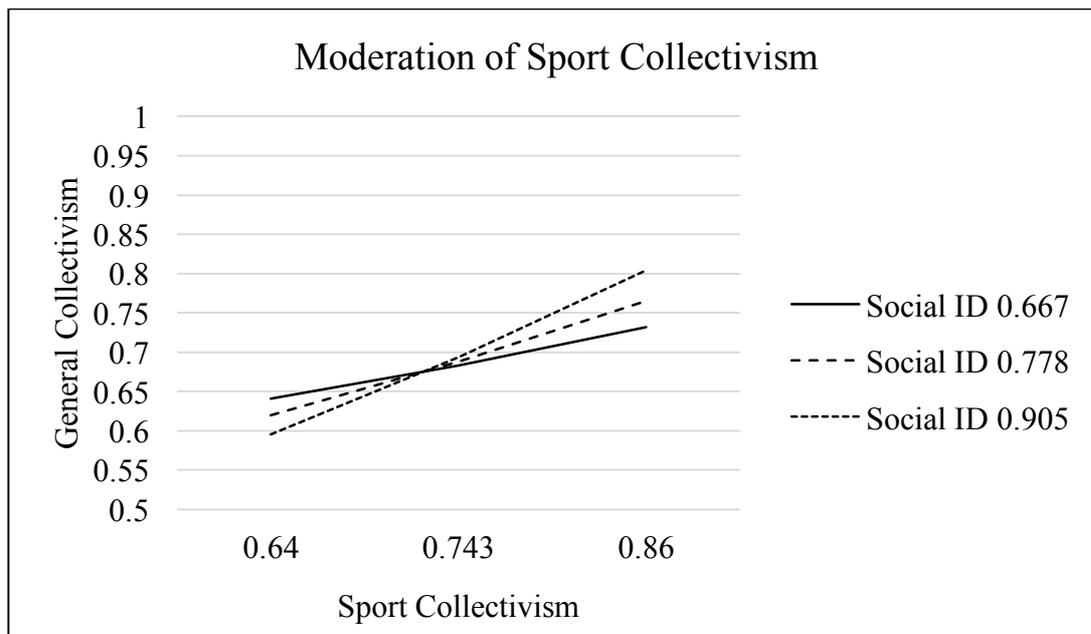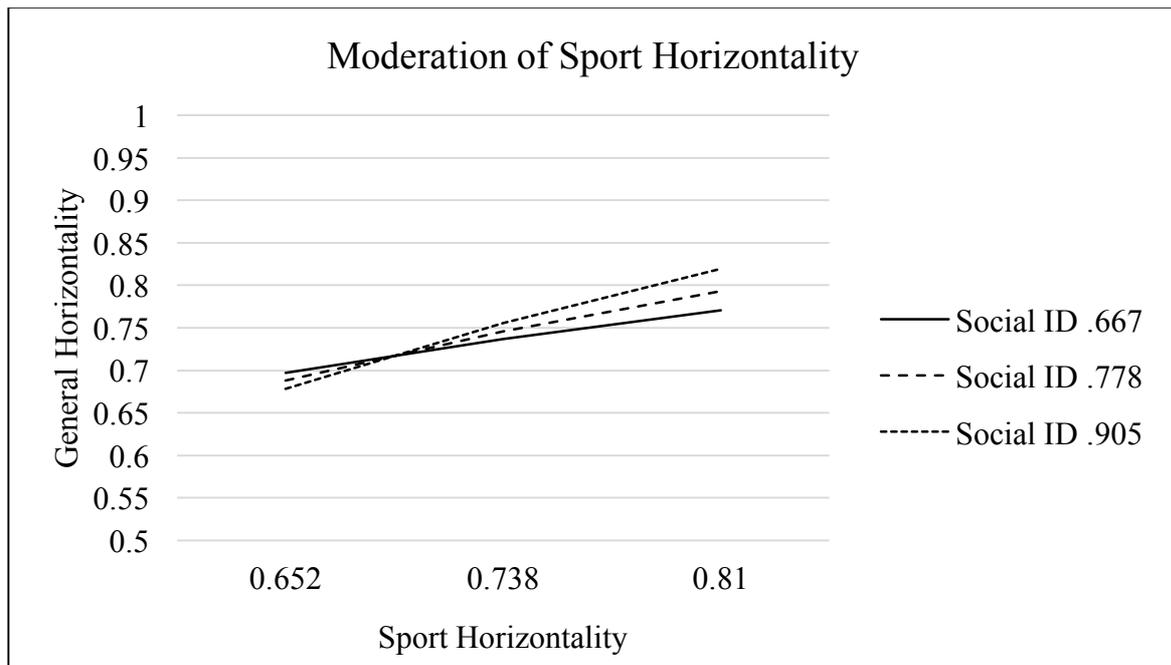

Figure 3: Moderation of the relationship between sport horizontality and general horizontality at low, medium and high levels of social identification.

Overall, this analysis demonstrated that preseason athletes' social identification was a significant moderator of the relationship between sport and general cultural orientations for collectivism and horizontality. In both cultural orientations, sport values predicted general values more significantly at higher levels of social identification with the team; however, the effects focalized at low, medium and high levels of social identification were all significant. This analysis did not further consider the role of social identification as a moderator because it was restricted to preseason identification and was significant at all levels.

2.2.4. Mediation Analysis

Simple mediation analyses were conducted using Hayes (2017) *PROCESS* (Model 4; 5000 iterations). The Baron and Kenny (1986) causal steps approach is used in the interpretation of the mediations: significant mediation occurs when the direct effect (Path C) becomes insignificant and an the total effect (Path C') is significant when the indirect effect (through Path A and B) is significant. In this study, Path A is the relationship between sport cultural orientation and general cultural orientation, Path B is the relationship between general cultural orientation and SDO, and Path C is sport cultural orientation predicting SDO directly. Path C' is the total effect of sport cultural orientation predicting SDO through general cultural orientation. The Baron and Kenny (1986) interpretation is not without criticism (see Hayes, 2009) because of its underpowered approach estimating multiple pathways, but this mediation analysis chose this approach for its straightforward interpretation. Mediations were conducted in the following order: sport collectivism, sport individualism, sport horizontality and sport verticality.

Collectivism

A mediation analysis of collectivism (Figure 4) revealed a significant direct effect of sport collectivism on SDO-E, $b = -2.21$, $p = .02$, 95 % CI [-4.06, -0.36], such that athletes with higher sport collectivism were less likely to have antiegalitarianism social attitudes. However, the indirect effect of general collectivism mediating the relationship with SDO-E was not significant, b = -0.76, $p = .38$, 95% CI [-2.46, 0.94]. Based on the framework of Baron and Kenny (1986), sport collectivism was not mediated by general collectivism on the prediction of SDO-E.

$b = 0.45, p < .001$
95 % CI [0.29, 0.60]

General Collectivism

$b = -0.76, p = .38$
95 % CI [-2.46, 0.94]

Sport Collectivism

SDO-E

Total effect, $b = -2.55$, $p = .003$, 95 % CI [-4.23, -0.87]
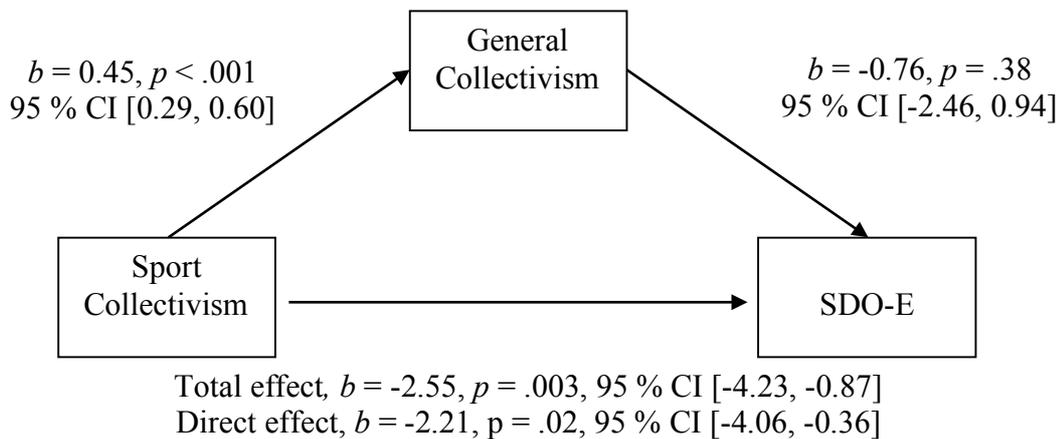Direct effect, $b = -2.21$, p = .02, 95 % CI [-4.06, -0.36]

Figure 4: Indirect effect of sport collectivism on preference for antiegalitarianism through general collectivism. Values are unstandardized beta coefficients.

Individualism

Next, a mediation analysis (Figure 5) found that the direct effect of sport individualism predicting SDO-D was significant, $b = 2.55$, p $= .021$, 95 % CI [0.39, 4.71]. The indirect effect of general individualism mediating the relationship approached significance, $b = 1.97$, $p = .07$, 95 % CI [-0.13, 4.06]. Accounting for the indirect effect, the total effect became more significant than direct effect, $b = 3.87$, $p < .001$, 95 % CI [2.22, 5.53]. Although this is not interpreted as full mediation by Baron and Kenny (1986) because the direct effect is still significant, the condition in which the total effect is less significant than the direct effect suggests partial mediation. Overall, this mediation suggests that a partial mediation by general individualism approached significance. In this example, the results can be speculated as indicating that athletes with higher sport individualism were more likely to have higher general individualism, which in turn suggested that they have higher preference for social dominance attitudes. The lack of significance, however, warranted further examination.

Total effect, $b = 3.87$, $p < .001$, 95 % CI [2.22, 5.53]
Direct effect, $b = 2.55$, $p = .021$, 95 % CI [0.39, 4.71]

Figure 5: Indirect effect of sport individualism on preference for dominance through general individualism. Values are unstandardized beta coefficients.

Horizontality

The third mediation analysis (Figure 6) indicated that the direct effect of sport horizontality is not significant, $b = 1.88$, 95 % CI [-0.65, 4.41]. However, a significant indirect effect indicates that there may be conditions in which sport horizontality predicts antiegalitarianism attitudes through general horizontality, $b = -3.31$, $p = .006$, 95 % CI [-5,64, -0.98]. This result does not demonstrate mediation, but the evidence of an indirect effect is evidence of potential mediation in other conditions in which higher sport horizontality is related to higher general horizontality, which in turn would predict lower preference for antiegalitarianism.

$b = 0.62, p < .001$
95 % CI [0.48, 0.76]

General Horizontality

$b = -3.31, p = .006$
95 % CI [-5.64, -0.98]

Sport Horizontality

SDO-E

Total effect, $b = -0.18$, $p = .87$, 95 % CI [-2.30, 1.95]
Direct effect, $b = 1.88$, p = .14, 95 % CI [-0.65, 4.41]

Figure 6: Indirect effect of sport horizontality on preference for antiegalitarianism through general horizontality. Values are unstandardized beta coefficients.

Verticality

Finally, the fourth mediation analysis (Figure 7) found that there was an insignificant direct effect of sport verticality predicting SDO-D, $b = 1.14$, p = .20, 95 % CI [-0.59, 2.87] and a significant indirect effect of general verticality, $b = 1.91$, 95 % CI [0.36, 3.45]. This resulted in a significant total effect, , $b = 1.86$, $p = .027$, 95 % CI [0.21, 3.52]. This is a significant mediation according to Baron and Kenny (1986), in which athletes with high levels of sport verticality were more likely to have higher levels of general verticality, which in turn made them more likely to have higher social dominance attitudes.

$b = 0.38$, $p < .001$
95 % CI [0.22, 0.54]

$b = 1.91$, $p = .016$
95 % CI [0.36, 3.45]

General Verticality

Sport Verticality

SDO-D

Total effect, $b = 1.86$, $p = .027$, 95 % CI [0.21, 3.52]
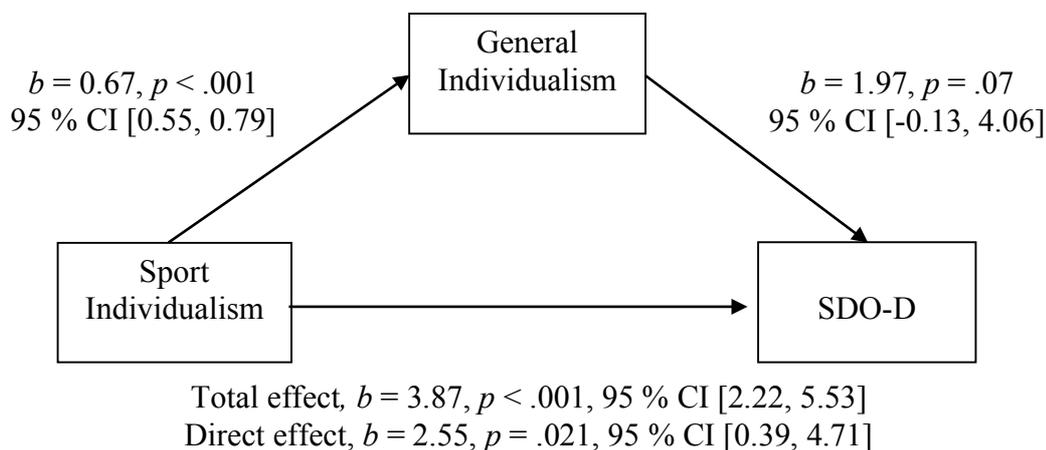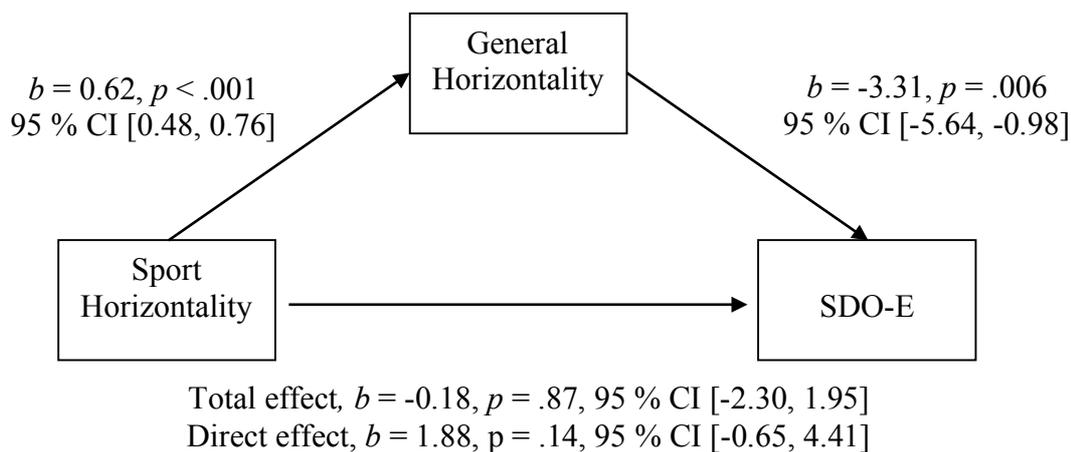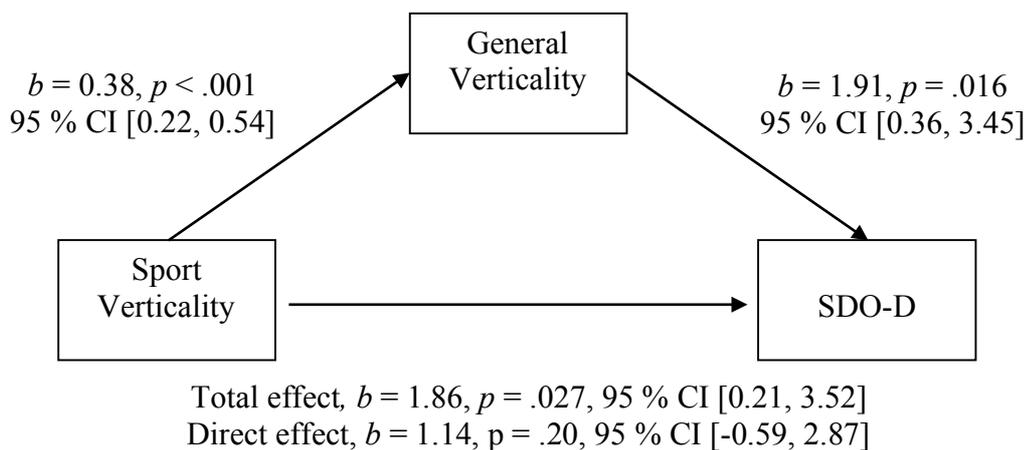Direct effect, $b = 1.14$, p = .20, 95 % CI [-0.59, 2.87]

Figure 7: Indirect effect of sport verticality on preference for dominance through general verticality. Values are unstandardized beta coefficients.

In sum, the hypothesized relationship between sport verticality and SDO-D mediated by general verticality was supported and there was partial support for the hypothesized mediation of sport individualism and SDO-D by general individualism. Sport verticality was significantly mediated by general verticality and sport individualism's mediation by general individualism approached significance. This suggests that high values of verticality and

individualism in sport were related to high values of verticality and individualism in general, which in turns positively predicts attitudes about social dominance.

Furthermore, the mediation analysis revealed a significant indirect effect of sport horizontality on antiegalitarianism attitudes through general horizontality. Contrary to the mediation hypotheses, general collectivism did not mediate the relationship between sport collectivism and antiegalitarianism, although the direct effect was significant. Taken together, these results provide evidence of cultural differences experienced at the level of the sports team affecting intergroup attitudes outside of the sports contexts in the domain of social dominance. There is less evidence, however, that relationships between cultural differences and preferences for antiegalitarianism exist as mediated by general cultural orientations. Although there is conditional support that preseason social identification with the team was a moderator for the internalization of sport cultural orientations into general cultural orientations, the overall analysis suggests that social identification did not moderate the relationship between sport and general cultural values for elite athletes. In order to generalize these relationships outside of elite sports contexts and to control for responses biases, a second study was conducted in-person to expand the athlete sample to non-elite competitive levels and to investigate individual sports compared to team sports.

3. Study 2

The participant sample of Study 1 restricted the generalizability of the findings because athletes at professional, semi-professional and elite intercollegiate levels were used. Elite athletes were chosen in an attempt to seek out emphasized differences in cultural values between general and sports contexts, but the implications of the cultural mediations would be limited in scope without a broader range of athletes. In order to investigate Study 1's findings in a more generalized context, Study 2 examined athletes in lower competitive levels and expanded to include individual sport athletes for a comparison to team sport athletes.

