An investigation of the big-fish-little-pond effect (BFLPE) on academic self-concept and the social comparison types and standards among boys and girls in single-sex and co-educational schools in Jordan

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An investigation of the big-fish-little-pond effect (BFLPE) on academic self-concept and the social comparison types and standards among boys and girls in single-sex and co-educational schools in Jordan

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An abstract

This is an embedded mixed methods research study aimed at examining the associations of gender and schooling type with the Big Fish Little Pond Effect (BFLPE) in four school subjects: Arabic, English, Science and Math in the context of Jordan. The BFLPE hypothesizes that academic self-concept is positively affected by individual academic ability but negatively affected by the average ability of a class or school. Students' ability was measured by using an ability test from PISA 2000 (Programme for international student assessment). Students' academic self-concepts were measured by the academic self-description questionnaire II (ASDQII). The types of social comparison made in the classroom were investigated using semi-structured interviews. The systematic multi-stage cluster sampling was used in selecting 269 tenth grade male and female students from single-sex and co-educational schools in the northern regions in Jordan. 8 male and female students were randomly selected to take part in face-to-face interviews. The results showed that male and female students in single-sex and co-educational schools in Jordan suffered the BFLPE. A student's own ability has a positive effect on their academic self-concept, but the average ability of a school is evident in having a negative effect on students' academic self-concept in the four subjects. Gender has no influence on the academic self-concept. The type of school a student attends has a substantial influence on academic self-concept. Students who attend co-educational schools suffered a larger BFLPE than their peers in single-sex schools. The interaction between gender and school type was not significant in any of the four subjects' self-concept. The findings from the interviews evidenced the downward and upward comparisons. The effect of downward comparisons on academic self-concept was positive; whereas, the effect of upward comparisons on academic self-concept

was negative. The findings from the interviews also showed different social comparison standards that students used to establish their academic self-concepts such school grades, the participation in the class, homework, and teachers' and parents' comments.

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I would like also to dedicate this thesis to the soul of my mum, hope you will be happy with my great achievement. I would also like to thank my father for his invaluable support during my study. Finally thanks to all people who surrounded me with their love and support till I completed this thesis.

Chapter 1: Introduction

1.1 Background of the study

The Big-fish-little-pond effect has been the focus of academic self-concept research for the last three decades. The BFLPE is a model introduced by Marsh in 1984, which claims that average-ability students have a lower academic self-concept when they attend high-ability schools, though higher academic self-concept when they attend low-ability schools. The BFLPE is driven by social and psychological theories such as self-theory, social comparison theory, relative deprivation theory, and social and psychological judgement theories.

The BFLPE Model focuses on the social comparisons in the classroom as a way of academic self-concept establishment. The average-ability students tend to have a lower academic self-concept when they compare themselves with high-ability students, yet maintain high academic self-concept when they compare themselves with lower ability students. Therefore, the average ability of the class or school has an effect on students' academic self-concept.

The BFLPE has been tested in different educational and contextual settings as presented in chapter two, the literature review. However, there are still some gaps in the BFLPE to be filled by further research. For example, there is a lack of the BFLPE research in the Jordanian context. The issue of gender has not been investigated deeply in the BFLPE research. The schooling types in single-sex and co-educational schoolings have not been tested widely. Therefore, this study aims to investigate the BFLPE between males and females in single-sex and educational schools in Jordan.

1.2 The context

A cross-cultural research on the BFLPE has been conducted on up to 41 different contexts in Marsh, Abduljabbar, Morin, Parker, Abdelfattah, Nagengast and Abu-Hilal (2015). In this BFLPE research, two Arabic contexts that were involved, Kuwait and Tunisia. The author of the BFLPE, Professor Marsh, argues that the results of those studies could be generalised for the rest of the Arab countries, but no evidence was provided. In this study, the BFLPE is tested on a new Arab context with Jordan providing further evidence of the universality of the BFLPE and its generalizability in the Arab world.

Jordan is a small country in the Asian part of the Arab world (35.833 sq. miles), with a population of 9,531712 million (Department of Statistics, 2015). Of 1,726831 million Students, 877003 males and 849828 females attend preschools, elementary schools and secondary schools (The Ministry of Education, 2013). 89% of students' population attend elementary education. The elementary education starts from age, six in grade one, then up until the age of sixteen in grade ten. After this, students move to secondary education where they study for two years.

The schooling system in Jordan at all levels is predominantly single-sex schools. Boys and girls are taught in separate schools and by same-sex teachers. However, there are some co-educational schools in some rural areas where there is a small population where the government cannot afford to separate the boys and girls in different classes. The co-educational schooling system is also followed in privilege schools. Privilege schools are publically funded schools accept the top high achieving students in mainstream boys and girls single-sex schools. Privileged schools operate after the mainstream schools finish. Co-educational schools also operate through the private sector in all school levels.

The schools in Jordan are either public or private. 117.3976 students attend public schools (The ministry of education, 2013). Public schools accept any Jordanian student at the age of six and above and it is completely free until the end of the elementary level, tenth grade. In secondary education, students have to pay fees and buy the recommended syllabus. 424.999 students attend private schools. Private schools are paid for by parents and most private schools have a pre-assessment for accepting new students. However, public and private schools teach the same syllabus which is published by the Jordanian ministry of education.

In elementary education, in public and private schools, students study up to ten core and non-core subjects. The core subjects like Arabic, English, Mathematics and Science, are taught for at least five hours a week. Non-core subjects like religious studies, social sciences, arts, physical sciences, vocational education, and computer sciences are taught for up to three hours a week. However, core-and non-core subjects are obligatory and students have to pass all subjects to proceed to an upper grade.

1.3 The Participants

The end of the elementary level happens at age sixteen (tenth grade), which is the age of participants in this study. 121,268 students, 7.8% of the elementary schools' population, attend tenth grade. Tenth grade is an important stage in elementary education since students have to decide which subjects they will be taking for their secondary education, or after elementary education. The high achieving students would compete for entry to the scientific divisions in secondary schools. The average achieving students would compete for entering the Arts and vocational divisions. Therefore, lower achieving students cannot repeat tenth grade. Thus, if they were not accepted in any secondary educational divisions, they would have to either take

vocational training qualification or give up their education. Students are advised to evaluate their academic abilities wisely and be realistic when they submit their secondary education choices. Students may use social comparison with others as a way of judging their academic abilities. The literature of Shavelson, Hubner and Stanton (1976), Harter (1985), Wigfield and Eccles (1992), Marsh and Yeung (1998), asserted that students of adolescent age are able to recognise their abilities and to identify significant others. Therefore, I would expect that the age of the participants to fit in well with the purpose of this study.

1.4 The purpose of the study

This study aims to examine the BFLPE on academic self-concept among boys and girls in two different school settings; single-sex versus co-educational schoolings, and in four core subjects; Arabic, English, Mathematics and Science. The BFLPE is based on the social comparison theory which hypothesises that students compare their academic abilities with each other to establish their academic self-concept. Therefore, this study also aims to gain in-depth understanding of the ways students form their academic self-concept.

In line with those aims, this study addresses the following objectives:

1. Examine the relationship between students' abilities and their academic self-concept.
2. Examine the relationship between the average ability of peers and individual's own academic self-concept.
3. Explore the differences between boys and girls academic self-concepts and the effect of the opposite gender on students' academic self-concept.

4. Explore the differences in academic self-concept between students who attend single-sex schools versus those who attend co-educational schools.
5. Explore the types of social comparison students may use in the classroom to establish their own academic self-concept.

This study will answer the following research questions and test the following hypothesis:

1. Does the BFLPE apply to single-sex and co-educational schools in Jordan?

2. Does gender and school type influence BFLPE results?

3. What are the types of social comparison that students use in Jordanian schools to establish their academic self-concept? Is there any evidence that gender influences the academic self-concept?

H01: There is no negative effect of school-average ability on academic self-concept.

Alternative: School-average ability has negative effect on students' academic self-concept.

H02: There is no relationship between gender and the BFLPE.

Alternative: There is a relationship of gender and the BFLPE.

H03: There is no relationship between school type and the BFLPE.

Alternative: There is a relationship between school type and the BFLPE.