3.1 Method

3.1.1. Participants

Participants in the second study were team and individual sport athletes competing during their sport's season at elite, lower elite and intramural levels for an English university. Team sports were identified as sports where competitive games required team play (e.g., volleyball), whereas individual sports were defined as sports in which athletes compete individually in competitive play (e.g., tennis). It is important to note that individual sports in the university context were still in embedded in teams; team scores were still aggregated for multiple individuals competing separately, thus there is a caveat to the distinction between team and individual sport athletes in this study.

This sample considered athletes elite as Study 1 did, whereby elite athletes are athletes who competed professionally, semi-professionally, or for the university's intercollegiate first team. Lower elite athletes consisted of athletes who competed at an intercollegiate level for the university's lower ranked teams (e.g., second or third teams). Intramural athletes were defined as athletes who competed exclusively at an intracollegiate

level. In the case that an athlete played two different levels (e.g., intercollegiate second team and intramural team), they were assigned to the category of the higher competitive level.

A total of 262 athletes recruited through personal contacts and connections within the university's competitive sports organization completed the survey. Four athletes were excluded from the analysis for incomplete responses and an additional eight athletes were excluded for indicating that their highest competitive level was recreational. This produced a final participant sample of 250 athletes (121 females, 129 males) with an average age of 20.46 years ($SD = 2.13$) that did not significantly differ across sport type or competitive level ($p = .113$).

Team sport athletes accounted for 168 of the responses. There were 23 elite team sport athletes (14 female, 9 male; mean age = 19.87, $SD = 1.10$), 60 lower elite team sport athletes (34 female, 26 male; mean age = 20.25, $SD = 1.61$) and 85 intramural athletes (36 female, 49 male; mean age = 20.40, $SD = 2.40$). The eight sports represented in the final team sport sample were volleyball, basketball, rowing, rugby, lacrosse, football, squash and futsal. Athletes who played basketball ($N = 73$), volleyball ($N = 50$) and rowing ($N = 24$) represented 87.5 % of the surveyed responses.

Individual sport athletes accounted for 82 of the responses. There were 38 elite individual sport athletes (17 female, 21 male; mean age = 21.24, $SD = 2.77$) and 44 lower elite athletes (20 female, 24 male; mean age = 20.50, $SD = 1.90$). Every individual sport athlete who reported playing at the intramural competitive level also played at the lower elite level. This resulted in no intramural individual sport athletes in accordance with the aforementioned competitive level parameter. The eight sports represented in the final individual sport sample were fencing, badminton, tennis, squash, golf, triathlon, sculling, and track and field. Athletes who competed in fencing ($N = 29$), badminton ($N = 20$), tennis ($N = 15$) and squash ($N = 14$) represented 95.1 % of the surveyed responses.

3.1.2. Design, Measures and Procedure

Study 2 retained the same measures as Study 1. A reliability analysis was conducted of the INDCOL-Sport because of its adaptation for these studies. Responses to the 14-item INDCOL-Sport in the second study produced a Cronbach's alpha of $\alpha = .710$, indicating acceptable reliability. Study 2 also retains the same design as Study 1 with the exception of one change in procedure. Participants in Study 2 were recruited and completed the questionnaire in-person instead of online in order to reduce the likelihood of a response bias through the online questionnaire. Participants were provided with physical copies of the participant information sheet (Appendix 1) and consent form (Appendix 2). Upon completion of the questionnaire, participants were debriefed with the debriefing sheet from Study 1 (Appendix 3). Physical questionnaires and anonymous consent forms were stored by the main researcher in compliance with the ethics policy of the university ethics committee.

3.2. Results

3.2.1. Preliminary Analysis

As completed in the first study, a preliminary analysis was conducted as a precursor to the cultural comparison, moderation and mediation analyses. First, athletes' general cultural orientations and sport cultural orientations are respectively compared across sport type (team and individual) and competitive level (elite, lower elite, cultural orientation) to identify potential group differences. Then, a factor analysis was conducted of the SIQS (Bruner et al., 2014) for team sport and individual sport athletes to determine if a three-factor structure is supported in both groups. The results of the factor analysis informed the preliminary analysis of group difference in social identification.

3.2.1.1. Cultural Orientations

A one-way ANOVA of athletes' general cultural orientations factoring for sport group (elite team, lower elite team, intramural team, elite individual and lower elite individual) did

not demonstrate any differences between the groups on the values of general collectivism (p = .426), general individualism (p = .288), general horizontality (p = .417), or general verticality (p = .129). A one-way ANOVA of sport cultural orientations factoring for sport group, however, did find a significant difference between groups. There was a significant main effect of sport individualism, $F(4, 248) = 2.978$, p = .02. A Scheffe post-hoc test revealed that elite individual sport athletes (m = .741, SD = .098) had significant higher values of sport individualism than intramural team athletes (m = .671, SD = .119), p = .044. The one-way ANOVA approached significance for the main effect of sport collectivism, $F(4, 247) = 2.302$, p = .059, although a Scheffe post-hoc test indicated that the most significant difference was lower elite team athletes (m = .78, SD = .083) having greater sport collectivism values than intramural team athletes (m = .746, SD = .086), p = .32. The one-way ANOVA did not find any significant differences between groups on the values of sport collectivism (p = .059), sport horizontality (p = .08) or sport verticality (p = .116). Overall, there were no significant difference between groups on general cultural orientations. For sport cultural orientations, a significant difference in sport individualism occurred between elite individuals and intramural teams. The comparative cultural analysis later in this analysis will compare overall athletes, team sport athletes and individual sport athletes to account for this difference.

3.2.1.2. Social Identity Factor Analysis

A factor analysis of the SIQS (Bruner et al., 2014) is conducted separately for team sport athletes and individual sport athletes. In the same fashion as Study 1, the factor analysis was conducted using principal component analysis and Varimax rotation to examine the hypothesized three factor structure of ingroup ties, cognitive centrality and ingroup affect (Cameron, 2004). As conducted previously, these analyses compare Eigenvalues to the

Kaiser's (K1) criterion, parallel analysis and a scree plot of Eigenvalues plotted against component numbers in order to examine the structure.

The first study demonstrated a two-component structure of affective ingroup ties and cognitive centrality in the overall sample of elite athletes, but ingroup affect and ingroup ties were distinguished components when in-season athletes were examined separately. The three-component structure established in Study 1 for competitive season athletes is the main comparison for Study 2 findings with an expanded competitive season athlete sample.

3.2.1.2.1. Team Sport Factor Analysis

The overall team sport athlete sample across competitive level (elite, lower elite and intramural) was examined first. The case-to-variable ratio is 166:9, reduces to 18.44:1, and is greater than the accepted 10:1 ratio. The correlation matrix found that the determinant = .012 suggesting no multicollinearity in the data. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .827, above the acceptable .700 value and is the proportion of variance that is attributed to underlying factors. Bartlett's Test of Sphericity demonstrated that $\chi 2$ (36) = 707.077, $p < .001$; the correlation matrix was significantly different from the identity matrix, thus a factor analysis was supported. The communalities range from 0.523 to 0.811; all variables were kept in the analysis since they are above the 0.200 threshold.

In respect to the K1 Criterion, a three-factor structure emerges in which Factor 1 had an Eigenvalue of 4.406 and accounted for 48.954 % of the variance. Factor 2 had an Eigenvalue of 1.278 and accounted for 14.204 % of the variance. Factor 3 had an Eigenvalue of 1.024 and accounted for 11.374 % of the variance. These three factors accounted for 74.532 % of the variance in a three-component structure of social identity.

Running *Monte Carlo PCA for Parallel Analysis* (Watkins, 2000) generated random Eigenvalues for a structure with nine variables, 169 subjects and 150 replications. Table 4 produced the following random Eigenvalues:

Eigenvalue Number	Random Eigenvalue	Standard Deviation
1	1.3665	.0695
2	1.2344	.0433
3	1.1418	.0359

Table 4: Random Eigenvalue table generated by Monte Carlo PCA for Parallel Analysis

Compared to the Eigenvalues obtained in the factor analysis, the Eigenvalue in Factor 1 is greater than the randomly generated Eigenvalue (4.406 > 1.3665) and in Factor 2 (1.278 > 1.2344). The Eigenvalue for Factor 3 produced in the factor analysis is narrowly less than the random Eigenvalue generated by the parallel analysis (1.024 < 1.1418), thus the parallel analysis suggested that there are only two dimensions in the underlying structure unlike the K1 criterion's suggestion of the three.

The scree plot in Figure 8 illustrated that the variance accounted for by Eigenvalues levels out at the fourth component, which was interpreted as a three-component structure of social identification.
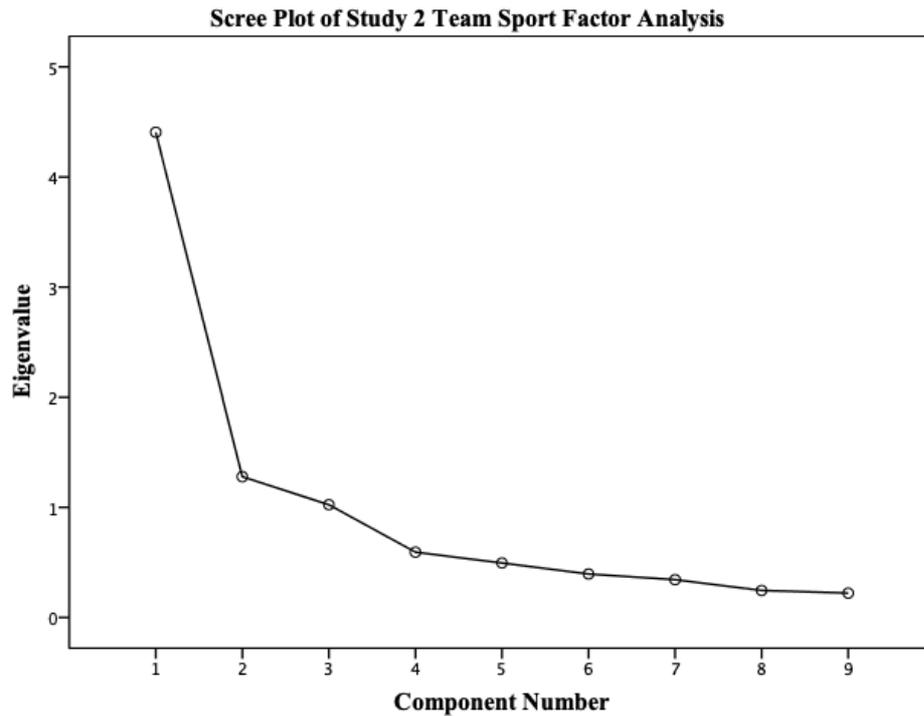
Figure 8: Scree plot of Eigenvalues graphed along the component numbers for team sport athletes in the second study.

The rotated component matrix in Table 5 suggested that Factor 1 was ingroup ties and includes the hypothesized SIQS Question 1 (.763) and Question 2 (.848). Factor 2 was cognitive centrality and includes SIQS Question 4 (.873), Question 5 (.875). Factor 3 was ingroup affect includes Question 7 (.879), Question 8 (.793) and Question 9 (.802).

The remaining two variables with cross-factor component loadings were SIQS Question 3 (Component 1, .699; Component 2, .390) and Question 6 (Component 2, .558; Component 3, .446). Question 3 had a higher factor loading with ingroup ties factor and Question 6 had a higher factor loading with cognitive centrality. These factor loadings were aligned with the hypothesized loadings in spite of crossing factors in the rotated component matrix (Bruner et al., 2014; Bruner and Benson, 2018).

SIQS Question	Rotated Component Number		
	1	2	3
Question 1: I feel strong ties to other members of this team.			.763
Question 2: I find it easy to form a bond with other members in this team.			.848
Question 3: I feel a sense of being "connected" with other members in this team.		.390	.699
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.		.873	
Question 5: In general, being a member of this team is an important part of myself-image.		.875	
Question 6: The fact that I am a member of this team often enters my mind.	.446	.558	
Question 7: In general, I'm glad to be a member of this team.	.879		
Question 8: I feel good about being a member of this team.	.793		
Question 9: Generally, I feel good when I think about myself as a member of this team.	.802		

Table 5: Rotated Component Matrix of the three-factor structure of sport social identity

extracted with Principal Component Analysis and Varimax rotation with Kaiser

Normalization converged in three iterations.

Overall, this factor analysis suggested that the social identification of competitive

season team sport athletes in Study 2 had a three-component structure as was identified in the

competitive season elite team sport athletes in Study 1.

3.2.1.2.2. Individual Sport Factor Analysis

The overall individual sport athlete sample across competitive level (elite and lower

elite) was examined next. The case-to-variable ratio is 81:9, reduces to 9:1, and was less than

the accepted 10:1 ratio but above the minimum 5:1 ratio. The correlation matrix found that

the determinant = .004 suggesting no multicollinearity in the data. The Kaiser-Meyer-Olkin

Measure of Sampling Adequacy = .810, above the acceptable .700 value and is the proportion

of variance that was attributed to underlying factors. Bartlett's Test of Sphericity

demonstrated that $\chi 2$ (36) = 422.830, p < .001; the correlation matrix significantly differed

from the identity matrix and a factor analysis was appropriate. The communalities ranged

from 0.520 to 0.837; all variables are kept in the analysis since they are above the 0.200

threshold.

In respect to the K1 Criterion, a two-factor structure emerged in which Factor 1 had

an Eigenvalue of 4.550 and accounted for 50.557 % of the variance. Factor 2 had an

Eigenvalue of 1.496 and accounted for 16.624 % of the variance. Together, the two factors

accounted for 67.181 % of the variance in a two-component structure of social identity.

Monte Carlo PCA for Parallel Analysis (Watkins, 2000) generated random

Eigenvalues for a structure with nine variables, 81 subjects and 150 replications. Table 6

produced the following random Eigenvalues:

Eigenvalue Number	Random Eigenvalue	Standard Deviation
1	1.5566	.1010
2	1.3408	.0661
3	1.2044	.0546

Table 6: Random Eigenvalue table generated by Monte Carlo PCA for Parallel Analysis

Compared to the Eigenvalues obtained in the factor analysis, the Eigenvalue in Factor

1 was greater than the randomly generated Eigenvalue (4.550> 1.5566) and in Factor 2 (1.496

> 1.3408). The Eigenvalue for a third factor in the factor analysis was less than the random

Eigenvalue produced by the parallel analysis (.904 < 1.2044), thus the parallel analysis

suggested a two-factor structure.

The scree plot in Figure 9 illustrated that the variance accounted for by Eigenvalues levelled out at the third component, which is interpreted as a two-component structure to social identification.
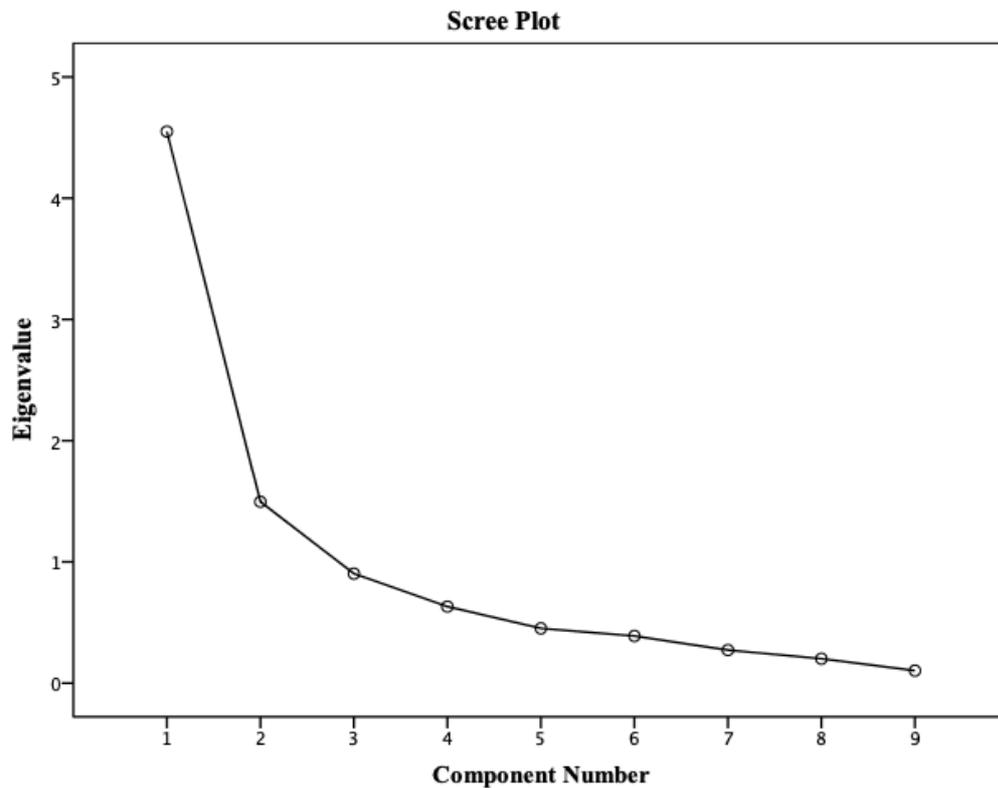
Figure 9: Scree plot of Eigenvalues graphed along the component numbers for team sport athletes in the second study.

In Table 7, the rotated component matrix suggested that Factor 1 is affective ingroup ties and includes the SIQS Question 2 (.763), Question 7 (.909), Question 8 (.849) and Question 9 (.890). Factor 2 was cognitive centrality and includes the hypothesized SIQS Question 4 (.799), Question 5 (.814) and Question 6 (.717).

The remaining two variables with cross-factor component loadings were SIQS Question 1 (Component 1, .440; Component 2, .571) and Question 3 (Component 2, .708;

Component 2, .367). Question 3 had a higher factor loading with affective ingroup ties

component and Question 1 had a higher factor loading with cognitive centrality.

SIQS Question	Rotated Component Number	
	1	2
Question 1: I feel strong ties to other members of this team.	.440	.571
Question 2: I find it easy to form a bond with other members in this team.	.728	
Question 3: I feel a sense of being "connected" with other members in this team.	.708	.367
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.		.799
Question 5: In general, being a member of this team is an important part of myself-image.		.814
Question 6: The fact that I am a member of this team often enters my mind.		.717
Question 7: In general, I'm glad to be a member of this team.	.909	
Question 8: I feel good about being a member of this team.	.849	
Question 9: Generally, I feel good when I think about myself as a member of this team.	.890	

Table 7: Rotated Component Matrix of the two-factor structure of sport social identity

extracted with Principal Component Analysis and Varimax rotation with Kaiser

Normalization converged in three iterations.

Unlike the team sport athletes in this sample, individual sport athletes who were in

competitive season had a two-component structure of social identification with their teams.

The social identity structure of individual sport athletes iwasmore similar to the preseason

and offseason team sport athletes in Study 1, where there is not a distinction between ingroup

affect and ingroup ties. Due to a difference in structure between team and individual sport

athletes, the overall social identity measure was used hereafter in the preliminary analysis and in the moderator analysis.