The following figure (1.1) shows the alternative hypotheses in this study:

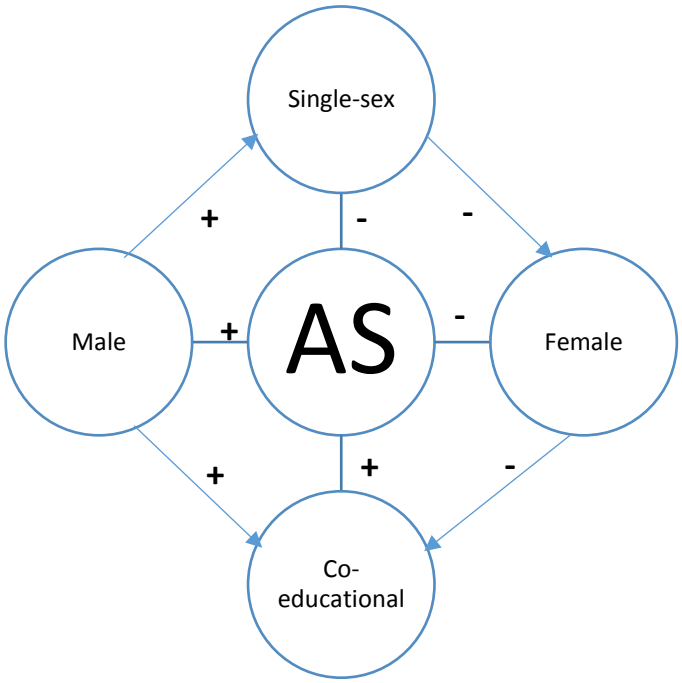


Figure 1.1: the representation of the academic self-concept among boys and girls in single-sex schools versus coeducational schools; (AS) academic self-concept, (+) increases in academic self-concept, (-) and declines in academic self-concept.

Figure 1.1 shows the hypothesised increase and decrease in academic self-concept in both single-sex and co-educational schools. This study hypothesises that girls might suffer a lower academic self-concept than boys when they compare themselves with the other. Girls are predicted to have higher ability than boys in Jordan; based on Mullis, Martin, Gonzalez, and Chrostowski (2004) TIMSS 2003 findings report, Mullis, Martin, Foy (2008) TIMSS International Mathematics Report, Mullis, Martin, Foy, and Arora, (2012) TIMSS 2011 international results in mathematics, and Organization for Economic Co-Operation and Development (OECD), 2006, 2009, 2012. Because Girls are predicted to have higher ability

than boys in Jordan, girls' classes is predicted to be more competitive than boys' classes. It also hypothesises that girls would have a lower academic self-concept than boys in co-educational schools, although they would have higher ability than boys, since they would have the gender interaction. This study hypothesises that equally able students in co-educational schools would have a lower academic self-concept than those with same ability who attend single-sex schools. For example, high-ability students in co-educational schools would have lower academic self-concept than high-ability students in single-sex schools.

However, the nature of research question 3 is qualitative and does not require hypothesis. Research question 3, investigates the types and standards of social comparison in the classroom. It will be answered through interviews that will be presented briefly in the next section.

1.5 Method and Design

This study employs a mixed method design which will be explained in detail in the methodology chapter. The mixed method research is a research approach which relies on quantitative and qualitative data. The mixed method design in this study will rely primarily on the quantitative data to examine the BFLPE on male and female students' academic self-concept in Jordanian single-sex and co-educational schools. Quantitative data in this study will be collected through an ability test and a questionnaire. The data will be analysed using a statistical analysis software, SPSS. The data will be presented numerically in tables and figures.

Since the quantitative data would not be able to identify the way students judge their academic ability, qualitative data will play a secondary role to fill this gap. Qualitative data will be collected using students' semi-structured interviews. Semi-structured interviews refers to the type of interviewing that requires a prelist of questions and an interview schedule, but it allows

the development of sub or new questions during the interviews. The qualitative data will be transcribed and the findings will be presented in a narrative way using quotations from the interviews.

1.6 Definition of the Terms

There will be key terms used in this thesis alongside the BFLPE, such as academic self-concept, individual's academic ability, school-average ability and social comparison. The BFLPE asserts that average ability students suffer a decline in their academic self-concept when they engage in a social comparison with others who are more academically able than them. The main concept in the BFLPE is the academic self-concept. The academic self-concept refers to the beliefs, attitudes and feelings that students hold about their academic abilities. For example, a student may view his academic ability as one of the top students in the class. Academic ability refers to students' capability to perform well at school and achieve educational goals. For example, a student who is below the average ability of his class is considered a lower ability student compared to the average ability other students in his class. School-average ability refers to the average ability of all students in a school. For example, a high-ability school would mean that the ability of all students in that school are above average. The last key terms will be used more often in this thesis as the social comparison. Social comparison occurs when students recognise the academic ability of others and compare it to their own ability. A student may recognise that his ability is higher than the rest of his class. However, those terms will be discussed more in details and examined in the next chapters.

1.7 The organisation of the thesis

This thesis is organised in six chapters.

Chapter one: the current chapter, is an overview of the entire thesis. It briefly overviews the background and the context of the study. It also presents the aims and objectives of the study. Chapter one will also present the research questions and hypothesis. This chapter will reveal the plan of the thesis.

Chapter two: the literature review, provides the conceptual and theoretical framework of the study. This chapter will start from the early beginning of the self-concept research. It will review the most related self-concept theory to the current investigation; the BFLPE. This chapter will systematically discuss the development of self-concept and the dimensionality of therein. The dimensionality of self-concept will lead onto the discussion of the academic facet of self-concept' which is one of the main concepts in the BFLPE research. Furthermore, the main concept in this study, the BFLPE, will be discussed. This chapter will reveal the development of the BFLPE from 1984 to date. It will explore the implication of the BFLPE model and evaluate on its flaws. The most related the BFLPE studies will be evaluated and compared to the current study. At the end of this chapter, the contribution of the current investigation to the BFLPE research will be revealed.

Chapter three: the methodology; reveals the path the researcher followed in conducting this study. It will review the three main research approaches; quantitative, qualitative and mixed method research. Following this, the methodology will discuss the mixed method approach which followed in this study. This includes the different mixed method design, the designed employed in the current investigation and the researcher's rationale for employing a mixed method design. Mixed method research requires different data collection tools, and will be

discussed in detail in the methodology. The data collection process will be revealed in the methodology section. The data collection section will discuss the three research instruments used in this study; ability test, ASDQII (the Academic Self-Description Questionnaire), and semi-structured interviews. Each tool will be discussed in detail and it will be subject to a reliability and validity check. The rationale of using each tool in this study will be discussed in this section. Consequently, the methodology chapter will reveal the sampling process in this study. This will include the type of sampling, the process of choosing the sample, the number and distribution of the participants across gender and school types. The final stage of data collection is the administration of the study, which is presented in two parts; pre-administration and post-administration. The pre-admiration process will reveal the ethical procedures followed in this study. This will include obtaining an ethical approval from the educational institution that this study is undertaken in, and an ethical approval from the ministry of education in Jordan, to access schools. The ethical procedures also includes obtaining consent letters from the interviewees' parents to take part in the interviews. The post administration process reveals the distribution and collection of the ability tests and questionnaires, as well as the conduction of the interviews.

Chapter Four: present the analyse process of data of this study. The data analysis will begin with the ability test. It will present the initial results from students' responses on the ability test and it will reveal the differences in academic ability between males and females of single-sex schools' and co-educational schools' students. Following that, students' responses on the ASDQII questionnaires will be analysed and the initial results and differences between students and schools will be presented. Using an Analysis of Variance test (ANOVA), the relationship between academic ability and academic self-concept in the four core school subjects; Arabic, English, Mathematics and Science, will be examined. The relationship between schools'

average abilities and students' academic self-concept in the four core subjects will also be examined. At the end of this chapter, there will be a summary section of the main findings.

Chapter Five: will discuss the main findings of the data analysis. It will answer each research question based on the findings in the analysis chapter. The discussion will show how important the findings are and it will compare it to previous researches.

Chapter Five: will also reveal the findings from the analysis of students' interviews. It will identify the social comparison types and it will support them from direct quotations from the interviews with supportive evidence from previous researches.

Chapter six: is a conclusion. This chapter will present the implication of the current research findings and the contribution of the current research findings to the BFLPE research. It will comment on the limitation of the current study and the recommendations of further researches. It will also summarise the entire thesis.

Chapter 2: Literature Review

2.1 An introduction

This study aims to investigate the *Big Fish Little Pond Effect* (BFLPE) model in Jordanian single sex and co-educational schools. BFLPE indicates that average-ability students have lower academic self-concept when they compare themselves with high-ability students and higher academic self-concept when they compare themselves with lower ability students (Marsh, 1987). The BFLPE model is based on an academic self-concept and social comparison theory alongside other theories such as social/ psychological judgement theories, and relative deprivation theory. Therefore, the organisation of this chapter will be as follows:

Section 2.2; deals with the definition of self-concept and academic self-concept together with the development of this concept and the overlapping with other concepts of self such as self-esteem and self-efficacy. This section will also highlight the importance of self-concept in education.

Section 2.3; reviews some important theories of self with a focus on the central theory in the BFLPE social comparison by Festinger (1954). As Festinger's Social Comparison Theory does not provide an explanation of the negative effect of peers' comparison on self-concept and the relativeness of comparison, Relative Deprivation Theory *is* a theory used in the BFLPE which provides that explanation.

Section 2.4; argues the dimensionality of self-concept and the shift from viewing self-concept as a single unidimentional concept such as the early works of James, Cooley Epstein to a

multidimensionality view such as Shavelson and Marsh. The BFLPE model derived from a multidimensional view i.e. self-concept consists of different facets.

Section 2.5; will explore the BFLPE model in detail. Its originality, the empirical evidence of BFLPE and its implications and limitations. This study compares the BFLPE between single-sex schools and co-educational schools.

Section 2.6; evaluates single-sex schooling versus co-educational in relation to self-concept. Another aspect of the current investigation is that it will compare the BFLPE between male and female.

Section 2.7; comments on the gender differences in self-concept research.

Section 2.8; demonstrates the distinctions of current investigation.

Section 2.9; summarises the literature review chapter.

2.2 Self-concept (SC)

Self-concept is a broad construct that has been the focus of psychology research for decades. This section will provide different definitions of self-concept from different perspectives. It will also overview the importance of self-concept research and its implications.

2.2.1 The definition of self-concept

Although many psychologists have tried to define self-concept (SC), there has not been a clear widely accepted definition in literature. It would be worthwhile exploring some of the definitions of SC cited in published papers. Lecky (1945), defined self-concept as *"the nucleus of one's personality. The perceptions that we hold about ourselves are derived from our social environment and are believed to provide the culminating force in directing our behaviour, this behaviour in return, influences the way we perceive ourselves".* Lecky's definition identifies important elements of self-concept: perceptions, social environment and behaviours. This is a consistent definition which indicates that individuals' personal opinions about themselves are influenced by their personal experiences and the influences from the society surrounding them - moderating or modifying their behaviours.

Similar to Lecky's definition, Shavelson, Hubner & Stanton (1976, p. 411) viewed self-concept as *"a potentially important and useful in explaining and predicting how one acts. One's perceptions of himself are thought to influence the ways in which he acts, and his acts in turn influence the ways in which he perceives himself ... self-perceptions formed through experience with the environment and, in particular, through environmental reinforcement and the reflected appraisals of others".* Shavelson et al (1976) also highlighted the role of how personal experience and the social environment change individuals' opinions and behaviours. Self-concept has different facets applied to different areas. In education, self-concept is referred to as 'Academic Self-Concept' which implies the perceptions students hold about their abilities or performances at school (Marsh, 2005). It is believed that students use social comparison with their peers to establish their academic self-concept (Marsh and Parker, 1984).

Byrne (1984, 1996a) on the other hand, claimed that Self-concept involves two processes: a

cognitive process and affective response to self. The cognitive process involves the evaluation an individual holds about him/herself which is influenced by his/her own past or present experience and the experience of others. The affective response to the self involves the reaction an individual takes when he/she perceives themselves, such as a change in behaviour. For example, Byrne (1984) illustrated the two processes of self-concept establishment in a students' evaluation of his performance in a task which would form his self-concept about his academic ability. Because Byrne's claim involves a task performance as a way of establishing one's self-concept, his claim overlaps with self-efficacy. Thus, there appears to be an overlap between three constructs of self: self-concept, self-esteem and self-efficacy. It is not within the range of this study to deeply evaluate the three concepts, but it would be beneficial to distinguish between them briefly.

Purkey (1988) and Byrne (1996a) viewed self-esteem as one's attitudes and feelings towards self-worth. Self-esteem is also viewed as the general or global facet of self-concept (Marsh & Hau, 2003). Self-esteem involves attitudes and emotions towards one's self and this slightly differentiates from self-concept which involves facts or information that is known to an individual. For example, a student might evaluate how well he is at school by saying *'I'm good at school'*. In self-concept, the same student would judge his school performance as *'I am doing well at school'* (Byrne, 1996a). Another difference between self-esteem and self-concept is the stability. Self-esteem tends to be stable over time since it indicates the broad feeling about self (Rosenberg, 1965, Coleman, Ivani-Chalian &Robinson, 1993, Harter, 1998). This stability of self-esteem is absent in the self-concept because self-concept differs from one life trend to another. For example, an individual may have a high academic self-concept but low physical self-concept. Self-concept is more likely to be affected by others (Festinger, 1954, Marsh & Parker, 1984, Marsh, 2005). However, Self-esteem is more likely to appear in the unidimensional perspective which will be explained later in section two of this chapter.

Self-efficacy, on the other hand, is defined by Bandura (1986 p.391) as a 'personal judgement of our own capabilities to organise and execute courses of action to attain designated types of performances'. Self-efficacy indicates a cognitive judgement of one's ability to carry out a task. In self-concept, individuals evaluate and praise their ability based on their accomplishment or the accomplishment of others, whereas, in self-efficacy, individuals become more confident about their ability to carry out a certain task (Bong & Clark, 1999). For example, a student might think he is capable of completing a complex mathematic exam in a shorter time than his peers.

However, it is important to make a distinction between them in the argument to avoid using inappropriate measures for the wrong concepts. For example, a self-concept instrument has to be very specific to a domain like an academic domain and even more specific to the small aspect of that domain such as Mathematics (Marsh, 1990). The distinction between the three terms would also help in avoiding any overlap in interpreting the research results. For example, if self-concept is viewed the same as self-efficacy, a researcher might interpret results as self-concept but in fact it is self-efficacy; he would be testing students' capability at performing a Mathematic task rather than their ability in a Mathematic subject. If self-concept were viewed as self-esteem, a researcher may claim that his findings indicate a stability of academic self-concept but in fact his findings would be for self-esteem. The implications of self-concept in an area like education, or more specifically in a subject like English or Mathematics, would be different from the implications of studying the general self-esteem or self-efficacy.

2.2.2 The importance of self-concept

Social scientists agree on the importance of self-concept in most social and psychological problems. In Education, self-concept is one of the central focuses by educational policy makers, because it plays a central role in predicting other educational outcomes. Self-concept is strongly related to: motivation and anxiety and socio-economic status (Meece, Weigfield & Eccles, 1990, Seaton, Marsh & Craven, 2009); educational and career aspiration; academic and career choices (Marsh and Yeung, 1997b), and academic achievement (Marsh, Byrne & Yeung, 1999, Marsh & Craven, 2006, Marsh and Hau, 2003, Marsh, 2005).

The relationship between academic self-concept and academic achievement has been the concern of self-concept research for decades. Purkey (1970), who examined the relationship between academic self-concept and academic achievement found a substantial and significant relationship between the two variables. Students with a previous high achievement were found to have high academic self-concept and students who had high academic self-concept achieved better than those who had lower academic self-concept. Purkey (1970) concluded that a change in academic self-concept led to a change in academic achievement and vice versa. Rogers, Smith and Coleman (1978) tested the relationship between academic self-concept and academic achievement based on the social comparison within the classroom. They found a strong relationship between academic self-concept and children's academic performance when the social comparison was considered. Students who compared themselves with their low achieving peers reported higher academic self-concept. However, this relationship between the two variables declined when they did not consider the social comparison. Those students who reflected on their own achievement without comparing themselves with others did not report any change in their academic self-concept. In terms of the casual order of academic self-

concept and academic achievement, Marsh and Craven (2006) found that academic self-concept had influence on academic achievement and prior academic achievement had influence on academic self-concept. Students who maintain a high academic self-concept achieved higher grades than those with low academic self-concept. Marsh and Craven (2006) and Marsh et al (1999) found that the previous achievement had influence on academic self-concept in that those who ended their previous year with high grades maintained their academic self-concept.

Academic self-concept was found to have influence on choice behaviour such as coursework selection and educational and career future aspirations. Feather (1988), examined the relationship between Mathematic and English self-concept and the enrolment in those subjects among university students. He found that the enrolment in a Mathematics programme was significantly influenced by students' high self-concept in Mathematics and likewise their enrolment in English is highly influenced by their perceptions of English. However, each subject's self-concept did not influence the decision of enrolling in the other subject. Another study by Meece et al. (1990), examined the relationship between Mathematics self-concept and school grades with the intention of taking additional courses in Mathematics. They found that a Mathematics self-concept significantly influenced students' decision to enrol in further Mathematic courses but not school grades. Even those who did not have high school grades, but had high Mathematic self-concept, decided to take further Mathematic courses. Likewise, Marsh and Yeung (1997b) found that academic self-concept strongly contributed to course selection more than school grades. For example, a student who has high self-concept in Mathematics might choose Mathematics as his future course of study even if his Mathematic grade is not substantially high. Marsh and Hau (2003) reasoned that academic self-concept would have influence on a student's future career choice in that a student who has high Mathematic self-concept, for example, would choose to work as a mathematician because they

believed that self-concept continues with students even after graduation and influences their career decision.