3.2.1.3. Social Identification

A one-way ANOVA comparing athletes' overall social identification scores found a significant effect of sport group, $F(4, 246) = 4.996$, $p = .001$. A Scheffe post hoc test demonstrated that intramural team athletes ($m = .780$, $SD = .11$) identified significantly less with their teams than elite team ($m = .862$, $SD = .084$; $p = .022$) and lower elite team athletes ($m = .842$, $SD = .088$; $p = .013$). Since the overall construct of social identification is tested as a moderator, this significant difference in social identification warrants separating intramural team athletes during the moderator analysis as a sub-group.

3.2.2. Cultural Orientation Analysis

As conducted in the first study, a series of paired sample t-tests compared the general and sports cultural orientations of collectivism, individualism, horizontality and verticality. The preliminary analysis found significant differences in sports individualism between elite individual sport athletes and intramural team athletes, and this difference was accounted for by splitting the cultural comparisons into team and individual sport groups.

As hypothesized, team sport athletes were significantly more collectivistic in sports contexts ($m = .766$, $SD = .084$) than in general contexts ($m = .728$, $SD = .092$), $t(165) = -5.394$, $p < .001$. Additionally, team sport athletes were significantly less individualistic in sports contexts ($m = .687$, $SD = .115$) than in general contexts ($m = .712$, $SD = .114$), $t(166) = 3.491$, $p = .001$. One the second subdimension, team sport athletes had significantly higher horizontality in general contexts ($m = .792$, $SD = .082$) than in sports contexts ($m = .746$, $SD = .086$), $t(167) = 7.821$, $p < .001$. Lastly, team sport athletes also had significantly higher verticality in sports contexts ($m = .716$, $SD = .109$) than in general contexts ($m = .649$, $SD = .106$), $t(164) = -9.356$, $p < .001$.

Next, individualistic athletes were also significantly more collectivistic in sports contexts (m = .747, SD = .106) than in general contexts (m = .709, SD = .09), $t(76)$ = -3.651, $p < .001$. Furthermore, individual sport athletes did not demonstrate a hypothesized difference in sports individualism (m = .718, SD = .117) and general individualism (m = .724, SD = .114), $t(78)$ = 0.531, $p = .597$. On the second cultural dimension, individual sport athletes had significantly higher verticality in sports contexts (m = .712, SD = .106) than in general contexts (m = .65, SD = .101), $t(76)$ = -5.327, $p < .001$. Lastly individual sport athletes had significantly higher horizontality in general contexts (m = .78, SD = .069) than in sports contexts (m = .757, SD = .089), $t(78)$ = 2.735, $p = .008$.

Overall, athletes across both team and individual sports had significantly higher sports collectivism and verticality than general collectivism and verticality. In addition, team and individual sport athletes had significantly greater horizontality in general contexts than in sports contexts. The two groups differed on the value of individualism: team sport athletes demonstrated a hypothesized lower sport individualism than general individualism, whereas individual sport athletes did not show a significant difference between the two. Although similar on three dimensions of cultural difference between sports and general contexts, the difference on individualism evidenced a need to separately analyse individual and team sport athletes during the mediation stage of the analysis.

3.2.3. Moderation Analysis

The preliminary analysis identified intramural athletes' social identification with their teams as significantly lower than elite and lower elite athletes. This moderation analysis therefore analysed moderation in the overall sample, an intramural athlete sample and a combined elite and lower elite athlete group because the latter two groups did not significantly differ on the overall construct of social identity. This analysis re-iterates that the intramural athlete sample was only comprised of team sport athletes as individual sport

intramural athletes were not available for surveying. Results are therefore limited to their interpretation about intramural team sport athletes.

Moderation analysis was conducted using Hayes (2017) *PROCESS* (Model 1; 5000 iterations) to test if overall sports identification moderated the relationship between sports cultural orientations and general cultural orientations. The moderation analysis showed that the overall relationships between sports cultural orientations and general cultural orientations were significant for collectivism, $F(3, 237) = 28.23$, $p < .001$, individualism, $F(3, 240) = 70.76$, $p < .001$, horizontality, $F(3, 241) = 42.71$, $p < .001$, and verticality $F(3, 236) = 44.33$, $p < .001$.

Significant moderation occurs when the interaction between sport cultural orientations and the hypothesized moderator of team social identification was significant while predicting general cultural orientations. The following Table 8 provides the significance of the interaction variables produced during moderation analyses.

Sport Cultural Interaction Variables	Overall Social Identity		Intramural Team Social Identity		Elite and Lower Elite Team Social Identity		Elite and Lower Elite Individual Social Identity	
	F-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value
Collectivism	.0002	.99	.64	.43	.84	.36	.02	.89
Individualism	.03	.87	.06	.81	4.44	.04	.02	.88
Horizontality	.79	.37	.07	.79	.23	.63	4.47	.04
Verticality	.04	.83	.21	.65	.11	.74	.73	.47

Table 8: The *F* and *p*-values of the interaction variables obtained during moderation analysis of sport cultural orientations predicting general cultural orientations as moderated by social identification.

In the overall sample of athletes, there was no significant interaction variable between a sport cultural orientation and the overall construct of social identification. This reinforces the finding of Study 1 which also did not find an overall moderation for competitive season athletes. Further moderation analyses were conducted on individual and team sport athletes, the latter group subdivided be intramural athletes and a combined elite and lower elite team athletes due to the significant difference in social identification noted in the preliminary analysis stage. Significant moderation was pinpointed in sport individualism for elite and lower elite team athletes and for sport horizontality in elite and lower elite individual athletes.

Sport Individualism – Team Sport Athletes

For elite and lower elite team athletes, the *PROCESS* moderation analysis (Hayes, 2017) indicated that the interaction variable between athletes' social identification and sport individualism was significant when predicting general collectivism $F(1, 79) = 4.44$, p = .04. The conditional effects of sport individualism are examined when focalized on social identification values identified as low (0.762), medium (.0.841) and high (.945). At low levels of social identification, the effect of sport individualism predicting general individualism was significant, $b = 0.9975$, $p < .001$, 95 % CI [0.74, 1.26]. At medium levels of social identification, the effect of sport individualism was also significant, $b = 0.8165$, $p < .001$, 95 % CI [0.64, 0.99] Lastly, the effect of sport individualism at high levels of social identification was significant, $b = 0.579$, $p < .001$, 95 % CI [0.31, 0.85]. Although moderation is significant at each level of social identification, it is of note that the size of the effect decreases at social identification increases.

The interaction plot in Figure 10 illustrated that lower levels of sport individualism predicted lower levels of general individualism when social identification was low than when social identification was high. Thus, at low values of sport individualism, athletes who

identified less with their team were predicted to have lower levels of general individualism than high identifiers.
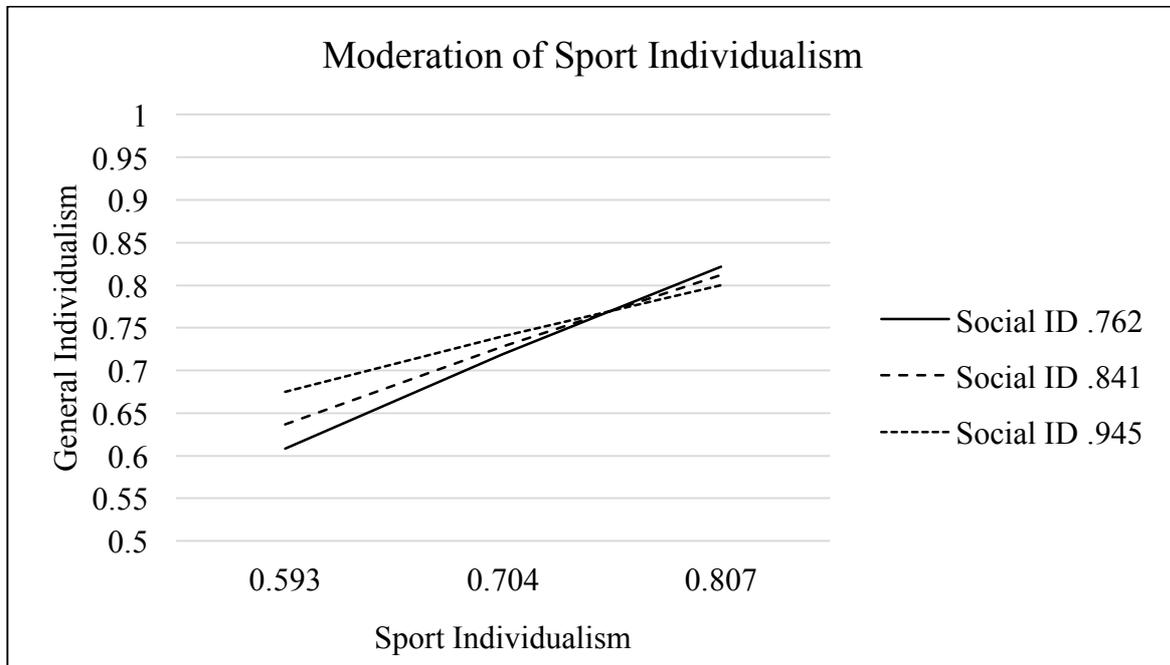

Figure 10: Moderation of the relationship between sport individualism and general individualism at low, medium and high levels of social identification.

Sport Horizontality – Individual Sport Athletes

Furthermore, the interaction variable between individual sport athletes' social identification and sport horizontality was significant while predicting general horizontality, $F(1, 75) = 4.47$, $p = .038$. The conditional effects of sport horizontality were examined when focalized on social identification values identified as low (0.727), medium (.0.857) and high (.924). At low levels of social identification, the effect of sport horizontality predicting general horizontality was significant, $b = 0.727$, $p = .016$, 95 % CI [0.05, 0.48]. At medium levels of social identification, the effect of sport horizontality was also significant, $b = 0.857$, $p < .001$, 95 % CI [0.30, 0.59] Lastly, the effect of sport collectivism at high levels of social identification was significant, $b = 0.924$, $p < .001$, 95 % CI [0.36, 0.71].

The interaction effect illustrated in Figure 11 portrayed moderation in which high

levels of sport horizontality predicted higher levels of general horizontality when social

identification was high compared to low social identification. That is, when an individual

sport athlete highly identified with their team and had high values of sport horizontality, they

were more likely to have higher general horizontality than their low identifying teammates.
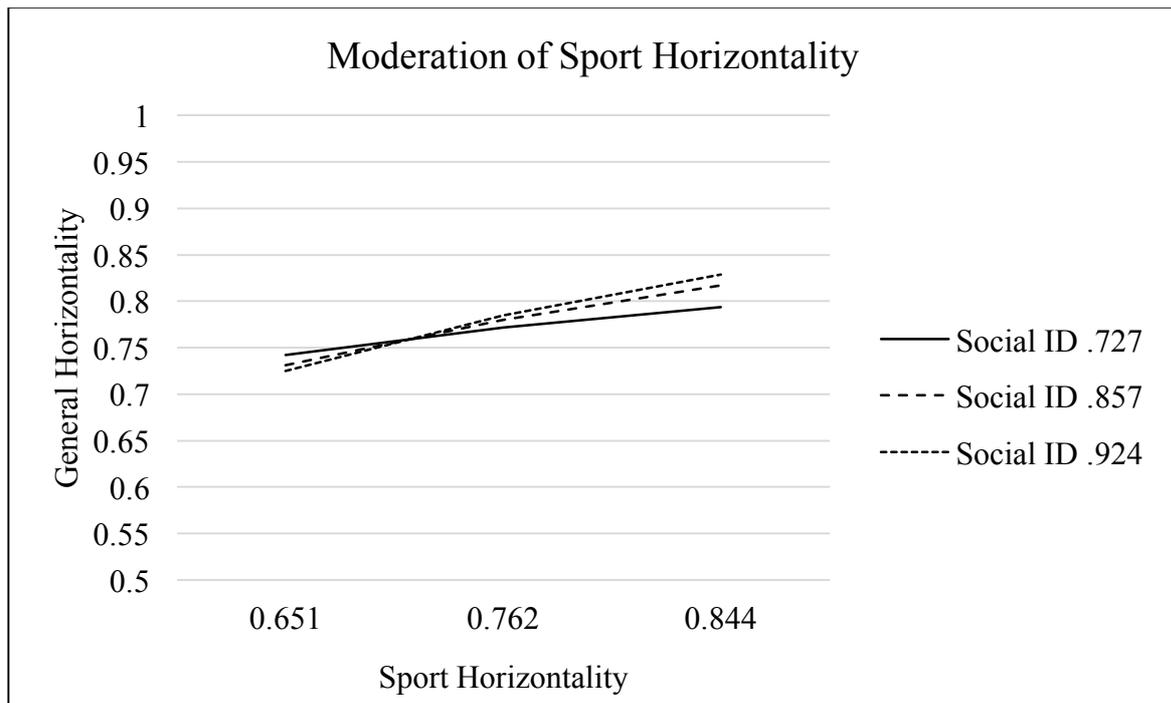
Figure 11: Moderation of the relationship between sport horizontality and general

horizontality at low, medium and high levels of social identification.

Overall, this analysis demonstrates that team sport athletes' social identification is a

significant moderator of the relationship between sport and general individualism meanwhile

individual sport athletes' social identification significantly moderates the relationship

between sport and general horizontality. More specifically, lower identifiers in team sports

significantly predict a lower relationship between sport individualism and general

individualism, whereas higher identifiers in individual sports predict a higher relationship

between sport horizontality and general horizontality. These moderations have a

commonality with the moderators discovered in Study 1 in that the effects focalized at low, medium and high levels of social identification were all significant. As conducted in the first study, this analysis therefore does not further consider the role of social identification as a moderator because the conditions by which moderation occurred were all significant and not present in the overall athlete sample.

3.2.4. Mediation Analysis

Mediation analyses were again conducted using *Hayes (2017) PROCESS* (Model 4; 5000 iterations) to examine the indirect and direct effects of sport cultural orientations on social dominance orientations as mediated by general cultural orientations. The causal steps approach of Baron and Kenny (1986) outlined in Study 1's mediation section was used in this study as well. As noted in Study 2's preliminary analysis, team sport athletes had lower individualism in sports contexts compared to general contexts, whereas individual sport athletes did not have a significant difference between the two contexts. To account for this, the mediation of individualism was separated by sport type. Thus, mediation analyses are presented in the following order: sport collectivism, sport individualism (team sport), sport individualism (individual sport), sport horizontality and sport verticality.

Collectivism

First, the overall collectivism mediation analysis (Figure 12) found an insignificant direct effect of sport collectivism on SDO-E, $b = 0.53$, 95 % CI [-0.98, 2.04]. Moreover, the indirect effect was also insignificant, $b = -1.23$, 95% CI [2.74, 0.28]. This provided no evidence of mediation or the suggestion that general collectivism may have a role in the relationship of sport collectivism and SDO-E. This also contrasted with the limited finding of a direct effect in Study 1's collectivism mediation.
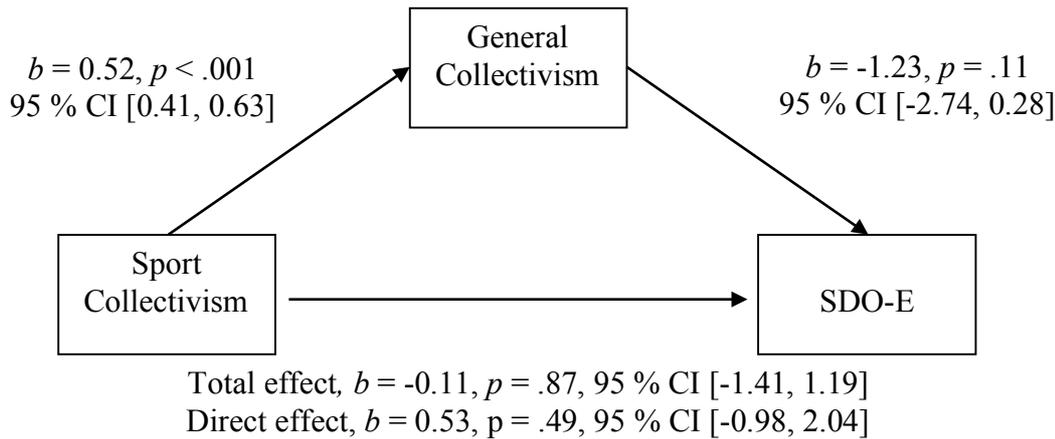
Figure 12: Indirect effect of sport collectivism on preference for antiegalitarianism through general collectivism. Values are unstandardized beta coefficients.

Individualism – Team Sport

The mediation analysis for sport individualism was approached separately for team sport and individual sport athletes because the preliminary analysis identified sport individualism being significantly lower than general individualism for team sport athletes and not significantly different for individual sport athletes.

The mediation analysis of team sport athletes' individualism was conducted first (Figure 13). The direct effect was found to be insignificant, $b = 0.98$, p = .27, 95 % CI [-0.78, 2.74] and the indirect effect approached significance, $b = 1.55$, 95 % CI [-0.22, 3.32]. Although the indirect effect only approached significance, the total effect was significant, $b = 2.03$, $p = .002$, 95 % CI [0.74, 3.33]. The causal steps approach suggested that this mediation therefore approached significance like the results of the individualism mediation in Study 1. The result of this mediation could be interpreted as athletes with higher sport individualism were more likely to have higher general individualism, which in turn is trending toward a positive prediction of social dominance attitudes.

Figure 13: Indirect effect of sport individualism on preference for dominance through general individualism for team sport athletes. Values are unstandardized beta coefficients.

Individualism – Individual Sport

The second mediation analysis of individual sport athletes' individualism values was conducted next (Figure 14). The direct effect of sport individualism on SDO-D was insignificant, $b = -0.45$, $p = .73$, 95 % CI [-3.02, 2.12]. Additionally, the indirect effect was also not significant, $b = 1.91$, 95 % CI [-0.78, 4.62]. Neither mediation nor an indirect effect were observed with individualism sport athletes, who were also not observed to have different individualist values between their sport and general contexts.
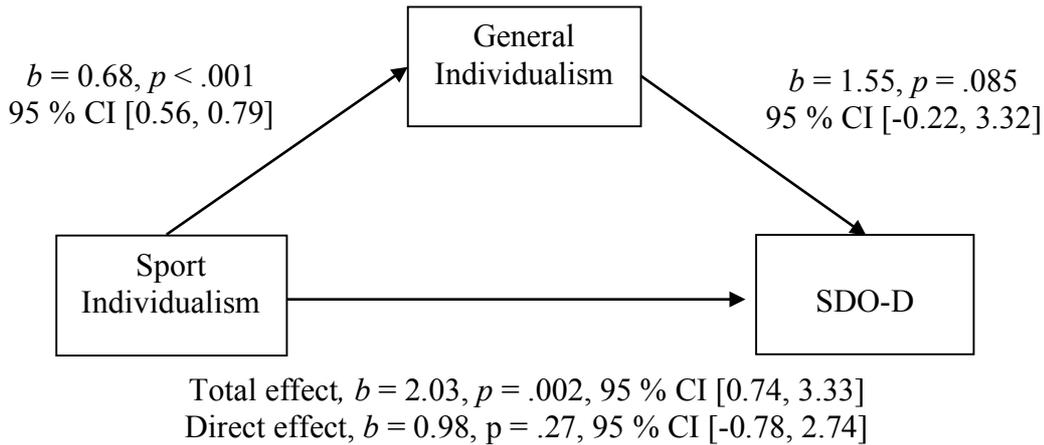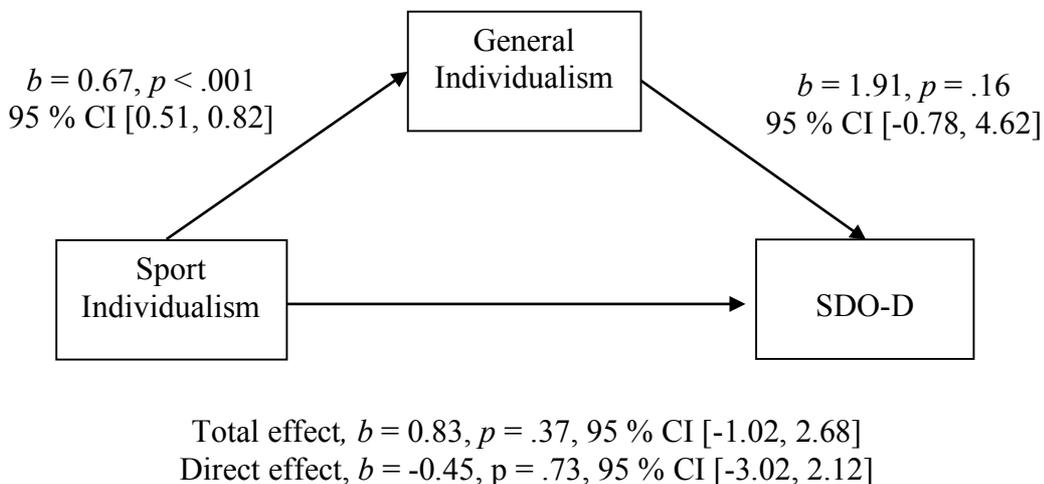
Figure 14: Indirect effect of sport individualism on preference for dominance through general individualism for individual sport athletes. Values are unstandardized beta coefficients.

Horizontality

The mediation analysis returned to the overall athlete sample as there were no differences in sport horizontality between team and individual sport athletes in the preliminary analysis (Figure 15). The direct effect of sport horizontality was not significant, *b* = 0.77, *p* = .36, 95 % CI [-0.89, 2.43], however, the indirect effect was significant, *b* = -2.91, *p* = .002, 95 % CI [-4.77, -1.05]. The total effect remained insignificant, *b* = -0.72, *p* = .31, 95 % CI [-2.10, 0.67]. Although mediation was not observed according to Baron and Kenny (1986), the significant indirect effect suggested that there were conditions in which sport horizontality influences general horizontality, which in turn predicted lower antiegalitarianism attitudes.

General Horizontality

b = 0.51, *p* < .001
95 % CI [0.42, 0.60]

b = -2.91, *p* = .002
95 % CI [-4.77, -1.05]

Sport Horizontality

SDO-E

Total effect, *b* = -0.72, *p* = .31, 95 % CI [-2.10, 0.67]
Direct effect, *b* = 0.77, p = .36, 95 % CI [-0.89, 2.43]
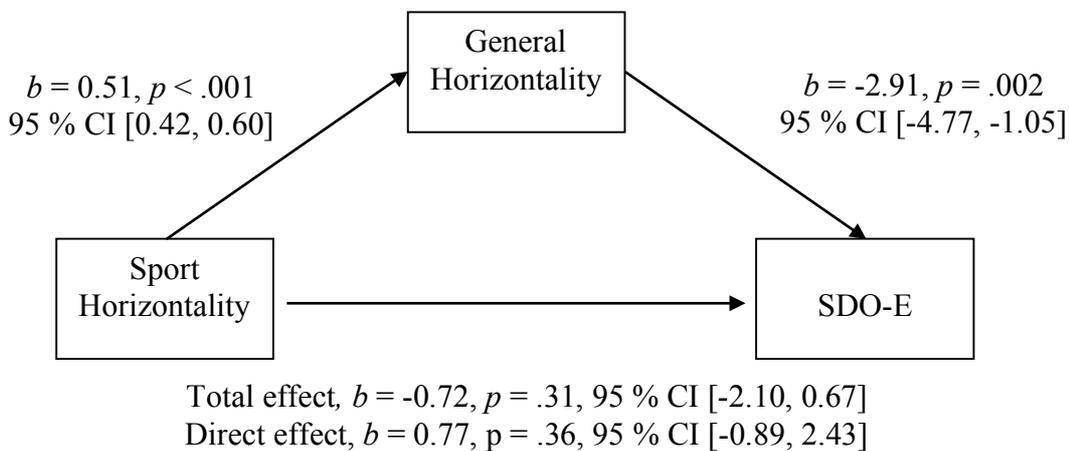
Figure 15: Indirect effect of sport horizontality on preference for antiegalitarianism through general horizontality. Values are unstandardized beta coefficients.

Verticality

The final mediation analysis (Figure 16) was of overall verticality values. There was a direct effect approaching significance, *b* = 1.21, *p* = .088, 95 % CI [-0.18, 2.59]. The indirect

effect was significant, $b = 1.73$, $p = .018$, 95 % CI [0.30, 3.17] and the total effect was

significant, $b = 2.21$, $p < .001$, 95 % CI [1.08, 3.33]. Each aspect of the causal steps approach

was met, indicating that there was significant mediation by general verticality of sport

verticality predicting SDO-D. Athletes with high levels of sport verticality were more likely

to have higher levels of general verticality, which positively predicted social dominance

attitudes.
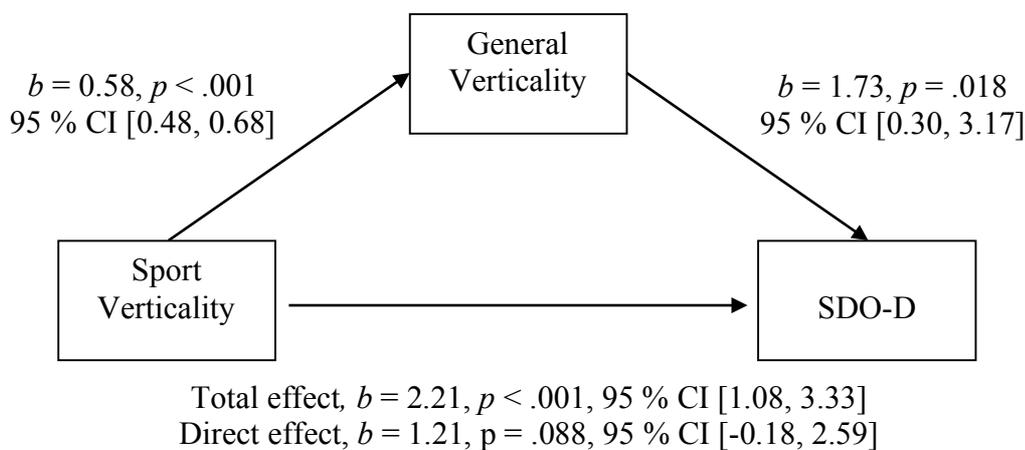
Figure 16: Indirect effect of sport verticality on preference for dominance through general

verticality. Values are unstandardized beta coefficients.

The results of the mediation analyses in Study 2 supported one hypothesis and

provided evidence approaching significance of a second. The sport cultural orientation of

verticality for team and individual sport athletes was significantly mediated by general

cultural orientations as predictors of social dominance attitudes. The analysis also showed

that team sport athletes' sport individualism approached significant mediation by general

individualism, whereas the mediation for individual sport athletes was insignificant.

The results of Study 2 are similar to the findings of Study 1 and were produced by a

more generalized athlete sample, furthering the evidence that sport team cultural contexts

influence broader intergroup social attitudes. Study 2 also provided evidence of specific

moderations of social identity on the relationship between sport and general cultural

orientations, but the overall trend is that the internalization of cross-cultural values occurred

irrespective of social identification with the team in either individual or team sports. Study 2

demonstrated that the findings of the elite athletes in Study 1 can be replicated in varying

competitive levels and sports types, but did not clarify if the results endure after the sport

season ends. Study 1 did not find group differences between competitive season and

offseason athletes and thus combined these groups together in its analyses, but the amount

offseason athletes in the first study was undersized ($N = 27$). To explore the endurance of

internalized cultural values into athletes' offseason, this study is followed by a third study

examining offseason athletes across the three established competitive levels.

4. Study 3

4.1 Method

4.1.1. Participants

In the third study, participants were offseason elite, lower elite and intramural athletes at an English university. The competitive levels retained their operational definitions as established in Study 2. Fifty-eight athletes responded to the online survey and six athletes who identified themselves as playing individual sports (cross country, badminton, tennis and swimming) were removed due to the low group size. An outlier analysis lead to the removal of two more athletes whose last seasons were 35 and 60 weeks ago. This analysis proceeded with a final participant sample of 50 offseason team sport athletes (28 females and 22 males).

Twenty-two athletes (12 female and 10 males; mean age = 22.55 years, SD = 2.99) were elite athletes who reported being an average of 8.05 weeks (SD = 4.88) out of season. Sixteen athletes (11 female and five males; mean age = 19.94 years, SD = 1.29) were lower elite athletes whose seasons ended an average of 8.69 weeks (SD = 4.30) ago. Lastly, 12 athletes (five female and seven males; mean age = 20.00 years, SD = 0.95) were intramural athletes who reported being an average of 8.00 weeks (SD = 4.35) out of season. A one-way ANOVA with a Scheffe post-hoc test indicated the elite athletes were significantly older than lower elite athletes (p = .003) and intramural athletes (p = .008) by a respective mean difference of 2.61 and 2.55 years, $F(2, 47)$ = 8.68, p = .001. Athletes across competitive levels did not significantly differ on the amount of time since their last competitive season (p = .894).

The thirteen team sports represented in the final sample were volleyball, basketball, rowing, cricket, rugby, netball, lacrosse, field hockey, water polo, football, ultimate frisbee, dance and cheerleading. Athletes who played volleyball (N = 14), basketball (N = 12) and rugby (N = 5) represented 62 % of the surveyed responses.

4.1.2. Design, Measures and Procedure

Study 3 was conducted online through *Qualtrics* and used the same design, measures and procedure as detailed in Study 1. The 14-item INDCOL-Sport measure was tested for reliability again because of its adaptation for this study. The reliability analysis produced a Cronbach's alpha of $\alpha = .588$, a low value of reliability but passable to use with some caution heeded to in the interpretation of the cultural differences.

4.2 Results

4.2.1. Preliminary Analysis

For the third study, a preliminary analysis was conducted for the offseason athletes. Athletes' general cultural orientations and sport cultural orientations were respectively compared across competitive level (elite, lower elite and intramural) to test for group differences. Then, a factor analysis was conducted of the SIQS (Bruner et al., 2014) to establish the structure of social identity in offseason athletes compared to the offseason elite athletes sampled in Study 1. This study followed the previous studies by choosing to use the overall construct of social identity as a moderator in the main analysis, thus the preliminary analysis compared differences in social identification across competitive level as well.

4.2.1.1. Cultural Orientation Preliminary Analysis

A one-way ANOVA of athletes' general cultural orientations factoring for competitive level did not demonstrate significant differences between the groups on the values of general collectivism ($p = .407$), general individualism ($p = .550$), general horizontality ($p = .933$), or general verticality ($p = .889$). Similarly, a one-way ANOVA of sport cultural orientations factoring for time of season did not find any differences between groups in athletes' values for sport collectivism ($p = .856$), sport individualism ($p = .133$), sport horizontality ($p = . 882$), or sport verticality ($p = .369$). Offseason team sport athletes across competitive levels did not differ on either their general cultural value systems or their

sport cultural value systems, therefore comparisons of general and sport cultural orientations will not further subdivide the group.

4.2.1.2. Social Identity Factor Analysis

A factor analysis of the SIQS (Bruner et al., 2014) using principal component analysis and Varimax rotation was conducted to assess the structure of social identity in offseason athletes. The SIQS predicts three factor structure of ingroup ties, cognitive centrality and ingroup affect reflective of social identity work conducted by Cameron (2004), but the first study conducted here found that offseason athletes have a two-component structure of affective ingroup ties and cognitive centrality. To examine the structure, this factor analysis used the established comparison of Eigenvalues to the Kaiser's (K1) criterion, parallel analysis and scree plot (Eigenvalues plotted along the component numbers).

The overall offseason athlete sample produced a case-to-variable ratio of 50:9 which reduces to 5.56:1, less than the accepted 10:1 but above the minimum 5:1 ratio. The correlation matrix found that the determinant = .007 which is greater than .00001, indicating that there was no multicollinearity in the data. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .787, above the acceptable .700 value and was the proportion of variance observed that was explained by underlying factors. Bartlett's Test of Sphericity found produced χ^2 (36) = 226.201, p < .001. The significant chi-square meant that the correlation matrix was significantly different from the identity matrix, demonstrating that there was correlation among variables and that a factor analysis was appropriate. The communalities, or amount of variance shared by a variable with other variables, ranged from .500 to .800; all values are above .200 therefore all variables were kept in the analysis.

Using the K1 criterion, where factors were kept if their Eigenvalue is greater than 1.00, a two-factor structure emerged wherein Factor 1 had an Eigenvalue of 4.304 and accounted for 47.824 % of the variance. Factor 2 had an Eigenvalue of 1.822 and accountsed

for 20.249 % of the variance. These two factors combined accounted for 68.073 % of the variance in a two-component structure of social identity.

Monte Carlo PCA for Parallel Analysis (Watkins, 2000) generated random Eigenvalues for a random structure with nine variables, 49 subjects and 150 replications. The following Table 9 is produced:

Eigenvalue Number	Random Eigenvalue	Standard Deviation
1	1.7154	.1334
2	1.4507	.0786
3	1.2595	.0709

Table 9: Random Eigenvalue table generated by Monte Carlo PCA for Parallel Analysis

Compared to the Eigenvalues obtained in the factor analysis, the Eigenvalue in Factor 1 was greater than the randomly generated Eigenvalue (4.304 > 1.7154) as was the Eigenvalue obtained in Factor 2 (1.822 > 1.4507). The Eigenvalue obtained for a third factor was not greater than the randomly generated Eigenvalue produced by the parallel analysis (.744 < 1.2595) therefore the comparison was interpreted as a two-factor social identity structure similar to the K1 Criterion.

Lastly, the scree plot in Figure 17 showed that the variance accounted for by Eigenvalues levelled out at the third component. This scree plot illustrated that there was a two-factor structure of social identity.
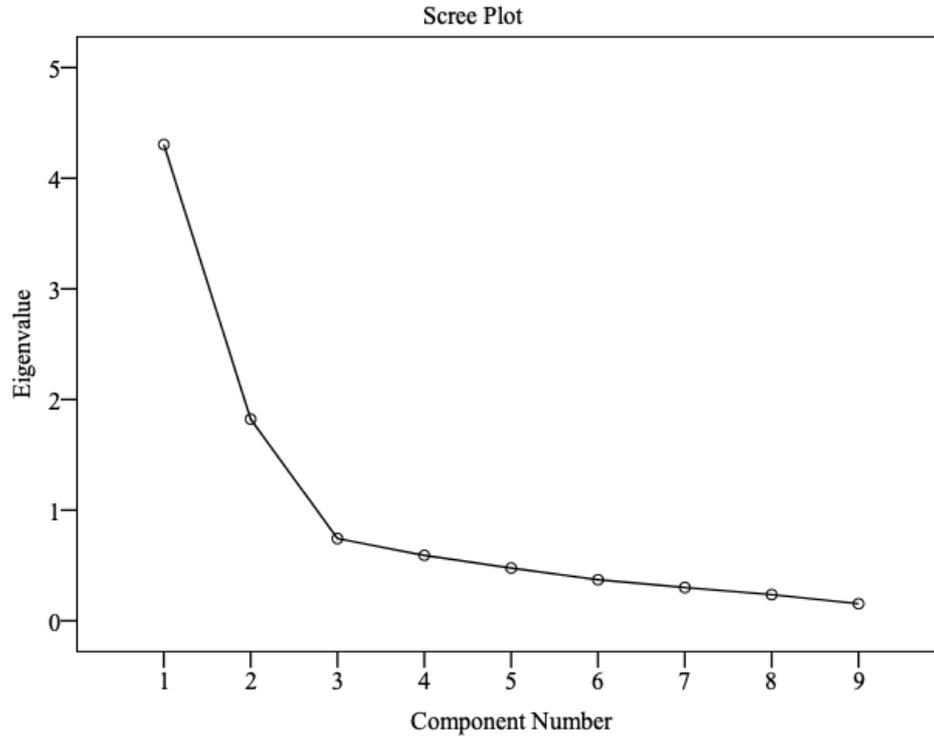
Figure 17*:* Scree plot of Eigenvalues graphed along the component numbers.

The rotated component matrix shown in Table 10 suggested that Factor 1 was affective ingroup ties and included the SIQS Question 1 (.867), Question 2 (.721), Question 3 (.779), Question 7 (.842) and Question 9 (.755). Factor 2 was cognitive centrality and included the hypothesized SIQS Question 4 (.887), Question 5 (.870) and Question 6 (.838).

The remaining variable with its respective Factor 1 and 2 component loadings was SIQS Question 8 (.518, .481). This variable was identified by Bruner and colleagues (2014) as belonging to ingroup affect, but in this factor analysis the variable loads slightly closer to the merged affective ingroup ties component, depicting that ingroup affect was indistinct from ingroup ties. Overall, this analysis supported a two-component structure of social identity in sport: affective ingroup ties and cognitive centrality.

| | Rotated Component Number | |
SIQS Question	1	2
Question 1: I feel strong ties to other members of this team.	.867	
Question 2: I find it easy to form a bond with other members in this team.	.721	
Question 3: I feel a sense of being "connected" with other members in this team.	.779	
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.		.887
Question 5: In general, being a member of this team is an important part of myself-image.		.870
Question 6: The fact that I am a member of this team often enters my mind.		.838
Question 7: In general, I'm glad to be a member of this team.	.842	
Question 8: I feel good about being a member of this team.	.518	.481
Question 9: Generally, I feel good when I think about myself as a member of this team.	.755	

Table 10: Rotated Component Matrix of the two-factor structure of sport social identity extracted with Principal Component Analysis and Varimax rotation with Kaiser Normalization converged in three iterations.