Cantor, Markus, Niedenthal, & Nurius (1986), claimed that motivation cannot be understood without referring to self-concept since "motivation requires self-knowledge that provides individuals with sense of continuity and directs their behaviour" (p. 97). When examining the relationship between motivation and self-concept two types of motivation must be distinguished: *Intrinsic motivation and Extrinsic motivation.* These two types of motivation were introduced by Deci & Ryan (1985). They asserted that intrinsic motivation occurs when individuals engage in a task for the joy or pleasure of carrying out that task. They are self-determined in their intention of taking part in a task. For example, a student may engage in Spanish classes because he/she may intend to engage in online encounters with Spanish people. Extrinsic motivation, on the other hand, occurs when there is an external encouragement for individuals to get involved in a task - such as being rewarded for scoring high grades in an exam.

The relationship between motivation and self-concept has been examined empirically. Research on academic motivation (and other educational concepts, such as academic achievement and academic self-concept) has shown that highly motivated students tend to accomplish superior educational outcomes. Academic accomplishment has effects on academic self-concept; the more motivated students are more likely to have high academic self-concept (Guay, Ratelle & Litalien, 2010, Radi, 2013, Seaton et al, 2009, Marsh, 2007). Seaton et al (2009), in a cross-cultural study in 41 countries, found that both types of motivation; intrinsic and extrinsic, have relationships with Mathematical self-concept in that the more the students are intrinsically and extrinsically motivated, the higher their Mathematical self-concepts were. However, they found no significant difference between intrinsic and extrinsic

motivations in academic self-concept. Radi (2013), tested the relationship between intrinsic and extrinsic motivation and academic self-concept among undergraduate nursing students in Saudi Arabia. She found that students who are extrinsically motivated showed lower academic self-concepts than those who were intrinsically motivated. Guay et al (2010) & Marsh (2007), found that academic motivation mediates the relationship between academic self-concept and academic achievement - students felt competitive when they performed a task; thus, increasing their academic motivation leading them to achieve better scores. In other words, high academic achievement is reflected in high academic self-concept.

Anxiety is another factor that is believed to be related to academic self-concept. Meece, Weigfield & Eccles (1990), found anxiety to have a negative effect on students' academic self-concept in that highly anxious students showed low academic self-concept. Bandalos, Yates & Thorndike-Christ (1995), tested the relationship between anxiety and Mathematics self-concept among graduate and undergraduate students in two US universities. They found that anxiety had a negative effect on Mathematical self-concept in that students showed high anxiety in general which reflected on their Mathematical self-concept; which was found to be low. In Seaton et al's (2009), cross-cultural research they found that students with high anxiety suffered a deficiency in their Mathematical self-concept compared to other students, who felt less anxious. Urhahne, Chao, Florineth, Luttenberger & Paetcher (2011) conducted a study on teachers' judgement of students' performance in Math. Based on teachers' expectations, students were assigned into two groups: underestimated group and overestimated group. Underestimated group represented those who are expected to achieve low Mathematics grades; whereas, overestimated group is for those who are expected to achieve high Mathematics grades. One part of this study was to investigate students' Mathematics self-concept. The research findings showed that the underestimated group experienced more test anxiety than overestimated students and low Mathematics self-concept. The overestimated group

experienced less test anxiety and higher Mathematics self-concept. This is another evidence that high anxiety would cause low academic self-concept.

The growth of self-concept research has shed the light on the importance of the early theories of self as in William James (1950), Cooley (1902) and Epstein (1973). Drawing upon those fundamental theories, there was a growing interest among researchers to link the psychological theories of self with society. This led to the creation of new socio-psychological theories of self-concept such as social comparison theory and relative deprivation theory. The following section will discuss these theories, their influences and their relevance to BFLPE model.

2.3 Theories of Self

Across the self-concept literature, William James' work (1950) is widely acknowledged and is considered fundamental in his field. According to James (p. 291), "a man's self is the sum total of all of that he can call his, not only his body, and his physical powers, but his clothes and his house, his wife and children, his ancestors and friends, his reputation and work, his land and horses, and yacht and bank account". In other words, anything belongs to a man, belongs to the self. James' work differentiated between *self as a knower (I) and self as known (me)*. *Self as a knower*, according to James (1950) refers to man's recognition of his own self and others. For example, a man would recognise his identity by spotting the similarities and differences with others and either accept or reject the others. *Self as known*, on the other hand, refers to what belongs to a person from material belongings, social interaction with others and the feeling and emotions of that person. Social comparison is implicitly included in this theory in that it implicitly indicated that a person would compare him/herself with other people and would

either accept them or reject them.

Cooley (1902), drew upon James' work and introduced the *'looking-Glass-Self'* theory that emphasises the importance of social interaction in developing one's self. According to Cooley's theory, an individuals self-knowledge is based on what others might think about them. Cooley (1902) identified some characteristics of the 'ideal self' which are: what one would think about himself, combined with what others would think about him, and the final judgement based on both; self-perception and others' perceptions. Cooley's work is considered the early work that studied self-concept or self-perceptions in relation to the social comparison process.

The theories of self discussed earlier, shaped most of the new and traditional self-concept theories such as those implemented in the BFLPE model. The BFLPE model is based on social and psychological theories such as social theory, social and psychological judgement theories, relative deprivation theory and social comparison theory (Marsh and Parker, 1984). Since the BFLPE model relies heavily on the social comparison theory (SCT) the focus will be drawn upon this theory. However, SCT does not explain the relativeness in the social comparisons with others. For example, social comparison theory may fall short to answer the question of whether students compare themselves with other students in other schools. Thus, there is a need for another theory to explain this issue such as Relative deprivation theory by Stouffer, Suchman, DeVinney, Starr & Williams (1949). This theory, RDT, will be discussed after SCT in section 2.1.4.

2.3.1 Social comparison theory (SCT)

Social comparison theory was proposed by Leon Festinger (1954) and asserts that individuals evaluate their opinions and abilities by comparing themselves to others. Social comparison theory is based on nine hypotheses.

1. Festinger (1954), hypothesised that it is in the human organism that people automatically evaluate their opinions and abilities. He asserts that an individual's perceptions of their abilities are either due to personal opinion of themselves or a comparison with others. Individuals use their personal opinion to evaluate their own abilities when there exists no standard of comparison or there are no other people to compare with. However, when the standards or criterion of evaluation is obvious, one's ability would be judged by making a comparison with others' abilities. Festinger's first hypothesis claimed that individual perceptions do not only serve as judgement of ability but also direct the behaviours and appraise the ability/performance of that individual (Festinger, 1954).

2. Festinger (1954) hypothesis that when there no objectives or non-social means available allowing a person to evaluate his opinion, he/she tends to base the evaluation on his subjective opinion or compare his opinion on the opinion of others. In other words, Festinger (1954) assumes that individuals tend to use their aspirations/expectations to evaluate their abilities when social comparison with others is not available. However, this evaluation may not be stable as it can change by the increase or decrease of their expectations. For example, a student might expect himself to achieve intermediate level in an exam, but if he achieved an upper-intermediate score, his expectation of himself may increase.

3. Festinger (1954), hypothesized that individuals tend to compare their abilities with others who are similar or close to their abilities. A student may not compare his academic ability with other students who would highly exceed his ability nor with others who are far below his average academic ability. This also applies to the discrepancy between individual aspirations and their actual performance on a task. If a student performed on a task far below his expectations, he wouldn't be able to evaluate his ability subjectively. Festinger (1954) concluded that "The availability of comparison with others whose opinions or abilities are somewhat different from one's own will produce tendencies to change one's evaluation of the opinion or ability in question" (p. 122).

4. Festinger (1954), hypothesised that there is a unidirectional drive upward in the case of abilities which are largely absent in opinions. This explains the difference between ability and opinion in that ability has a value so an individual may have higher ability than another; whereas, there is no such value for opinion. No ones' opinion is greater or better than the other, they are only different opinions from each other. For example, a person may have a better ability to pass a driving test than others, but being a good driver does not mean having a better opinion about one's driving test relative to others.

5. Festinger (1954), hypothesised that one's ability is unchangeable because of personal restrains that limit it, but opinions are free of those restrains which make it changeable. In other words, it is possible to change a person's opinions, but difficult or impossible to change their abilities. For example, if a student's maximum ability is to achieve a moderate level in an IQ test, based on Festinger's fifth hypothesis, it would be difficult to change that student's ability so he can achieve a higher level.

Opinions on the other hand, are flexible and changeable. An individual may change his opinion about a matter if he discusses it with others or experiences more about it. For example, in the theory of intercultural communication competence, Byram, Nichols & Stevens (2001) believe that once students critically evaluate other cultures and reflect to their own culture, their opinion or attitude towards the culture of others would change. Our opinions are changing but those changes cannot be evaluated for better or worse since opinions are different between people. There are no good or bad opinions (Festinger 1954). On the other hand, Festinger (1954) stated that "when a discrepancy exists with respect to opinions and abilities there will be tendencies to change one's own position so as to move closer to others in the group (or) to change others in the group to bring them closer to oneself" (p. 126). An individual does not always change his/her opinion, but sometimes he/she will influence other people to change their opinion to his/her.

6. Festinger (1954), hypothesised that social comparison with others stops when there is a divergent between self and others, because continued comparison with divergent individuals creates hostility and would end up with harmful consequences. The consequences that would appear from the cessation of comparison are different depending whether the comparison is based on opinions or abilities. In the case of opinions, the cessation of comparison with others would lead to contradiction or hostility resulting in an exclusion from the group. According to Hoffman et al (1954), viewing others as an incomparable group may indicate the acknowledgement of their superiority, which would satisfy the self of those who appear as inferiors. In the case of ability however, the cessation of comparison with others below oneself or above, may not lead to the same results as in the case of an opinion. It would lead to a decline in one's self-concept if others are more able; or an increase in one's self-concept if others

are less able. In some occasional cases it might lead to a contradiction or hostility with the others (Festinger, 1954). In an experiment carried out by Hoffman, Festinger, and Lawrence (1954) they found that two students declined any comparison with a third student who achieved better results in a test, so they started to compare their abilities with each other. This example by Hoffman et al., is evidence that individuals tend to compare themselves with others who are similar or closer to their ability and tend to decline any comparison with others who are far above or below their average abilities.

7. Festinger (1954), hypothesised that increasing the importance of the comparison group would increase the uniformity of one's ability or opinion. When an individual is made aware of the importance of the other group or comparison group, he/she would be pressurised to reduce the differences and compete their ability or opinion. The importance of the comparison group creates a competitive environment for individuals to maintain uniformity of their opinions or abilities. In an experiment carried out by Hoffman et al. (1954), a test was given to two different groups. The first group was informed that the test was very important and the outcomes would be used officially. The second group was informed that the test was not important and would be used only to prove the invalidity or poorness of the test. In this experiment, the test was viewed as the importance factor. It was made important for the first group and unimportant for the second group. The results showed that the first group scored higher than the second group in the test. This example is evidence that because the importance of the test had increased, the pressure towards uniformity of ability had consequently increased. To summarise this hypothesis, Festinger (1954) asserted that “the greater the relevance of the opinion or ability to the group, the stronger will be the pressure toward uniformity” (p. 132).

8. Festinger (1954), hypothesised that the more divergent the comparison group/individuals are the less tendency of comparing to that group would be. In other words, individuals would always choose to compare their abilities or opinions with others who are less divergent from their own abilities or opinions. They would cease any comparison with the most divergent individuals. Individuals tend to choose those people who are similar or close to them as a comparison group.

9. Festinger (1954), hypothesised that when there is a range of opinions or abilities in a group, the relative strength of the manifestation of pressure towards uniformity will be different for those who are closer to the status of the group than for those who are distant from that status. Specifically, those close to the status of the group will have stronger tendencies to change the position of another's relatively weaker tendencies by narrowing the range of comparison; much weaker tendencies will change their own position compared to those who are distant from the status of the group. For example: The implication is that individuals would change their opinions if they were viewed as divergent compared to others. On the other hand, individuals who have closer opinions to the others in a group would be more influential on the group than the divergent ones. However, the extent to which someone would agree to change his opinion would depend on how much pressure he would be under to change his position. For example in a study carried out by Festinger et al. (1952) participants were divided into two groups. In the first group; some of the group members were made aware that the rest of the group did not agree with their opinions. In the second group; some of the members were informed that the rest of the group agreed with their opinions. The results showed that there were changing in opinions among those whose opinions were disagreed with by the rest of the group. Those in the second group, who had similar or closer opinions to the rest of the group, showed efforts to impress others and influence

them.

To summarise those hypothesis in relation to ability (since BFLPE is based on ability), individuals establish their perceptions about their abilities and opinions by comparing themselves with others. SCT identified two types of social comparison: downward comparison with others who are less able than oneself and upward comparison with others who are abler than oneself. Individuals would prefer to compare themselves with others who are similar in ability to them. A comparison with others who are far different in opinion or ability would cause harm to self and hostility to others. Therefore, the next section, 2.3.1.1, will discuss the types of social comparisons.

2.3.1.1 Types of social comparison

The social comparison theory identified two types of social comparison: downward and upward comparisons. Downward comparison, according to Festinger (1954), occurs when individuals compare their abilities with others who are better than themselves; whereas, upward comparison occurs when individuals choose to compare their abilities with others who are worse off than themselves. Festinger's (1954) sixth hypothesis asserted that upward comparison has negative consequences on individuals in that the comparison with others who are better-off themselves would cause hostility and would harm oneself. Festinger, though, hypothesised that individuals would prefer to compare themselves with others who are similar to them.

The effect upward comparison individuals' self-concept was empirically tested by other researchers. Martin (1986), found that upward comparison has negative effect on individuals in that it causes frustration, dissatisfaction and the feeling of inferiority. Salovey and Rodin (1984, 1986) also found that upward comparison causes jealousy in that individuals would

view themselves as inferior in comparison with others. The feeling of inferiority comparing with others would cause a threat to oneself and lead harmful consequences (Tesser, 1988).

However, upward comparison does not always have negative effect on individuals. Upward comparison can serve as motivators encouraging individuals to make a progress and enhance their performance (Bandura, 1986, Maddux, 1995, Stapel and Koomen, 2000). For example, a student may view other students who are abler than him as a comparative target to compete with them and achieve better grades than them; therefore, that student would work harder to improve his performance at school.

The concept of downward comparison; however, was further explained by Wills (1981) who claimed that downward comparison has positive effect on individuals' well-being. Wills stated that "persons can increase their subjective well-being through comparison with less fortunate others" (1981, p. 245). Individuals may choose to compare themselves with others who are less able than them to satisfy themselves. Kemmelmeier & Oyserman, (2001),

McFarland, Buehler, & MacKay, (2001) Blanton, Buunk, Gibbons, and Kuyber, (1999) found that downward comparison has positive effect on self-concept in that when individuals compare themselves with others who are less able than themselves, they would feel happier about themselves which would reflect on their self-concept. For example, an average ability student would have high academic self-concept when he/she compare him/herself with low ability students in a school.

2.3.1.2 Social comparison standards

Students use comparison standards when they compare their abilities with each other. The literature on the tools or standards, that students use to make a comparison with each other, is rather limited. Most studies relied on school grades and exams' scores as tools that students use to judge their academic abilities and compare themselves with others. Blanton, Buunk, Gibbson, and Kuyber (1999), Rosenberg (1979), and Skaalvik and Skaalvik (2002), have identified some of the standards or choices that students use to make an upward or downward comparison. Blanton et al (1999) conducted a study investigating the contribution of social comparison choices on academic performance. They found that secondary school students in Netherland use their school grades to make an upward comparison. In terms of comparison preferences, they found that students prefer same-gender comparison. Rosenberg (1979) claims that the reflected appraisal from others is a source of information that can be used in making a social comparison. An example of reflected appraisal is teachers' appraisal of his students. Students may use their teacher's comments about their abilities to compare themselves with each other. Skaalvik and Skaalvik (2002) identified external and internal sources of comparison in the classroom such as school grades, teachers' and parents' appraisal, and students performance in different school subjects.

However, social comparison theory does not explain how relative the comparison target would be to oneself when he/she make a comparison with others. Therefore, the next section will introduce the relative deprivation theory which may provide an answer.

2.3.2 Relative deprivation theory (RDT)

Relative deprivation theory was first introduced by Stouffer et al. (1949) who carried out longitudinal research for five years on American soldiers. Their study aimed to understand Soldiers' attitudes towards promotions in the Military service. Relative deprivation, according to Stouffer et al (1949), refers to the feeling of deprivation/discontent of individuals when they compare themselves to others. In other words, deprivation refers to the feeling of exclusion of taking part in society. Individuals may feel deprived when they compare themselves to those who are better off than them in that society. Stouffer et al's study compared air corps attitudes towards promotions with policemen in the American Army. Although air corps were promoted quicker than policemen, they felt more deprived. Their feeling of deprivation was due to a relative comparison with other corps in the same unit who had even quicker promotions. Those air corps who felt deprived perceived their performance in the military service as lower than the military performance standards.