This factor analysis of offseason athletes' response to the SIQS doid not support the hypothesized three-factor structure of social identity in sport but reinforced the findings from Study 1 where offseason athletes had a similar two-component structure of affective ingroup ties and cognitive centrality. The findings of Study 1 and Study 2 indicate that ingroup affecti and ingroup ties were distinct components of social identity when an athlete was playing a team sport that was in competitive season. Aligning with the two previous studies, this study used the overall construct of social identity for the last section of the preliminary analysis for the moderation analysis.

4.2.1.3. Social Identification

A one-way ANOVA comparing offseason athletes' overall social identification scores did not find a significant effect of competitive level, $F(2, 47) = .188, p = .830$. Elite, lower elite and intramural athletes during the offseason did not have significantly different social identification with their previous teams. Accordingly, subsequent analysis did not subdivide these groups.

4.2.2. Cultural Orientation Analysis

Next, a series of two-tailed paired samples t-tests were conducted to compare the cultural orientation values of all offseason athletes in general and sports contexts. The individualism-collectivism subdimension was assessed first and followed by the comparison of the verticality-horizontality subdimension.

As hypothesized, offseason team sport athletes were significantly more collectivistic in sports contexts ($m = .759, SD = .095$) than in general contexts ($m = .689, SD = .075$), $t(49) = -5.497, p < .001$. Although individualism values were hypothesized to be lower in sports contexts, no significant difference was found in athletes' individualism scores in general ($m = .741, SD = .101$) than in sports contexts ($m = .725, SD = .104$), $t(49) = 1.118, p = .269$. On the second subdimension, offseason athletes had greater scores of horizontality in general contexts ($m = .772, SD = .068$) than in sports contexts ($m = .751, SD = .075$), $t(49) = 2.106, p = .04$. The results also supported the hypothesis for verticality in that athletes had greater verticality scores in sports ($m = .738, SD = .109$) than in general contexts ($m = .651, SD = .099$), $t(49) = -5.825, p < .001$.

The cultural patterns obtained in Study 3 reflected the findings of the previous two studies: sports contexts fostered significantly lower horizontality value, significantly higher collectivism and verticality values. There was only evidence of lower sport individualism in

Study 2's competitive team sport athletes; otherwise, the offseason team sport athletes of the current study had similar indifferent individualism scores compared to Study 1's elite sample.

4.2.3. Moderation Analysis

The preliminary analysis did not find a significant difference of overall social identification across the competitive level of offseason athletes, therefore this moderation analysis analysed moderation in the overall sample. Moderation analyses were conducted using Hayes (2017) *PROCESS* (Model 1; 5000 iterations) to test if overall social identification moderated the relationship between sports cultural orientations and general cultural orientations.

The *PROCESS* moderation analysis (Hayes, 2017) demonstrated that the overall relationships between sports cultural orientations and general cultural orientations were significant for collectivism, $F(3, 46) = 5.35$, $p = .003$, individualism, $F(3, 46) = 6.25$, $p = .001$, horizontality, $F(3, 46) = 6.14$, $p = .001$, and verticality $F(3, 46) = 6.33$, p = .001.

Significant moderation occurs when the interaction variable between a sport and general cultural orientation is significant. The moderation analysis showed that the interaction variable between social identification and sport cultural orientations was not significant for sport collectivism, $F(1, 46) = 1.85$, $p = .18$, sport individualism $F(1, 46) = .92$, $p = .34$, or sport horizontality, $F(1, 46) = .46$, $p = .50$. The interaction effect of social identification and sport verticality approached significance, $F(1, 46) = 3.57$, p = .06

This moderation analysis overall did not support the moderation of sport and general cultural orientations by social identification in spite of their significant relationships. This study did not pursue social identification as a moderator further in the mediation.

4.2.4. Mediation Analysis

The final mediation analysis was conducted using Hayes (2017) *PROCESS* (Model 4; 5000 iterations) to examine the indirect and direct effects of offseason athletes' sport cultural orientations on social dominance orientations. Mediation analyses were presented in the order of sport collectivism, sport individualism, sport horizontality and sport verticality.

Collectivism

The collectivism mediation analysis (Figure 18) found an insignificant direct effect of sport collectivism, $b = 0.93$, $p = .62$, 95 % CI [-2.80, 4.66]. Likewise, the indirect effect of sport collectivism through general collectivism was also insignificant, $b = -0.45$, $p = .85$, 95% CI [-5.18, 4.28]. General collectivism did not mediate the relationship between sport collectivism and antiegalitarianism attitudes in the first two studies, and this result further confirmed that the hypothesized relationship did not occur for offseason athletes.
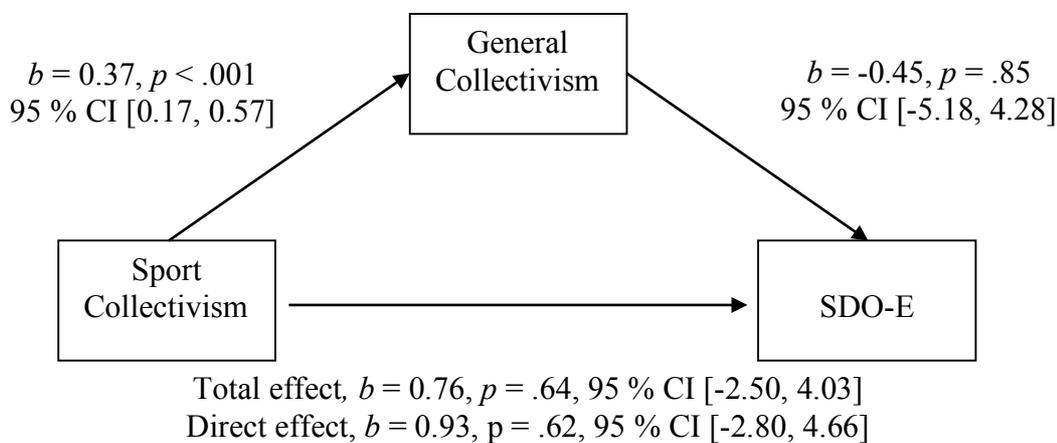
Figure 18: Indirect effect of sport collectivism on preference for antiegalitarianism through general collectivism. Values are unstandardized beta coefficients.

Individualism

        A mediation analysis of individualism (Figure 19) found an insignificant direct effect of sport individualism, $b = -2.19$, p = .22, 95 % CI [-5.70, 1.33], but the indirect effect was significant, b = 7.31, 95% CI [3.70, 10.92]. The total effect, however, remained insignificant, $b = 1.38$, 95 % CI [-1.98, 4.95]. The indirect effect indicated that there are conditions when sport individualism predicts SDO-D through general individualism. The first two studies found mediations of individualism that approached significance. In this study, the finding of an indirect effect in the offseason was speculated to mean that individualism values in sports contexts do not influence SDO-D as much as they do during the competitive season. Future studies would need to have a longitudinal design to assess this relationship more clearly to determine if the influence of sport individualism on broader social attitudes is reserved to the competitive sports season.

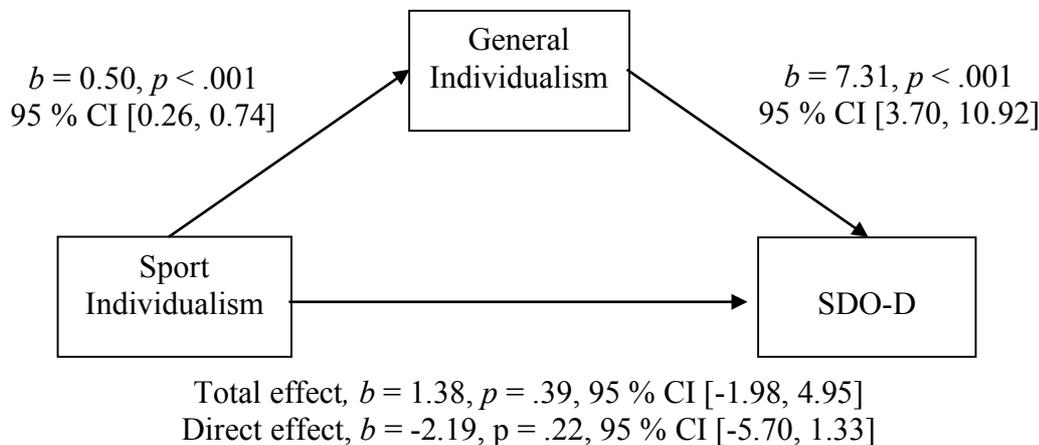*Figure 19:* Indirect effect of sport individualism on preference for dominance through general individualism. Values are unstandardized beta coefficients.

Horizontality

The horizontality mediation (Figure 20) of offseason athletes did not find a significant direct effect, $b = 4.00$, p = .10, 95 % CI [-0.77, 8.77]. The indirect effect was also found to be insignificant, $b = -1.92$, $p = .46$, 95 % CI [-7.17, 3.32]. In spite of this, the direct effect of sport horizontality on antiegalitarianism attitude was trending toward significance, $b = 4.00$, 95 % CI [-0.77, 8.77]. This finding contrasts with the results of Study 1 and 2 in which the indirect effect of general horizontality was significant. This evidence suggests that values of horizontality fostered in sports contexts, which were significantly lower than general horizontality, did not influence antiegalitarianism attitudes once the season is complete.

$b = 0.48, p < .001$
95 % CI [0.25, 0.70]

General Horizontality

$b = -1.92, p = .46$
95 % CI [-7.17, 3.32]

Sport Horizontality

SDO-E

Total effect, $b = 3.08, p = .13$, 95 % CI [-0.96, 7.13]
Direct effect, $b = 4.00, p = .10$, 95 % CI [-0.77, 8.77]
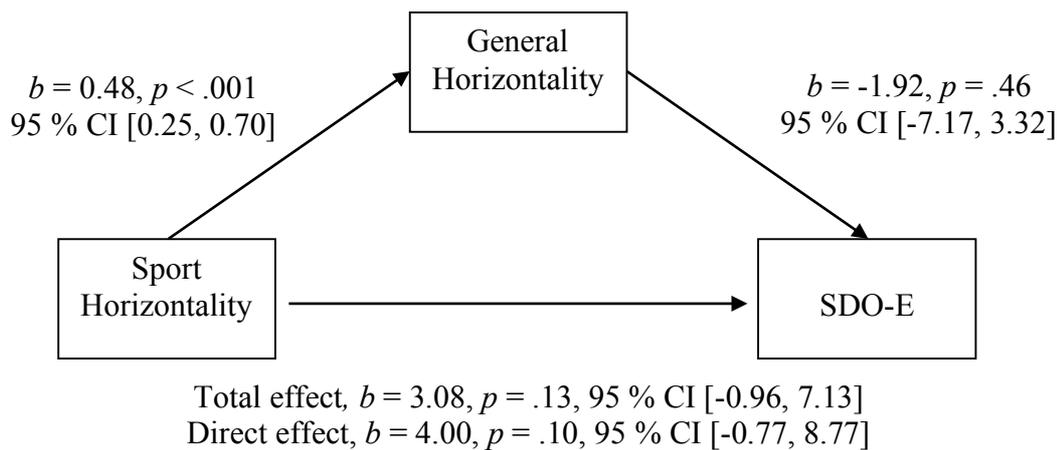
Figure 20: Indirect effect of sport horizontality on preference for antiegalitarianism through general horizontality. Values are unstandardized beta coefficients.

Verticality

Finally, the last mediation of sport verticality (Figure 21) demonstrated an insignificant direct effect, $b = 0.63$, p = .36, 95 % CI [-2.87, 4.13] and a significant indirect effect, $b = 4.89$, $p = .01$, 95 % CI [1.05, 8.74]. However, the total effect was only trending toward significance, $b = 2.80$, $p = .09$ 95 % CI [-0.43, 6.03]. Unlike the previous two studies

which found significant mediation, verticality in the offseason only approached significance

in which athletes with higher verticality in sport have higher general verticality which

positively predicts social dominance. The result that the mediation approaches significance

provided preliminary evidence that the influence of sports contexts is limited during the

offseason compared to its effect during competitive seasons in Study 1 and 2.

$b = 0.44, p < .001$
95 % CI [0.21, 0.67]

$b = 4.89, p = .01$
95 % CI [1.05, 8.74]

General
Verticality

Sport
Verticality

SDO-D

Total effect, $b = 2.80, p = .09$, 95 % CI [-0.43, 6.03]
Direct effect, $b = 0.63, p = .36$, 95 % CI [-2.87, 4.13]
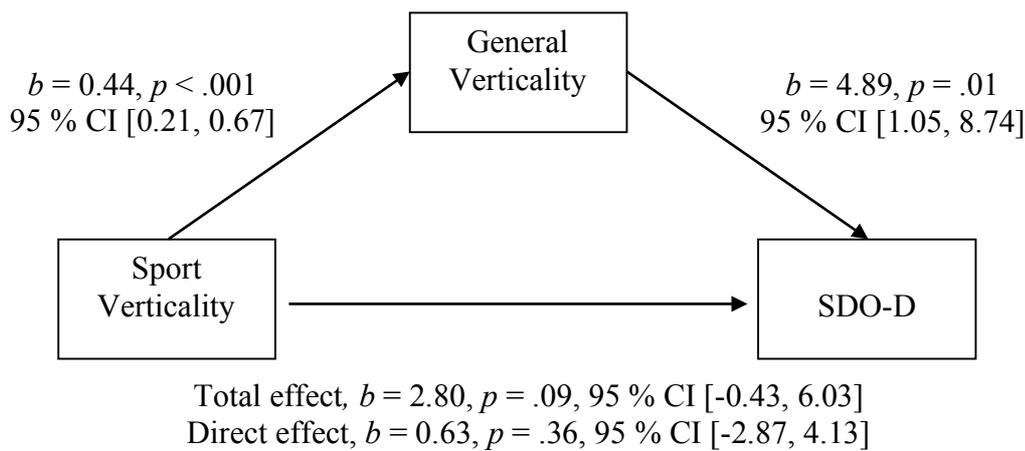
Figure 21: Indirect effect of sport verticality on preference for dominance through general

verticality. Values are unstandardized beta coefficients.

The mediation analysis of offseason athletes in Study 3 attempted to assess the

endurance of mediated cultural values through a cross-sectional design. Overall, a significant

indirect effect and trending significant total effect suggested that sport verticality predicted

social dominance attitudes in the offseason, but a significant mediation could not be

concluded according to Baron and Kenny (1986). A significant indirect effect but not

mediation was also discovered for sport individualism, contrasting with the previous two

studies.

The indirect effect of horizontality was not significant for offseason athletes in spite

of a direct effect approaching significance. Collectivism was also insignificant, as would be

expected since the previous two studies did not support its mediation during preseason or competitive season. These results suggest that cultural orientations that can particularly influence social dominance attitudes are present offseason for athletes to a lesser extent, though evidence that this occurs for antiegalitarianism is insufficient or insignificant.

5. General Discussion

The overall aim of this thesis was to address the research question: do sport teams create a context of cultural change that is conducive for influencing intergroup social attitudes? In order to address the question, the three studies first established that athletes in sports team contexts have cultural value systems that are consistently different from their broader cultural orientations. Next, the three studies demonstrated that social identification neither has a consistent substructure across time of season and sport type nor does it moderate the internalization of sports cultural values into general cultural values (although conditions of moderation are noted and discussed). Nonetheless, the three studies provided evidence that sports cultural orientations have the potential to influence social dominance orientations through an indirect effect or mediation of general cultural orientations particularly for the subdimension of SDO-D. The results of the three studies are summarized and their relevant theoretical, methodological and applied implications are discussed in the order of their analyses: cultural orientations, social identification and finally, effect on social dominance orientations. The general direction of future research is addressed based on these findings and research limitations, and finally this thesis concludes with an overall discussion.

5.1. Sport and General Cultural Contexts

Athletes were hypothesized to have significantly different sport cultural orientations compared to their general cultural orientations because the environmental demands of sports teams invoke higher collectivistic, horizontal and vertical values and potentially lower individualistic values (Greenfield et al., 2002; Kernan and Greenfield, 2005). The results of the three studies support Hypothesis 1 on the subdimensions of collectivism (1a), horizontality (1c) and verticality (1d) while only providing one condition of support for the subdimension of individualism (1b).

Across all three studies, sports collectivism and verticality were significantly greater than general collectivism and verticality. Additionally, sports horizontality was significant lower than general horizontality. These cultural orientations contextualized by sports teams were significantly different from their general cultural orientations across time of season (preseason, competitive season, offseason; Study 1 and 2), sport type (team sport and individual sport; Study 2) and competitive level (elite, lower elite, intramural; Study 2 and 3). Overall, these findings suggest that sports teams are local contexts in which greater collectivism can be experienced in broader social contexts that are considered more individualistic at an aggregate level such as in the United States or the United Kingdom (Triandis, 1994; Kernan and Greenfield, 2005). This also suggests that the potential for sports teams to be an equal status context among ingroup members as theorized by Kernan and Greenfield (2005) may be overshadowed by the broader context of competition in which athletes culturally value equality (horizontality) less and hierarchical relations (verticality) more than their general cultural orientations.

The hypothesis that sports individualism would be lower than general individualism was not supported across the three studies except in one condition: competitive season team sports (Study 2). Sports individualism was hypothesized to be lower than general individualism because the environmental demands of sports teams were qualitatively associated with greater collectivism values in the longitudinal study conducted by Richland and Greenfield (as cited in Kernan and Greenfield, 2005). Although individualism-collectivism is not a binary continuum (Triandis & Gelfand, 1998), it was hypothesized that such environmental demands like teamwork and interdependence to reach collective goals would result in lower sport individualism. The one condition where sports individualism was significantly lower than general individualism was for competitive season team sport athletes in Study 2, who represented elite, lower elite and intramural levels. This sample was most

similar to the Richland and Greenfield's sample of athletes, whom were high school team sport athletes in the United States also in their competitive season (as cited in Kernan and Greenfield, 2005). The competitive season athletes in Study 1, however, were exclusively elite athletes and did not demonstrate a significant difference in individualism. This finding suggests that lower sport individualism may only present during competitive season and in samples of athletes that are not exclusively elite. This suggests that elite levels may not be contexts where individualism is decreased because of competitive demands, but such a conclusion would require more refined comparisons of the effect of competitive levels on differential cultural patterns in sports contexts.