Smith, Pettigrew, Pippin & Bialosiewicz (2012) identified three conditions of the relative deprivation theory: cognitive comparisons; appraisal of being disadvantaged; viewing disadvantages as unfair and resentment. Smith et al (2012), illustrated the relative deprivation theory in the following figure (2.1):

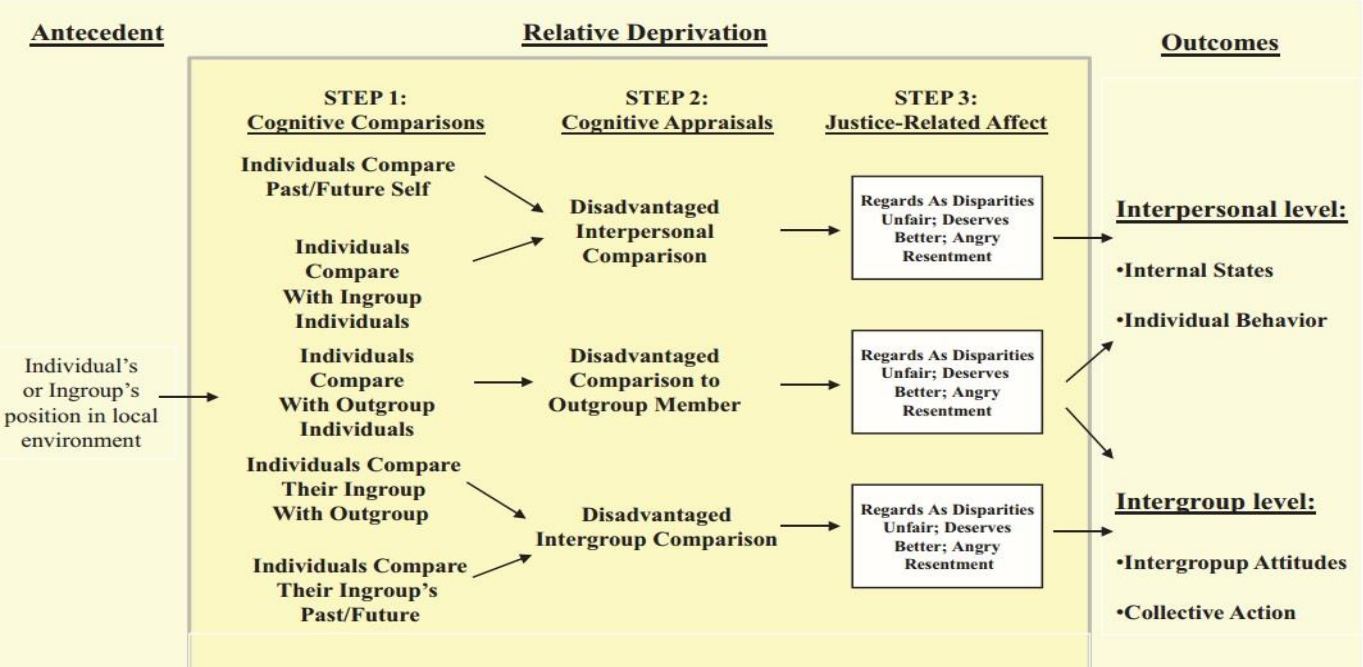


Figure 2.1: Outline of relative deprivation theory (Smith et al, 2012 p. 205).

Smith et al (2012) in figure (2.3) showed the process of relative deprivation in the three aforementioned conditions. According to Smith et al (2012), the cognitive comparison, occurs in two levels: the individual level and the group level. Stouffer et al (1949) referred to individual's feeling of deprivation as egoistic deprivation; whereas group deprivation is called fraternal deprivation. Smith et al (2012), claimed that the social comparison within the egoistic deprivation occurs when individuals compare their past with their future; individuals compare themselves with their peers in the same group i.e. in-group comparison and individuals compare themselves with others from an out-group. The social comparison within the fraternal group occurs when individuals compare their in-group with an out-group or even those individuals compare their in-group's past with the future. Those social comparisons, according to Smith et al (2012), leads to cognitive appraisal in that the difference between one's self and others is viewed as a disadvantage. Identifying oneself as disadvantaged results in a justice-related effect, such as the feeling of unfairness, deprivation and incompatible with society. This also leads to changes in behaviour. For example, an individual may perceive himself as

worse off than others in his group i.e. low self-concept which might lead him to change his behaviour to impose his opinion (*Ibid*). Thus, the feeling of deprivation that involves a social comparison process with others leads to a low self-concept (Stouffer et al, 1949). The decline in self-concept which causes the feeling of deprivation can be explained by different reasons such as the lack of opportunities, the social gap between individuals in a society and the exclusion from taking part in social activities compared to their peers.

RDT focused on the relativeness of the comparison group. In Stouffer et al, (1949) the air cops were deprived because they compared themselves with other air cops in their military unit; however, they would not feel deprived if they compare themselves with policemen in other units who even hardly obtained any promotion. This indicates that individuals would compare themselves with those who are most relative to them. For example, a student would compare himself with other students at his school but unlikely to compare himself with other students in different schools. This is also consistent with Festinger (1954) and Wills (1981) who also predicted that individuals would compare themselves with the most relevant comparison target to them.

However, the feeling of deprivation because of the comparison with the most relative others would harm self-concept, For example, an average ability student would feel deprived when he compares himself with others who perform better than him at his school. This feeling of deprivation results in a decrease in a students' academic self-concept. For example, Davis (1966) tested this theory on senior college men and found that career choice was determined by college students through social comparison with each other not through grades achieved, therefore, students who felt deprived or viewed themselves as less able than others tended to choose lower career paths.

One of the criticisms of relative deprivation theory is that it does not consider the self-

referenced deprivation since individuals may experience deprivation when they compare their past position with their current or their future position (Flynn, 2008). Another criticism about relative deprivation theory is that it fails to explain why individuals may not get engaged in social movement when they feel deprived (Flynn, 2008). For example, students in a classroom may feel deprived but they are unlikely to form a social movement or administration against their teachers.

Although these theories explain the process of establishing self-concept and it also explains the negative effects emerged from the social comparison with others, they were exclusively applied on the general facet of self-concept but they did not consider the dimensionality of self-concept. The question is whether the social comparison occurs in all facets to self-concept is still broad and it is out the scope of the current investigation to be answered; however, the next section will explain the idea of dimensionality in self-concept.

2.4 The dimensionality of self-concept

Historically, self-concept, or global self-esteem, was viewed as a unidimensional construct. For example, Rosenberg's (1965) viewed self-concept as a nomothetic construct i.e. one unified construct that explains human opinions, abilities and behaviour in different life trends. He claimed that self-concept is better studied as a single unified concept. For example, academic self-concept would be according to the way students would perceive themselves at educational settings, but their academic perception would not be different from their self-esteem or general self-concept. This view parallels itself with the empirical findings from work by Shavelson et al (1976), Soar and Soar (1983), Winne and Marx (1981) Marsh and Parker (1984), Marsh (1987), Marsh, Byrne and Shavelson (1988) which found that success in self-concept does not necessarily indicate a success in other facets of self-concept. For example, one might have high

general self-concept but low academic self-concept or one might have high academic self-concept but low physical self-concept. Winne and Marx (1981), asserted that a success in a certain domain of self-concept may occur because of a lack of success in other domains. For example, a student may show a high academic self-concept because he might have a lack of confidence in his table tennis skills (physical self-concept) thus, his academic success is his perceived aspiration. Soar and Soar (1983), asserted that a success in a life trend does not indicate a success in other life trends. For example, being successful at school does not necessarily reflect on sporting success.

Shavelson et al's (1976), model of the dimensionality of self-concept is widely acknowledged since it is considered the fundamental of most multidimensional models including the BFLPE. Shavelson's model declines previous claims that self-concept is a single unified construct. Shavelson et al (1976), viewed self-concept as a hierarchical construct in that it consists of multiple domains; the general facet is the stable one and the other facet might vary in stability.

Shavelson et al (1976) reviewed previous research on self-concept and proposed a new model which was labelled *Shavelson, Hubner and Stanton's model'.* In this model, they identified six characteristics of self-concept. Self-concept is an organised, multifaceted, hierarchical, stable, developmental and a differentiable construct. The following figure (2.1) shows the structure of Shavelson et al'

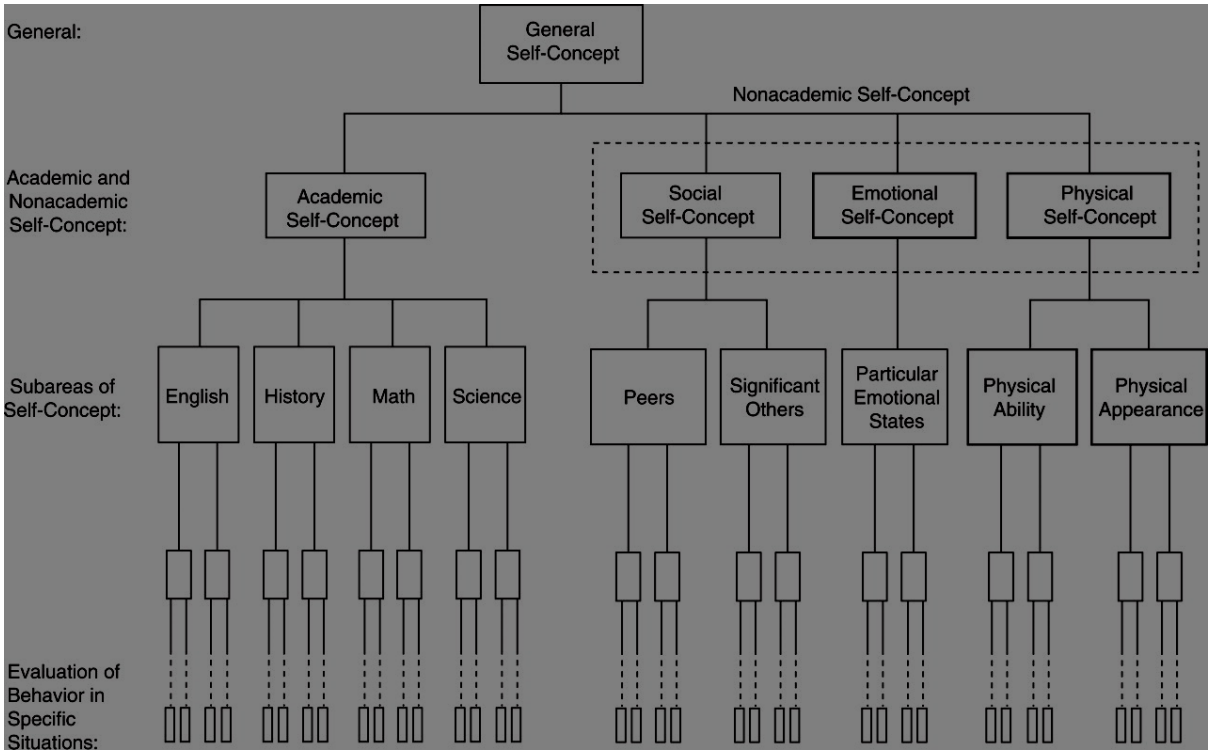


Figure 2.2: Shavelson, Hubner and Stanton's model (1976) Multidimensionality & Hierarchy of self-concept.

Figure (2.1) shows self-concept as one hierarchal general or global construct. The global self-concept is naturally multifaceted in that it is divided into academic and non-academic facets. Each of the two facets has sub-divisions or small specific facets. The non-academic domain is divided into social, emotional and physical. The Academic self-concept, the focus of this study, is divided into subject specific self-concepts; English, Mathematics, Science and History. The development of self-concept emerges from the interaction and correlation between those sub-concepts. However, Marsh (2005) criticized the hierarchy of self-concept in Shavelson's model suggesting that "research showed that the self-concept hierarchy is weak – that a relatively small amount of variance in specific components of self-concept can be explained in terms of self-esteem" (p. 17). Marsh believed that even specific domains in every facet of self-concept are not related. He claimed that Mathematics and verbal self-concepts are not correlated. Using the academic self-description questionnaire in Marsh (1990) study, the results showed strong

evidence that the subjects self-concept was not correlated with each other.

However, Shavelson's model played an important role in shifting the psychological research into a new multidimensional panel. Multidimensionality of self-concept was not accepted at the beginning until the development of self-concept research showed its benefits. Marsh & Parker, (1984), Marsh (1987, 1988, 1993, 2005), for example, claimed that the multidimensional research of self-concept provides a better understanding of self-concept in different social settings such as education, sports, psychological development, and mental-health psychology. It would also provide more sensible evidence of specific self-concept domains (Marsh, 2005).

Research in educational psychology has relatively supported the multidimensionality of self-concept and focused on the academic facet. Marsh (1993) investigated the relationship between academic self-concept, self-esteem (the general self-concept) and academic achievement. He found a strong positive correlation between academic self-concept and academic achievement, but no significant relationship between self-esteem on academic achievement. Marsh (2005) also reviewed previous studies on self-concept and concluded that academic self-concept is related to academic achievement but not for self-esteem or non-academic self-concepts. This may indicate that self-concept is multidimensional. If self-concept was one-dimensional, it would be expected that academic achievement correlates with academic and non-academic self-concept.

Marsh and Yeung (1997b) found that coursework selection was significantly associated with academic self-concept and non-significantly related to the general self-concept. Those findings indicated that students relied on their academic self-perceptions in their future coursework choice.

Other evidence that supports the multidimensionality of self-concept over unidimensional is in the gender gap. Based on a review of previous studies, Marsh (2005) concluded that in most studies that investigated the gender difference in self-concept, the gender gap was larger in multidimensional research than in unidimensional. In general self-concept, the gap favours boys over girls but in academic self-concept, it varies from one subject to another. Marsh (2005) suggested that the relationship between gender and self-concept "cannot be understood if the multidimensionality is ignored" (P21).

For this reason, Marsh and Parker (1984) suggested that there was a need for creating models or frames that would explain self-concept in academic settings. As it was revealed earlier in this chapter, individuals or students tend to evaluate their abilities based on comparisons either with others or even with their previous experiences. Those comparisons, according to Marsh and Parker (1984), are subjected to standards. Marsh has created two models to investigate the social comparison standards that students use to evaluate their academic self-concept: *The internal/external frame of reference (I/E) model,* and *Big-Fish-Little-Pond Effect model (BFLPE)*. As the focus of the current study is to only investigate the BFLPE model, it is this model section four examines in more detail.

2.5 The Big-Fish-Little-Pond-Effect (BFLPE)

The Big-fish-little-Pond-Effect (BFLPE) is a model introduced by Herbert Marsh in 1984. The model claims that average-ability students tend to have lower academic self-concept (ASC) when they compare themselves with those who have higher academic abilities and lower ASC when they compare themselves with lower-able students (Marsh and Parker 1984). The BFLPE

has been widely and cross-culturally researched and proven its generalizability (Marsh and Hau 2003). It has also applied on different educational contexts (Seaton et al 2009).

The BFLPE model was derived from different psychological and social theories such as social comparison theory, relative deprivation theory and other theories of self-concept (Marsh, 2008). The BFLPE model operates a criterion or standards of comparison which students use to judge their academic ability. The BFLPE hypothesises that students compare themselves with each other and use this comparison to evaluate their academic ability; therefore, students may have positive or high ASC or negative or low ASC depending on the ability of others.

Social comparison theory is incorporated in the BFLPE model. Since Festinger (1954) asserted that social comparison exists in the human organism, it is expected that social comparison occurs between students in the classroom. Students compare their ability with each other to evaluate their ability since it is the most common standard of comparison available to them (as hypothesised in Festinger's second hypothesis). Based on Festinger's third hypothesis, students tend to compare their academic ability with those who are similar to them. In the BFLPE, equally able students are hypothesized to compare their abilities with each other which results in a decline of academic self-concept for some students. Festinger (1954), on the other hand, hypothesised that ability is unchangeable, therefore, average ability students may find it difficult or impossible to compete with high ability students and as a result their academic self-concepts decline. Festinger's hypothesis, which claims that social comparison stops when there is a divergent in ability or opinion between individuals, is also implemented in the BFLPE model. In BFLPE, it is expected that some students would stop comparing themselves with those who have higher academic ability and evaluate themselves as less able students which indicates a decline in their academic self-concept. However, based on Festinger's claim that the more divergent the comparison group is, the less tendency of comparison would be, it is not

expected that low or average ability students compare themselves with those who exceed their abilities and therefore limit their comparison with the same or lower able students.

The Relative Deprivation Theory is also implicated in the BFLPE model in that an equally able student may feel deprived when they compare their academic performance with those who perform academically higher than them. In this case, those feeling deprivation leads to a decline in their academic self-concept. The decline in academic self- concept leads to a drop in other educational outcomes such as achievement. Thus, low ability students feel deprived of the opportunities that they would be available for those who exceed their abilities.