The adaptation of the INDCOL-Sport in these three studies from the general INDCOL (Sivadas et al., 2008) resulted in the first quantification of cultural values along the subdimensions of individualism-collectivism and horizontality-verticality in sports contexts. This methodological adaptation expanded on the underexplored literature by providing a quantitative approach that also includes the expanded typology of horizontality-verticality (Singelis et al, 1995; Triandis & Gelfand, 1998), which may impact future research seeking to incorporate cultural values toward hierarchy and equality. Whereas lower horizontality (cultural value of equality) and higher verticality (cultural value of hierarchy) in sports contexts complement each other, higher collectivism and insignificantly different individualism may be a source of intragroup conflict. Kernan and Greenfield (2005) documented conflict on multi-ethnic sports teams that was often a result of conflicts between athletes with individualist and collectivist value interpretations. If collectivism is heightened during competitive seasons and individualism is unchanged, this suggests that intragroup conflict stemming from interpersonal value systems of athletes on the same team does not resolve itself as an adaptation to the sports season in spite of the overall trend for higher collectivism in itself. This thesis demonstrates that cultural systems are situated in sports

teams, and research on the cultural conflicts that occur within those teams could be expanded upon for a more comprehensive understanding of the interaction of individual and group-level cultural differences. Future research could replicate the research aims of Kernan and Greenfield (2005) by quantifying cultural orientations as conducted in the current studies in order to examine how interpersonal cultural differences are antecedents to intragroup conflicts at an individual level. Additionally, the relationship between interpersonal intercultural conflict and intergroup relations could be examined in this manner, as well.

The cultural orientation analysis presented here also has theoretical implications. The significant differences that were observed in sports contexts compared to general contexts supports the potential to separate cultural values that are situated in specific group memberships (sports teams) and cultural values that are considered to be more general. This finding broadly supports the operationalization of culture as a dynamic process that cannot be reified as a singular, static entity (Singelis et al., 1995). The results are evidence of the notion that cultural value systems interact with specific environments and that contrasting value systems situationally co-exist in individuals (Greenfield, 1994). Furthermore, it is well-established that individualism-collectivism and horizontality-verticality are not binary cultural value systems, but rather four distinct types of cultural orientations (Triandis, 1995; Singelis et al., 1995; Triandis & Gelfand, 1998). The overall finding that athletes have greater sports collectivism but unchanged sports individualism compared to general collectivism and individualism, respectively, demonstrates that changing one orientation in a subdimension does not necessarily have an impact on the other orientation. In order to examine how the multifaceted relationship between differing cultural value systems can influence broader social attitudes, the three studies next examined the substructure and role of social identification with the team on the internalization of cultural values.

5.2 Social Identity in Sports

This thesis examined both the substructure of social identification and its moderating role in the relationship between sports and general cultural orientations. The structure of athletes' team identification is assessed first, followed by a discussion of its role as a moderator.

Social Identity Structure

Social identification was measured using the SIQS (Bruner et al., 2014), a measure adapted from the social identity work of Cameron (2004) and empirically tested by Bruner and Benson (2018) using datasets of team sport youth athletes during their competitive seasons. This thesis responded to the suggestion of Bruner and Benson (2018) to expand the measurement of social identification to athletes who play individual sports embedded in team contexts (Study 2). Furthermore, the study expanded the scope of social identification in athletes from elite (Study 1, 2 and 3), lower elite and intramural (Study 2 and 3) competitive levels. Lastly, the structural differences of team identification during preseason, competitive season and offseason were considered from a cross-sectional approach (Study 1, 3).

The results of the factor analyses conducted in the three studies partially support Hypothesis 2 that athletes' social identification consists of a three-factor structure of ingroup ties, cognitive centrality and ingroup affect. Study 1 indicated that the three-factor structure of elite team sport athletes' social identification emerged only when athletes were measured during their competitive season. Elite team sport athletes in preseason and offseason otherwise exhibited a two-structure social identification with their teams: affective ingroup ties and cognitive centrality. Next, Study 2 showed that team sport athletes in their competitive season demonstrated the hypothesized three-factor structure regardless of their competitive level. Study 2 found contrary evidence for individual sport athletes, however, whose social identification was structured into the two components of affective ingroup ties

and cognitive centrality. The comparison of Study 1 and Study 2 suggests that the structure of social identification for individual sport athletes who are in competitive season is similar to that of preseason and offseason team sport athletes. Lastly, Study 3 provided further confirming evidence that offseason team sport athletes across competitive levels did not demonstrate a distinct affective subdimension to their social identification.

Since ingroup ties and cognitive centrality are cognitive subdimensions and ingroup affect is an affective subdimension, the merging of ingroup ties and ingroup affect in the aforementioned contexts suggests that an affective dimension is only present when team sport athletes are competing with their teams. The findings of Bruner and colleagues (2014) revealed that ingroup affect is associated with prosocial teammate behaviour and team cohesion, the latter of which has been shown to be associated with performative outcomes (i.e., wins and losses; Murrell & Gaertner, 1992). The affective subdimension is therefore of interest to research that seeks to understand or improve performance outcomes because of its relationship with team cohesion. The results of the three studies conducted here show that ingroup affect is a subdimension of social identification that becomes distinct during competitive seasons for team sport athletes, but that it is not yet distinct for individual sport athletes or during the preseason. Future research could longitudinally assess how ingroup affect develops specifically during preseason and distinguishes itself during competitive season; its association with performative outcomes (Murrell & Gaertner, 1992) indirectly through team cohesion (Bruner et al., 2014) could also be of interest to intervention work on how social identification with the team impacts objective competitive outcomes.

Additionally, a methodological implication of the structural analysis of athletes' social identification is that the SIQS (Bruner et al., 2014) subdimensions differ for athletes who are not in competitive season or playing a team sport. Research that extends the findings of social identity outcomes like athlete initiative (Bruner et al., 2017) and team cohesion

(Bruner et al., 2014) should be mindful that individual sport athletes' social identity does not have a distinctly affective subdimension differentiating ingroup affect and ingroup ties. Therefore, research should examine how social identity outcomes vary for individual sports embedded in team contexts because there is evidence that social identification has different structure for athletes who have individual components of competition. In an applied setting, attempts to improve social identification through team-building exercises or interventions for preseason or individual sport athletes may seek to improve ingroup ties (i.e., perceptions of similarity; Cameron, 2004) in order to improve ingroup affect because factor analyses in this study suggest that these dimensions are structurally connected.

Social Identity as a Moderator

Team social identity was also hypothesized to be a moderator between sport cultural orientations and general cultural orientations because individuals adopt group values when group identification is high (Turner et al., 1987). The three studies indicated that sport cultural orientations were overall significantly different than general cultural orientations, thus Hypothesis 2 was that social identity would moderate the subprocess of the internalization of sports values into general values. Hypothesis 2 was not supported because there were no significant moderations by social identification in the overall sample. However, several significant moderations were found in certain conditions.

First, there was evidence of significant moderation of collectivism and horizontality during athletes' preseason (Study 1). During the preseason, athletes who identified highly with their teams were more likely to have higher general collectivism than lower identifying athletes when sport collectivism values were high. Similarly, high-identifying athletes were more likely than low-identifying athletes to have higher general horizontality when sport horizontality was high. The moderations demonstrated by preseason athletes suggest that the internalization of values is influenced by social identification in specific conditions: athletes

who identify highly during the preseason internalize collectivism and horizontality values more than low identifying athletes when those respective cultural values are high. These results can be speculatively interpreted as high social identification leading to a quicker internalization, though it is emphasized that internalization still occurs for low identifiers. The current study was cross-sectional in nature and is thus limited in its speculative ability about this interpretation; future research could assess the relationship between social identity and its moderation of sports cultural values during the preseason with more confidence in a longitudinal design. In an applied context, this suggests that if a team is attempting to foster interdependence during the preseason, identification can be targeted as a way in which to encourage internalization of sport cultural values; but the condition in which this occurs is when sport collectivism values are already high. It is emphasized that the significant moderations demonstrated during the preseason do not support an overall difference in the internalization of sports cultural orientations by low and high-identifying athletes because the conditional effects of moderation were significant at every level of identification (low, medium and high).

Second, the results of Study 2 also found two significant moderations when individual and team sports were separated in the analysis. When sport individualism was low, low-identifying team sport athletes were less likely to internalize sport individualism into their general individualism compared to high-identifying athletes. Study 2 team sport athletes were the only sub-sample of this thesis that demonstrated significantly lower sports individualism. This moderation contradicts the hypothesized moderation in which lower identifying athletes were more likely to have lower general individualism when their sport individualism was lower. For individual sports, high-identifying athletes with high sport horizontality were more likely to have high general horizontality than low-identifying athletes. Sports horizontality was overall significantly lower than general horizontality, thus this moderation suggests that

individual sport athletes with high sport horizontality were more likely to have high general horizontality. Both the significant moderations of Study 2 depict moderations that contradict the hypothesized relationship between social identification and sport cultural orientations. As noted for the moderations in Study 1, these two moderations were significant at each level of social identification (low, medium and high) as well which suggests that the overall moderation of social identification did not influence the relationship between general and sports cultural orientations except in these specific conditions. These moderations instead suggest that social identification does not uniformly relate sports cultural values to general cultural values, which attests to the dynamic quality of culture (Kernan and Greenfield, 2005) and suggests that more research is needed to develop a clearer understanding of the cultural orientations that team sports and individual sports can separately foster.

In general, the results of the three studies in this thesis suggest that sports identity does not moderate the overall relationship between sport cultural orientations and general cultural orientations. In spite of significant moderations of collectivism, horizontality and individualism for team sport athletes, these moderations did not provide evidence of differential significance between low and high-identifying athletes. The finding that social identification does not moderate the internalization of sports values is important because it indicates that the influence of situated cultural values on general cultural values is not contingent upon high levels of social identification within that situated context (e.g., sports teams). More precisely, team identification is not a necessary condition by which the internalization of cultural values occurs. Fischer (2011) argues that internalization is often assumed in research to be an automatic process that occurs because of the omnipresence of culture. Rather than assume that internalization occurs automatically, this thesis examined social identity as the subprocess by which internalization happens because the adoption of group values as individual values is associated with higher group identification (Turner et al.,

1987). The cross-sectional results here did not implicate social identification with the team as the overall mechanism by which athletes internalize sports cultural values, but did indicate that social identification had a small moderating effect in the early stages of group membership (i.e., preseason). Future research could examine the effect of time on group membership and internalization by conducting longitudinal studies that more carefully examine their interaction.

Moreover, it should be emphasized that these findings were concluded based on using the overall construct of social identification from the SIQS as a moderator between sports and general cultural orientations (Bruner et al., 2014; Bruner & Benson, 2018). These studies used the overall construct rather than its subdimensions because factor analyses indicated that there were structural differences to athletes' social identities depending on sport type and time of season. It is noted, however, that the results of the factor analyses found that cognitive centrality loaded as a distinct factor from ingroup ties and affect across all conditions and studies. Previous research by Benson and colleagues (2017) suggested that the subdimension of cognitive centrality is a moderator of the relationship between groups norms and personal behaviour. Although the current studies did not suggest that overall social identification had a significant role in the internalization of sports cultural values, future research could explore the role that the subdimension of cognitive centrality serves in the adoption of team-based values and individual values. Based on the findings of this thesis, future research could focus on values of collectivism and horizontality and their moderation by cognitive centrality to explore if the adoption of group behavioural norms is also reflected in cultural orientations. A study conducted in this way would help bridge the understanding between local contexts of culture, general cultures and its influence on social behaviours. Team identification may not be the mechanism by which the internalization of contextual

cultural values occurs, but the results suggest that their internalization does partially influence broader intergroup attitudes.

5.3 Social Dominance Orientations

Understanding the cultural factors that can influence social dominance orientations is important because SDO has a strong relationship with social attitudes, ideologies and policy preferences that can affect the social hierarchies which maintain or improve broader social inequality (Sidanius et al., 2016; Pratto & Sidanius, 2004). The main analyses of this thesis sought to examine the relationship between sports cultural orientations and SDO as mediated by general cultural orientations. Internalization of cultural attitudes from the contextual levels of sports was hypothesized to occur if there was a significant mediation of sports cultural orientations by general cultural orientations. Hypothesis 4 therefore assessed if there were significant mediational relationships between collectivism and horizontality with SDO-E (preference for antiegalitarianism) and between individualism and verticality with SDO-D (preference for social dominance). Across the three studies, Hypothesis 4 was partially supported by the mediational analyses that were predicting SDO-D from sport individualism (4b) and sport verticality (4d), but was not supported by the results predicting SDO-E from sport collectivism (4a) and sport horizontality (4c). The partial support of the mediation analyses of SDO-D is discussed first, and then lack of support from the mediation analyses of SDO-E is considered.

In Study 1 and 2, verticality was significantly mediated in the prediction of SDO-D, and approached significance during athletes' offseason in Study 3. This finding suggests that the cultural value for hierarchy contextualized in sports teams is internalized into general cultural values toward vertical relations, which then positively predicts SDO-D, the preference for group-based dominance hierarchies. Sport verticality was significantly higher than general verticality across all three studies, as well, suggesting that general verticality

mediates a higher cultural value of hierarchy in sports contexts to predict higher social dominance values. The mediation analyses for individualism provided partial support for the hypothesized relationship with mediations approaching significance in Study 1 and 2 (the latter in the team sport mediation), and a significant indirect effect observed in Study 3. While mediation cannot be claimed for sport individualism predicting SDO-D through general individualism, there is evidence that there may be conditions under which the hypothesized mediation of sport individualism may apply. Sport individualism was hypothesized to be significantly lower than general individualism because of the environmental demands of team sports (Kernan and Greenfield, 2005), and this significant difference was observed only in the condition of team sports in Study 2. The mediation of sport individualism by general individualism that approached significance in Study 2 therefore suggests that there is evidence for team sport settings providing opportunities for lower values of individualism, which in turn has the potential to predict a positive relationship with SDO-D; however, it is emphasized that this is can only be interpreted as a suggestion of the role of sport individualism. Overall, these analyses provide support of verticality and partial support of individualism in sports contexts having the potential to influence the SDO subdimension of dominance attitudes. Sport contexts in these three studies invariably had higher verticality values, whereas individualism was significantly lower for team sport athletes in which the mediation approached significance. This suggests that the cultural orientations in a local setting can either reinforce or attenuate dominance attitudes.

Hypothesis 4 was not supported by the insignificant mediations of sport collectivism and horizontality, but significant indirect effects were observed for sport horizontality in Study 1 and 2. The analyses indicated that sport collectivism was significantly associated with general collectivism across all three studies, but sport collectivism did not significantly predict SDO-E except as a direct effect in Study 1. Each study demonstrated that athletes had

significantly higher sport collectivism than general collectivism, but the mediation analyses did not support the hypothesized internalization of sport collectivism while predicting SDO-E. This suggests that the local context of sports teams did not influence intergroup social attitudes of antiegalitarianism. Additionally, the mediations of sport horizontality were also insignificant, but significant indirect effects were found in Study 1 and 2. The significant indirect effects without significant mediation suggests that there may be conditions where general horizontality can be understood as mediating the relationship between sport horizontality and SDO-E. Unlike the mediation analyses for sport verticality and individualism with SDO-D, there is less support for a relationship in which sports contexts influence SDO-E. Significant indirect effects, however, warrant future consideration by research that examines the process by which horizontality in sports contexts or other locally situated cultural systems can relate to broader social attitudes towards antiegalitarianism.

The results of the mediation analyses have important theoretical implications. First, there was support that situated cultural orientations such as sports teams have the potential to influence social attitudes through their internalization into general cultural orientations. This was demonstrated by the significant mediation analyses of sport verticality and partially by the mediation of sport individualism that approached significance or demonstrated a significant indirect effect. Likewise, the lack of mediation of collectivism and horizontality demonstrates that the observance of significant cultural differences in situated contexts (i.e., significantly higher collectivism and lower horizontality across the three studies) does not automatically influence general cultural orientations or their predictions of social dominance orientations. However, a distinction is made here between the results of SDO-D and SDO-E.

The three studies presented here are the first analysis of cultural antecedents to the subdimensions of SDO-E and SDO-D conceptualized by Ho and colleagues (2015). Prior to the recognition of the SDO subdimensions, previous research by Strunk and Chang (1999)

and Torelli and Shavitt (2010) used the overall construct of SDO in their work. By separately predicting SDO-E and SDO-D, the three studies here demonstrate that SDO-D may be more amenable to cultural influence through verticality and individualism than SDO-E is through horizontality and collectivism. This finding can be attributed to the fundamental difference between the two subdimensions. The social preference for SDO-D entails hierarchies organized by social dominance which are maintained by aggressive and coercive subjugation and oppression (Ho et al., 2012; Ho et al., 2015). Meanwhile, SDO-E entails a preference for social hierarchies that are maintained by subtler forms of inequality such as unequal resource distribution and ideologies that are antiegalitarian in nature (Ho et al., 2012; Ho et al., 2015).

In context of the results presented here, sports cultural orientations may more strongly influence social attitudes that espouse explicit social inequality instead of its subtler forms. Pinker (2011) argues that the use of coercive social dominance to enforce hierarchies is globally declining and Jackman (1994) explains that inequality is more readily and affordably maintained by the subtle forms of social hierarchy maintenance through means such as ideological resource allocation. Nonetheless, social inequalities that are maintained through explicit forms of subjugation and oppression persist and are consequential on the future of intergroup relations (Ho et al., 2015; Kteily et al., in press). The difference in the mediations between SDO-D and SDO-E indicate the need for future research to consider the differences between these subdimensions because hierarchy maintenance is multifaceted and multileveled (Pratto et al., 2006). Finally, an applied consideration derived from this theoretical implication is that the cultures of group membership, whether in a local context such as sports teams or part of a larger arbitrary membership, have the potential to influence attitudes regarding intergroup relations. Social dominance attitudes may be more amenable to influence than antiegalitarianism attitudes in sports contexts, but this suggests that different types of cultural orientations in local contexts such as the schools or businesses should be

examined for their role in influencing general cultural orientations and the subdimensions of social dominance that they may affect.

5.4. Limitations and Future Directions

There are inherent limitations to the three studies based on their theoretical and methodological approaches which serve as recommendations for future directions in research. The predictive ability of SDO has been routinely evidenced for a variety of consequential attitudes and behaviours such as social ideologies and policy preferences (Sidanius et al., 2016). The current studies could be expanded upon by explicitly establishing a relationship between cultural orientations, SDO and a behavioural outcome such as policy preferences in order to demonstrate how cultural antecedents to SDO directly affect broader intergroup relations in line with the theoretical framework of social dominance theory (Pratto et al., 2006).

The three studies also approached cultural orientations differently than previous work by Strunk and Chang (1999) and Torelli and Shavitt (2010). The previous studies predicted unidimensional SDO from the typologies of vertical collectivism, vertical individualism, horizontal collectivism and horizontal individualism. The current studies instead pooled together collectivism, individualism, horizontality and verticality on theoretical grounds of predicting subdimensions of SDO-E and SDO-D that were more theoretically similar to the subdimension constructs of individualism-collectivism and horizontality-verticality outlined by Triandis (1995). The findings of both Strunk and Chang (1999) and Torelli and Shavitt (2010) suggested that the cultural orientations of vertical individualism and horizontal collectivism were better predictors of SDO than vertical collectivism and horizontal individualism. The results of the cultural comparisons in this thesis suggest sports teams may be characterized as vertical collectivist systems because verticality and collectivism were consistently found to be higher than their subdimensions counterparts. This approach could

provide better insight into the relationship of cultural values and the SDO subdimensions and should be considered by a direction for future research.

There were also several overall methodological limitations of these studies. The studies employed an adapted form of the 14-item INDCOL (Sivadas et al., 2008) which aided in the comparison of sports and general cultural orientations. The adapted version was not empirically assessed before its use; significant differences rely on the validity of their measurement, thus future research that seeks to adapt similar measures to assess situated cultural values should provide empirical support of the adapted scale. The reliability analyses of the INDCOL-Sport were conducted post-hoc and showed passable Cronbach's alpha values, but a more consistent measure could have clarified some inconsistencies in the studies such as the moderations that contradicted the hypothesized relationships in Study 2.

As a series of cross-sectional studies, the results were limited in causal attribution to the development of cultural change between sports and general contexts and their relationship with SDO-D and SDO-E. Culture is fundamentally dynamic and constantly recreated at the interpersonal level and, as evidenced by the general and sports comparison, between contexts (Greenfield, 1994). Cross-sectional results from different times of season in Study 1 and 3 also indicate that social identity substructure differs between preseason, competitive season and offseason, but implications about its developmental trajectory can only be speculated with the cross-sectional design that was used. Future research should consider the use of longitudinal designs in the assessment of cultural orientations, social identification and SDO. Longitudinal studies could benefit the understanding of how sports cultural orientations change over the course of a season and become significantly different from general cultural orientations; only with an improved design can sports teams be appropriately called 'contexts of cultural change.'

The conclusions that were made about athletes in sports contexts were also limited by the sampling of young adults primarily in university settings. An inherent limitation in the sampling was also one of cultural similarity: the lead researcher's points of contacts were in the United States and the United Kingdom, which are considered culturally similar at the aggregate-level (Hofstede, 1980; Triandis 1995). Although there is more cultural variation within an aggregated culture than between (Poortinga & van Hemert, 2001), there is no basis to claim that the cultural differences demonstrated in the three studies here are universal. Additionally, the sampling of elite athletes (exclusively in Study 1) was not a representative sample of athletes in the general populace. While Study 2 and 3 expanded on their inclusion of competitive levels and sports types, athletes in this study were still in institutionally organized sports contexts. In order to address these limitations in sampling, future research should sample from various aggregate-level cultural contexts and investigate athletes from more generalizable social demographics such as youth athletes and athletes in recreational sports settings. An intersectional approach to the cultural and SDO analyses is also necessary because there are consistent differences between men's and women's SDO (Sidanius & Pratto, 2004) as a result of the perpetuated hierarchies against women. Gender is a construct that is at least in part socialized, thus observed differences in SDO suggest that cultural differences may influence their formation differently.

Lastly, the order of the general and sport cultural orientation scales were counterbalanced to control for the order effect of cultural priming. The potential effect of cultural priming should be more carefully assessed with future research because individualism-collectivism in particular has been rigorously shown to be an easily accessed cultural prime (Oyserman & Lee, 2008). Moreover, an experimental design in which cultural priming is intended via the manipulation of presenting general cultural or sports cultural

value systems first could contribute to the understanding of how different cultural orientations interact with an outcome variable such as SDO.

5.5. Conclusion

Social conflicts and inequalities are ubiquitous across cultures. The theoretical framework of social dominance theory was formulated to understand how the multi-level interaction of individual, institutional and societal systems perpetuate social hierarchies and group inequality (Pratto et al., 1994; Pratto et al., 2006). Research on the construct of social dominance orientations has implicated the individual-level of attitude toward inequality as a predictor of social ideologies, behaviours, and policy-preferences that can either enhance or attenuate the social hierarchies which maintain social inequality (Pratto et al., 2006). As an indication of the potential for social change, social dominance orientations are malleable as are the cultural antecedents that are suggested to influence their formation (Sidanius & Pratto, 2004; Singelis et al., 1995; Kernan and Greenfield, 2005). One cultural context that previous research has suggested to foster cultural values that diverge from general cultural orientations is the sports team (Greenfield et al., 2002; Richland and Greenfield as cited in Kernan and Greenfield, 2005). This thesis sought to address the underexplored area of sport cultural orientations and their relationship with the subdimensions of SDO-E and SDO-D. In doing so, the three studies also examined the role of team social identification as an explanatory subprocess of the internalization of cultural values. The overall findings suggest that sports cultural orientations that predict SDO-D are significantly mediated or have significant indirect effects through general cultural orientations, whereas the analysis of the relationship between cultural orientations and SDO-E is less supported. The subprocess by which sports cultural orientations are internalized into general cultural orientations was also not significantly moderated by social identification with the team. Therefore, sports cultural orientations were demonstrated to have the potential to influence the relationship between

general cultural orientations and SDO in certain conditions regardless of athletes'

identification. More generally, this suggests that situated cultural orientations are potential

contexts by which SDO can be influenced. These findings have broader implications about

cultural value systems embedded in group memberships since social dominance orientations

are intertwined with cultural orientations. Ultimately, these findings implicate local cultural

contexts as potential areas of influence for the cultural antecedents of social dominance

orientations, which in turn may assist in the broader effort to address social inequalities and

improve intergroup relations.

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Appendices

Participant Information Sheet – 22/8/2018

Project title: Athlete Cultural Orientations, Team Cultures and Generalized Social Attitudes

Researcher(s): [redacted]

Department: Department of Psychology, Durham University

Contact details: [redacted]

Supervisor: Prof. Richard Crisp

Supervisor contact details: richard.j.crisp@durham.ac.uk

Supervisor: Dr. Emily Oliver

Supervisor contact details: emily.oliver@durham.ac.uk

You are invited to take part in a study that I am conducting as part of my Master's by Research in Psychology. This study has received ethical approval from the Durham University Department of Psychology Ethics Committee. Before you decide whether to agree to take part it is important for you to understand the purpose of the research and what is involved as a participant. Please read the following information carefully. Please get in contact if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

The aim of this study is to assess the relationship between athlete's general and sport-specific cultural values and their general social attitudes. More specifically, I am interested in

quantifying athletes' cultural orientations towards hierarchy and equality on their teams and in general. The study will also analyse social attitudes and the role of social identification with the team. The study plans to complete data collection through December 2018, at which point the data will be analysed and composed in a research report for a dissertation and potential publication.

Why have I been invited to take part?

You have been invited to take part in this study because you are an elite team-sport athlete aged 18 or older and are either currently in season or out of season. For this study, an athlete is considered elite if they have participated at the national, international, collegiate (e.g., NCAA, NAIA, BUCS), professional or semi-professional level.

Do I have to take part?

Your participation is voluntary and you do not have to agree to take part. If you do agree to take part, you can discontinue at any time, without giving a reason and without consequence. Participation is anonymous and participants have the right to withdraw any identifiable data up until the point it has been fully anonymized upon submission.

What will happen to me if I take part?

If you agree to take part in the study, you will be asked to complete four online questionnaires that will ask about your general cultural values, cultural values as an athlete, your identification with a team and general social attitudes. In addition, you will be asked about non-identifiable demographic information (age, gender, sport and if you are in season). All data will be anonymous from the moment it is submitted. This will take approximately ten to fifteen minutes to complete.

Although the full completion of the questionnaires is preferred, you are not obligated to complete the questionnaires and may omit any questions that you do not wish to answer. There is no financial compensation for your participation, but you may contact the researcher about the general findings of the study upon its completion in January 2019.

Are there any potential risks involved?

This project is collecting data on social and cultural values about hierarchy and equality beliefs that may be considered sensitive. If these topics are discomforting for you to answer, it is advised you do not take participate in this project.

Will my data be kept confidential?

The data you provide is fully anonymous and we will not collect or ask you to provide any personal data besides non-identifying demographic information. We will have no way of linking responses back to an individual. IP addresses are not tracked through the online questionnaires. Coaches and sporting organizations will not have access to your data or responses, and there will be nothing to personally identify you.

What will happen to the results of the project?

Durham University is committed to sharing the results of its world-class research for public benefit. As part of this commitment, the University has established an online repository for all Durham University Higher Degree theses which provides access to the full text of freely available theses. The study in which you are invited to participate will be written up as a thesis. On successful submission of the thesis, it will be deposited both in print and online in the University archives, to facilitate its use in future research. The thesis will be published

open access. In addition to the thesis, the researchers will also seek to publish the data in a peer-reviewed journal.

Who do I contact if I have any questions or concerns about this study?

If you have any further questions or concerns about this study, please speak to the researcher or their supervisor. If you remain unhappy or wish to make a formal complaint, please submit a complaint via the University's Complaints Process.

Thank you for reading this information and considering taking part in this study.

Appendix 2 – Consent Form

Consent Form

Project title: Athlete Cultural Orientations, Team Cultures and Generalized Social Attitudes

Researcher(s): [redacted]

Contact details: [redacted]

Supervisor: Prof. Richard Crisp

Supervisor contact details: richard.j.crisp@durham.ac.uk

Supervisor: Dr. Emily Oliver

Supervisor contact details: emily.oliver@durham.ac.uk

This form is to confirm that you understand what the purposes of the project, what is involved and that you are happy to take part. Please check each box to indicate your agreement:

I confirm that I have read and understand the information sheet dated 22/08/18 for the above project.	
I have had sufficient time to consider the information and ask any questions I might have, and I am satisfied with the answers I have been given.	
I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.	

I understand that anonymised (i.e. not identifiable) versions of my data may be archived and shared with others for legitimate research purposes.	
I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of data protection legislation.	
I agree to take part in the above project.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.	

Debriefing Sheet

Project title: Athlete Cultural Orientations, Team Identification and Social Attitudes

Thank you for taking part in this study. What I want to understand from this research is how general cultural orientations are related to team cultural values and if this extends to broader social attitudes. Specifically, I am testing if the values of collectivism, individualism, equality and hierarchy fostered by team sports are related to general social attitudes of equality and hierarchy. Furthermore, I am interested in the role that team identification has in this process.

The data you have provided is automatically anonymized and cannot be traced back to your identity. Responses are confidential, anonymous, and IP addresses are not tracked. Data will be used exclusively for research purposes and will not be available to anyone outside the researchers. Coaches and sports organizations will not be able to access the data, either.

If you would like further information about the study or would like to know about what my findings are when all data have been collected and analyzed, then please contact me by email at [redacted] or my supervisors Prof. Richard Crisp (richard.j.crisp@durham.ac.uk) and Dr. Emily Oliver (emily.oliver@durham.ac.uk). I cannot, however, provide you with your individual results. Thank you again for your participation.

Appendix 4 – Participant Demographic Questions

Participant Demographic Information

Please complete the following demographic questionnaire. Any questions you do not wish to complete may be left blank.

Age:

*Gender:

*Sport:

Is your sport currently in season? Yes/No

      *If yes: How long have you been in season with your current team?

         (approximately)

      *If no: How long have you been out of season from your most recent team?

         (approximately)

*Free response boxes

Appendix 5 – 14-Item INDCOL Horizontal/Vertical Individualism/Collectivism Scale

(General; Singelis et al., 1995; adapted by Silvadas et al., 2008)

General Cultural Values

The following questions are designed to capture your **general, everyday cultural values**.

Please select a number from 1 (Never or Definitely No) to 9 (Always or Definitely Yes) to indicate your agreement with each of the statements.

1. My happiness depends very much on the happiness of those around me

2. I would do what would please my family, even if I detested that activity

3. I usually sacrifice my self-interest for the benefit of my group

4. I enjoy working in situations involving competition with others

5. The well-being of my co-workers is important to me

6. I enjoy being unique and different from others in many ways

7. Children should feel honored if their parents receive a distinguished award

8. I often "do my own thing"

9. Competition is the law of nature

10. If a co-worker gets a prize, I would feel proud

11. I am a unique individual

12. I would sacrifice an activity that I enjoy very much If my family did not approve of it

13. Without competition it is not possible to have a good society

14. I feel good when I cooperate with others

Appendix 6 – 14-item INDCOL Horizontal/Vertical Individualism/Collectivism Scale

(Singelis et al., 1995; ddapted by Silvadas et al., 2008)

Adapted for Sport Team Cultural Orientation by this study

Sport Cultural Values

*The following questions are designed to reflect your values **as an athlete from your current or most recent sports team**.*

With that sport team in mind, please select a number from 1 (Never or Definitely No) to 9 (Always or Definitely Yes) to indicate your agreement with each of the statements.

1. My happiness depends very much on the happiness of my team

2. I would do what would please my team, even if I detested that activity

3. I usually sacrifice my self-interest for the benefit of my team

4. I enjoy being in situations involving competition with other teams

5. The well-being of my team is important to me

6. I enjoy being unique and different from my team in many ways

7. Athletes should feel honored if their coach receives a distinguished award

8. As an athlete, I often "do my own thing"

9. Competition is the law of nature in sports

10. If a teammate gets a prize, I would feel proud

11. I am a unique athlete

12. I would sacrifice an activity that I enjoy very much if my team did not approve of it

13. Without competition it is not possible for a team to have a good season

14. I feel good when I cooperate with my team

Appendix 7 – 9-Item Social Identity Questionnaire for Sport (SIQS)

(Bruner et al., 2014; adapted by Bruner & Benson, 2018)

Social Identity Questionnaire for Sport (SIQS)

*The following questions are designed to reflect how you feel about being a part of **your current or most recent team**.*

Please select a number from 1 (strongly disagree) to 7 (strongly agree) to indicate your agreement with each of the statements.

1. I feel strong ties to other members of this team.

2. I find it easy to form a bond with other members in this team.

3. I feel a sense of being "connected" with other members in this team.

4. Overall, being a member of this team has a lot to do with how I feel about myself.

5. In general, being a member of this team is an important part of my self-image.

6. The fact that I am a member of this team often enters my mind.

7. In general, I'm glad to be a member of this team.

8. I feel good about being a member of this team.

9. Generally, I feel good when I think about myself as a member of this team.

Appendix 8 – Social Dominance Orientation$_7$ Scale

(Ho et al., 2015)

SDO$_7$ Scale

Instructions

Show how much you favor or oppose each idea below by selecting a number from 1 (Strongly Oppose) to 7 (Strongly Favor) on the scale below. You can work quickly; your first feeling is generally best.

1. Some groups of people must be kept in their place.

2. It's probably a good thing that certain groups are at the top and other groups are at the bottom.

3. An ideal society requires some groups to be on top and others to be on the bottom.

4. Some groups of people are simply inferior to other groups.

5. Groups at the bottom are just as deserving as groups at the top.

6. No one group should dominate in society.

7. Groups at the bottom should not have to stay in their place.

8. Group dominance is a poor principle.

9. We should not push for group equality.

10. We shouldn't try to guarantee that every group has the same quality of life.

11. It is unjust to try to make groups equal.

12. Group equality should not be our primary goal.

13. We should work to give all groups an equal chance to succeed.

14. We should do what we can to equalize conditions for different groups.

15. No matter how much effort it takes, we ought to strive to ensure that all groups have the same chance in life.

16. Group equality should be our ideal.

Appendix 9

Preseason Factor Analysis

The preseason elite athlete sample is used first, therefore the case-to-variable ratio is 62:9 which reduces to 6.88:1. This ratio does surpass the minimum 5:1 ratio recommended but does not reach the accepted 10:1 ratio, therefore caution is given to the interpretation of the emergent factor scores. The correlation matrix found that the determinant = .005 which is greater than .00001, indicating that there is no multicollinearity in the data. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .819, above the acceptable .700 value and indicates that 81.9 % of the variance is explained by underlying factors. Bartlett's Test of Sphericity found that $\chi 2$ (36) = 308.821, p < .001; the correlation matrix is significantly different from the identity matrix, therefore there is a correlation among the variables of the SIQS in preseason athletes and a factor analysis is supported. The communalities, or amount of variance shared by a variable with other variables, range from .301 to .832; all values are above .200 therefore all variables are kept in the analysis.

Using the K1 criterion, where factors are kept if their Eigenvalue is greater than 1.00, a two-factor structure emerges wherein Factor 1 has an Eigenvalue of 4.597 and accounts for 51.081 % of the variance. Factor 2 has an Eigenvalue of 1.434 and accounts for 15.94 % of the variance. Together, these two factors account for 67.018 % of the variance in a two-component structure of social identity.

Running *Monte Carlo PCA for Parallel Analysis* (Watkins, 2000), random Eigenvalues are generated for a random structure with nine variables, 62 subjects and 150 replications. The following Table 11 is produced:

Eigenvalue Number	Random Eigenvalue	Standard Deviation
1	1.6410	.1173
2	1.4092	.0802
3	1.2297	.0638

Table 11: Random Eigenvalue table generated by *Monte Carlo PCA for Parallel Analysis* using preseason elite athletes.

Compared to the Eigenvalues obtained in the factor analysis, the Eigenvalue in Factor 1 (4.597 > 1.6410) and Factor 2 (1.434 > 1.4092) is greater than the randomly generated Eigenvalue. The Eigenvalue obtained for a third factor is not greater than the randomly generated Eigenvalue produced by the parallel analysis (.878 < 1.2297) thus the parallel analysis comparison suggests a two-factor social identity structure similar to the K1 Criterion.

Lastly, the scree plot in Figure 22 illustrates that the variance accounted for by Eigenvalues levels out at the third component, supporting a two-factor structure of social identity.

Scree Plot of Preseason Social Identity
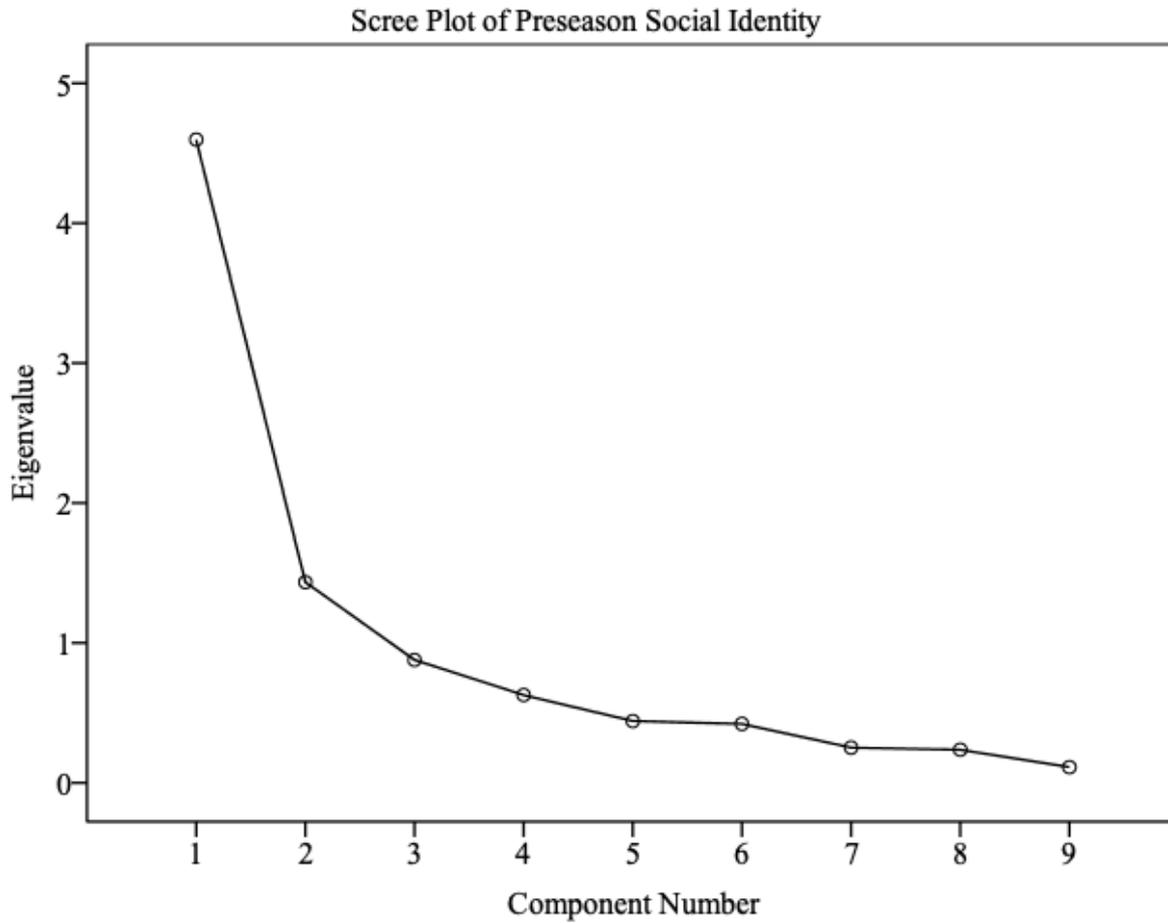
Figure 22: Scree plot of Eigenvalues obtained using preseason athletes graphed along the component numbers.

The rotated component matrix in Table 12 suggests that Factor 1 is affective ingroup ties and combines the hypothesized ingroup ties factors of SIQS Question 1 (.799), Question 2 (.828) and Question 3 (.863) with the hypothesized ingroup affect factors of SIQS Question 7 (.816), Question 8 (.888) and Question 9 (.728). Factor 2 is cognitive centrality and includes SIQS Question 4 (.813), Question 5 (.881) and Question 6 (.528).

The two-component sport social identity structure identified in the overall sample is clearly reflected in the preseason elite athletes. During the preseason, ingroup ties and ingroup affect are not distinct components, resulting in social identity compromised of two dimensions: affective ingroup ties and cognitive centrality.

	Rotated Component Number	
SIQS Question	1	2
Question 1: I feel strong ties to other members of this team.	.799	
Question 2: I find it easy to form a bond with other members in this team.	.828	
Question 3: I feel a sense of being "connected" with other members in this team.	.863	
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.		.813
Question 5: In general, being a member of this team is an important part of myself-image.		.881
Question 6: The fact that I am a member of this team often enters my mind.		.528
Question 7: In general, I'm glad to be a member of this team.	.816	
Question 8: I feel good about being a member of this team.	.888	
Question 9: Generally, I feel good when I think about myself as a member of this team.	.728	

Table 12: Rotated Component Matrix of the two-factor structure of sport social identity extracted with Principal Component Analysis and Varimax rotation with Kaiser Normalization converged in three iterations.

Competitive Season Factor Analysis

Next, the social identity structure of elite athletes in competitive season is separately assessed. In this subgroup, the case-to-variable ratio is 80:9 which reduces to 8.89:1. This ratio is above the minimum 5:1 ratio but falls short of the accepted 10:1 ratio, therefore some caution is applied in the interpretation of the factors. The correlation matrix found that the determinant = .004, indicating that there is no multicollinearity. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .844, above the acceptable .700 value and indicates that 84.4 % of the variance is explained by the emergent factors. A Bartlett's Test of Sphericity

produced χ2 (36) = 419.729, p < .001; the correlation matrix is significantly different from the identity matrix, thus a factor analysis of the social identity of competitive season elite athletes is supported. The communalities, or amount of variance shared by a variable with other variables, range from .641 to .863; all values are above .200 therefore all variables are kept in the analysis.

Using the K1 criterion, where factors are kept if their Eigenvalue is greater than 1.00, a three-factor structure emerges wherein Factor 1 has an Eigenvalue of 4.688 and accounts for 52.084 % of the variance. Factor 2 has an Eigenvalue of 1.309 and accounts for 14.54 % of the variance. Factor 3 has an Eigenvalue of 1.06 and accounts for 11.783 % of the variance. These three factors cumulatively account for 78.407 % of the variance in a three-component structure of social identity.

Running *Monte Carlo PCA for Parallel Analysis* (Watkins, 2000), random Eigenvalues are generated for a random structure with nine variables, 80 subjects and 150 replications. The following Table 13 is produced:

Eigenvalue Number	Random Eigenvalue	Standard Deviation
1	1.5551	.1035
2	1.3432	.0629
3	1.2014	.0579

Table 13: Random Eigenvalue table generated by Monte Carlo PCA for Parallel Analysis using elite athletes in competitive season.

Compared to the Eigenvalues obtained in the factor analysis, the Eigenvalue in Factor 1 (4.688 > 1.5551) is greater than the randomly generated Eigenvalue. The Eigenvalues obtained for the second factor (1.309 < 1.3432) and the third factor (1.06 < 1.2014) are not

greater than the randomly generated Eigenvalue produced by the parallel analysis. The parallel analysis comparison thus suggests a single component structure of social identity, in contrast to the three components identified in by the K1 Criterion.

Lastly, the scree plot in Figure 23 illustrates that the variance accounted for by Eigenvalues levels out at the fourth component, supporting a three-factor structure of social identity.
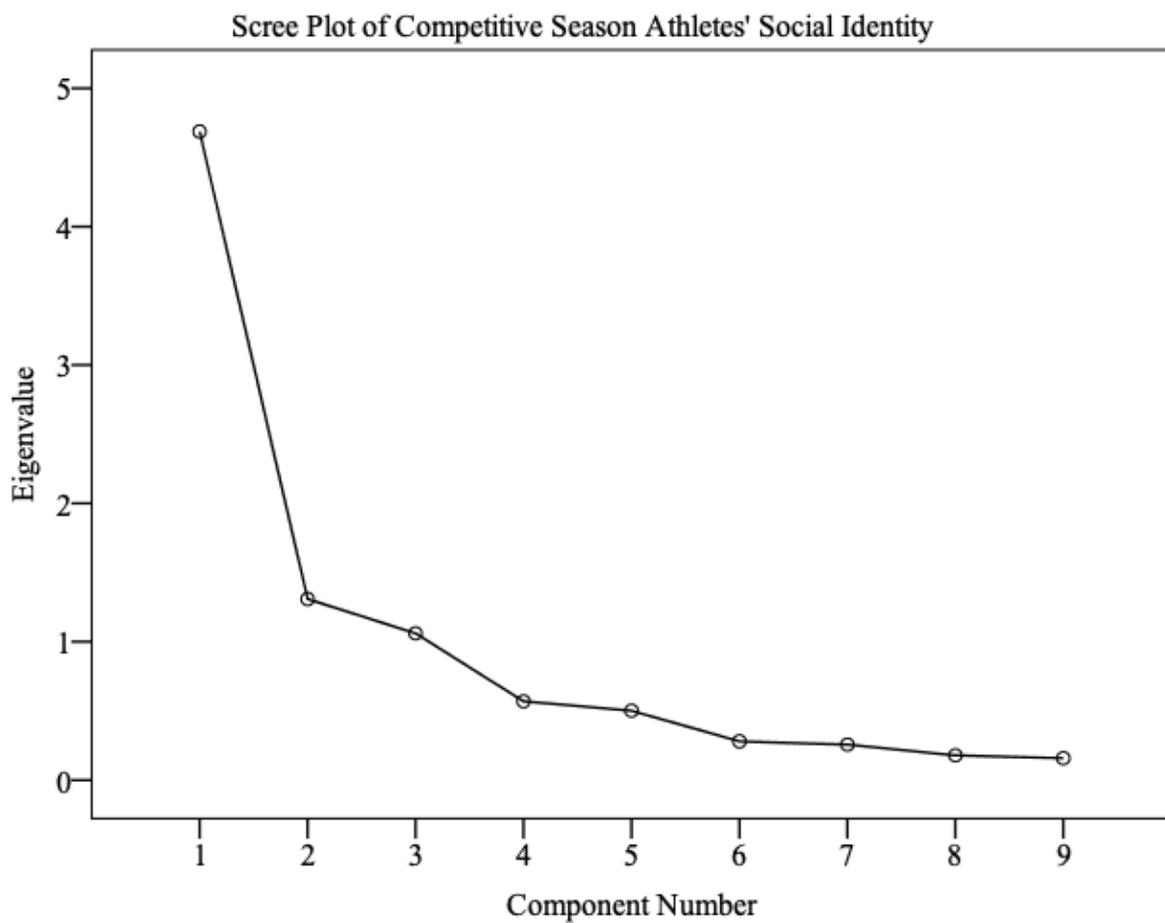

Figure 23: Scree plot of Eigenvalues obtained using competitive season athletes graphed along the component numbers.

The rotated component matrix in Table 14 suggests that Factor 1 is ingroup affect and includes SIQS Question 7 (.859) and Question 9 (.861). Factor 2 is ingroup ties and includes SIQS Question 1 (.836), Question 2 (.881) and Question 3 (.826). Factor 3 is cognitive centrality and includes SIQS Question 4 (.761) and Question 6 (.833).

The remaining two variables that load across factors with their respective component loadings are SIQS Question 8 (Factor 1 .845, Factor 2 .335) and Question 5 (Factor 1 .682, Factor 3 .419). Question 8 more readily loads with the hypothesized first factor of ingroup affect instead of the second factor of ingroup ties, whereas Question 5 loads closer to the first factor of ingroup affect than the hypothesized third factor of cognitive centrality.

SIQS Question	Rotated Component Number		
	1	2	3
Question 1: I feel strong ties to other members of this team.		.836	
Question 2: I find it easy to form a bond with other members in this team.		.881	
Question 3: I feel a sense of being "connected" with other members in this team.		.826	
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.			.761
Question 5: In general, being a member of this team is an important part of myself-image.	.682		.419
Question 6: The fact that I am a member of this team often enters my mind.			.833
Question 7: In general, I'm glad to be a member of this team.	.859		
Question 8: I feel good about being a member of this team.	.845	.335	
Question 9: Generally, I feel good when I think about myself as a member of this team.	.861		

Table 14: Rotated Component Matrix of the three-factor structure of sport social identity extracted with Principal Component Analysis and Varimax rotation with Kaiser Normalization converged in three iterations.

Overall, there is stronger evidence for the three-factor structure hypothesized by Bruner and colleagues (2014) and Bruner and Benson (2018) in competitive season athletes as demonstrated by the K1 Criterion and the scree plot. The rotated component matrix indicates that there are two cross-factor loadings from ingroup affect with ingroup ties and cognitive centrality, respectively, which explains why a stricter interpretation of the parallel analysis comparison does not definitively support three components. These results ultimately suggest that the hypothesized three-component structure of social identity in sport emerges when elite athletes in competitive season are considered separately from the overall group of participants surveyed.

Offseason Factor Analysis

Lastly, the social identity structure of offseason elite athletes is analysed. This group of athletes has the lowest case-to-variable ratio of 27:9 which reduces to 3:1. This ratio is below the minimum 5:1 ratio expected in factor analyses, therefore these results are treated as exploratory. The correlation matrix found that the determinant = .017, indicating that there is no multicollinearity. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .666, falling short of the .700 value and indicative that 66.46 % of the variance is explained by the emergent factors. A Bartlett's Test of Sphericity produced $\chi2$ (36) = 90.608, p < .001; the correlation matrix is significantly different from the identity matrix; thus, a factor analysis can be informative of underlying structures. The communalities, or amount of variance shared by a variable with other variables, range from .335 to .792; all values are above .200 therefore all variables are kept in the analysis.

Using the K1 criterion, where factors are kept if their Eigenvalue is greater than 1.00, a two-factor structure emerges wherein Factor 1 has an Eigenvalue of 3.693 and accounts for

41.029 % of the variance. Factor 2 has an Eigenvalue of 1.586 and accounts for 17.618 % of the variance. Cumulatively, the two factors account for 58.647 % of the variance in a two-component structure of social identity.

   Watkins' (2000) Monte Carlo PCA for Parallel Analysis cannot be conducted for a dataset of nine variables, 27 subjects with 150 replications; the number of subjects does not reach the minimum of 50. Without this information, the results are again treated as exploratory and reported for future consideration.

   The scree plot in Figure 24 illustrates that the variance accounted for by Eigenvalues levels out at the third component, supporting a two-factor structure of social identity.
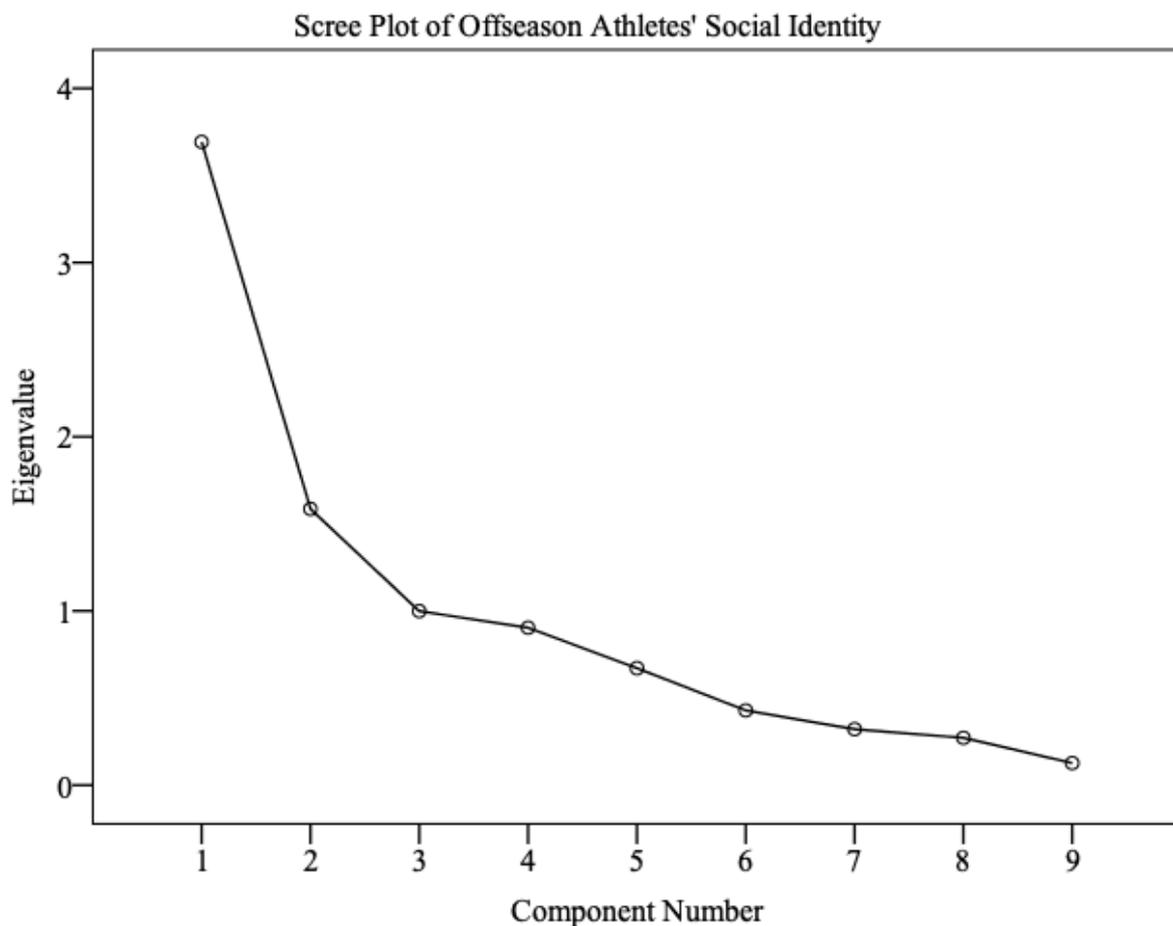
Figure 24: Scree plot of Eigenvalues obtained using offseason season athletes graphed along the component numbers.

The rotated component matrix in Table 15 suggests that Factor 1 is affective ingroup ties and includes SIQS Question 1 (.805), Question 2 (.778), Question 7 (.591) and Question 8 (.674). Factor 2 is cognitive centrality and includes SIQS Question 4 (.739), Question 5 (.867) and Question 6 (.486).

The remaining two variables that load across factors with their respective first and second factor component loadings are SIQS Question 3 (.772, .335) and Question 9 (.440, .659). Question 3 more clearly loads with the first factor of affective ingroup ties, whereas Question 9 loads closer to the second factor of cognitive centrality rather than affective ingroup ties.

	Rotated Component Number	
SIQS Question	1	2
Question 1: I feel strong ties to other members of this team.	.805	
Question 2: I find it easy to form a bond with other members in this team.	.778	
Question 3: I feel a sense of being "connected" with other members in this team.	.772	.442
Question 4: Overall, being a member of this team has a lot to do with how I feel about myself.		.739
Question 5: In general, being a member of this team is an important part of myself-image.		.867
Question 6: The fact that I am a member of this team often enters my mind.		.486
Question 7: In general, I'm glad to be a member of this team.	.591	
Question 8: I feel good about being a member of this team.	.674	
Question 9: Generally, I feel good when I think about myself as a member of this team.	.440	.659

Table 15: Rotated Component Matrix of the two-factor structure of sport social identity extracted with Principal Component Analysis and Varimax rotation with Kaiser Normalization converged in three iterations.

Similar to preseason elite athletes and the overall initial sample, offseason athletes have a social identity structure consisting of two components: affective ingroup ties and cognitive centrality. Only elite athletes who were in their competitive season demonstrated a distinction between the ingroup affect and ingroup ties components, which supports the findings of the Bruner and Benson (2018) whose factor analysis was conducted on athletes in their competitive seasons.

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Dedication

Two doves roost under rising moon.
One is you; the second is, too.
Great love may beget a great fall,
But rather that than none at all.
When the night stills and all is said,
Come spring we shall unite again.
Until then, I search for your love,
Gazing in moonlight overhead
Hoping to see a pair of doves.

I dedicate this work to my grandmother, Patricia Monigold and nana, Eleanor Philyaw.