Based on the above, the BFLPE concerns the negative effect that students' academic self-concepts suffer. Empirical research found that individual's average ability has a positive effect on ASC, whereas a school's average ability is more likely to have negative effect on ASC. Thus, students with good academic abilities would perceive themselves as academically good students (high ASC) but they would not have the same perception about their academic ability once they compare themselves with better students than themselves (negative effect of school average ability). The following figure (2.3) illustrates how the process of the BFLPE is thought to operate:

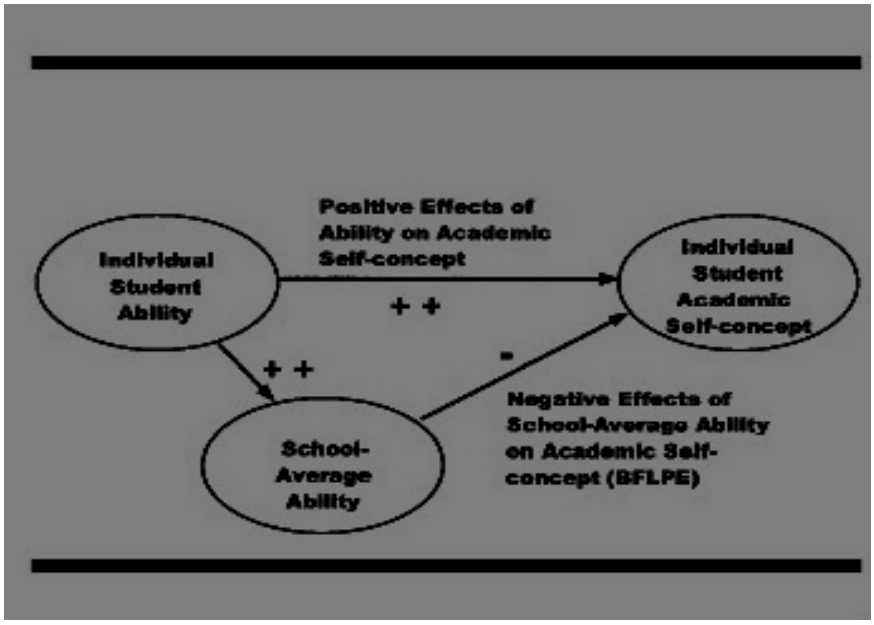


Figure 2.3: Marsh's Big-Fish-Little-Pond Effect model (by Marsh & Hau, 2003)

As shown in figure (2.3) an individual's own ability has a positive effect on self-concept; whereas, school-average ability has negative effect.

BFLPE research investigated the model on different educational settings and different variables. Academic abilities, academic achievement, school types, mode of study, privilege, socio-economic status, students with special needs or students' race gender and ethnicity are all different variables that were less or more investigated under the BFLPE model. Findings and implications of BFLPE on those different variables will be reviewed in the section on *Empirical Evidence of BFLPE*.(section 2.5.2).

2.5.1 BFLPE research and its implications

The BFLPE model is believed to be important in education. Researchers, policy makers, teachers and parents can benefit from the outcome of this model. BFLPE has both theoretical and practical implications. One theoretical implication for the BFLPE model is that it provides a theoretical framework for understanding academic self-concept based on social comparison theory. Marsh and Parker, (1984), Marsh (1987, 2005) claimed that academic self-concept cannot be understood without a frame of reference. BFLPE is one of the models that explains the way academic self-concept is formed.

Another theoretical implication is that BFLPE supports the multidimensionality of self-concept. Marsh (2005) suggested that academic self-concept cannot be understood if the multidimensionality is ignored. BFLPE research has shown that academic self-concept neither correlates with non-academic self-concept nor global self-concept or self-esteem.

Furthermore, BFLPE research provides a further evidence that a decrease in academic self-concept would result in a decrease in other academic outcomes such as academic achievement. Marsh (2005) suggests that the BFLPE model provides a new approach to investigate the impact of academic self-concept on the educational outcomes.

In practice, policy makers in education can benefit from BFLPE research. For those who support ability streaming systems, gifted or privileged schools or even special classes for disadvantage students, BFLPE research provides evidence of the disadvantages some school settings on academic self-concept and its consequences on future achievement, inspirations, and course selection. Therefore, academic self-concept enhancement strategies (which is not the concern of this study) should be considered in those schools.

For teachers, BFLPE indicates that grouping within the class has to be formed carefully to avoid any harm on students' academic self-concept. However, even with a good grouping strategies, BFLPE would still take its place in a classroom since students would still compare themselves with others who are placed in other groups.

A further practical implication is for parents who believe that high ability school would advantage their children and enhance their academic achievement. BFLPE theory has proved that attending high-ability schools would have disadvantages on academic self-concept which as a result would negatively affect other academic outcomes such as academic achievement, course selection, school attendance, academic effort and academic inspirations references.

2.5.2 Empirical Evidence of the application BFLPE

Marsh and Parker (1984) investigated the association of individuals and school-average socio-economic status (SES) with self-concept. The study examined the effect of the average ability of each individual as well as the average ability of the school on self-concept. For the purpose of this study, Marsh and Parker (1984) predicted that there would be a causal relationship between SES and academic ability, and academic self-concept. On the other hand, Marsh and Parker (1984) predicted that academic self-concept would correlate negatively with school-average SES after controlling for individuals' SES. Students were predicted to have higher academic self-concept when they attend low school SES. The third prediction was that Schools and individual's SES and academic ability do not correlate with non-academic self-concept.

Marsh and Parker's (1984) study involved a sample of 305 pupils from five coeducational schools. 125 pupils were chosen from three high SES schools and 180 pupils from two low

SES schools. The sample were selected based on a personal knowledge of the school counsellor and a survey of the properties' values at homes. This study employed three different measures of schools' average SES and ability:

a) Intelligence questionnaire (IQ) test is used to measure individual and school SES as well as the students' academic abilities.

b) Self-Description Questionnaire (SDQ) is used to measure seven self-concepts dimensions: Physical ability, Physical appearance, relationship with peers, relationship with parents, ability and enjoyment in English, in Mathematics, and in all school subjects. In additional, the questionnaire measures the total sum of non-academic self-concept based on the first four dimensions, the sum of academic self-concept based on the last three dimensions and the total of self-concept based on the sum of the seven dimensions together.

c) Progressive achievement test (PAT) is used to test students' reading achievement.

The results showed that academic self-concept was slightly higher in the low-SES schools than in the high-SES schools**.** School-average SES was negatively related to total self-concept measures. The effect of school average SES was much larger and more specific to academic self-concept. On the other hand, this study provided evidence that individuals' ability have positive effect on academic self-concept; whereas, school-average ability has a negative effect. Students in high ability schools showed lower academic self-concept than students in lower-ability schools. This study also countered the prevalent assumption that disadvantage children are likely to have substantially lower self-concept. In terms of non-academic self-concepts, this study found that neither socio-economic status of individuals and schools nor academic ability correlated with non-academic self-concept.

Marsh (1987) carried out another investigation of the BFLPE model. In this study, he investigated the relationship between academic self-concept and school average-ability; school socio-economic status and race. The school average-ability was measured according to the grade-point average obtained from the schools. This study also aimed to clarify the difference between academic ability and grade-point average. Marsh (1987) is a longitude study run for two years in US public high schools. 2230 tenth-grade students participated in year 1 and 1886 students in year 2; however, there were 214 students excluded from year 2 so the final population of year 2 was dropped to 1672 students. Schools were of mixed-abilities and mixed socio-economic status.

The findings of Marsh (1987) provided a strong support for the BFLPE application. The study found that school average-ability had negative effect on academic self-concept since equally-able students showed lower academic self-concept (ASC) in high-ability schools than in low-ability schools. However, the effect of school average-ability, in some cases, had a positive effect on low-ability students. When Students in low ability schools compare themselves with less able students they had higher ASC. On the other hand, Students in low-ability schools achieved higher grades than equally able students in high-ability schools which led to higher ASC. Marsh (1987, p. 290) concluded that "If the school ability is homogenous, BFLPE is not expected". This claimed was challenged later by Marsh in his recent studies that found BFLPE even in mixed ability schools.

In terms of socio-economic status, Marsh (1987) found a fairly small effect of students' and schools' socio-economic status on academic self-concept. The socio-economic status did not influence the BFLPE results of students from different socio-economic levels suffering the same effect.

Since the participants were of mixed African-American and Caucasian-American students, race is one of the factors that Marsh's (1987) study has investigated. The results showed no significant effect on race on academic self-concept. African-American students showed similar academic self-concept to Caucasian-American students although the latter scored higher on the standardised achievement test. Thus, both groups of students suffered the same size of BFLPE. One of the explanations of this finding would suggest that low ability African-American students compare themselves with less able students so they had higher ASC.

Another substantial finding to emerge from Marsh's (1987) study is the differentiation between academic ability and grade point average (GPA). Marsh (1987), claimed that academic ability differs from GPA in that the latter tends to grade students higher than what they would normally score, which does not measure the exact student's ability. According to this claim, a student would have an average ability, but higher grades. Thus, Marsh (1987) concluded that Big-Fish-Little-Pond Effect cannot be explained in terms of GPA since it was not accurate.

It is commonly believed that academically selective schools are more beneficial for students and have a positive influence on academic achievement, academic coursework selection, and educational and occupational aspirations. Marsh and Hau (2003), carried out a study that investigated the effects of academically selective schools on academic self-concept. This study is the first study to investigate BFLPE in an academically selective school setting and it is the first cross-cultural study since it has been carried out in 26 countries.

This study relies on data the of 4000 15 year old students from 26 countries participating in PISA 2000 (international students assessment program). This was the largest cross-cultural BFLPE study. PISA assessed a student's ability and achievement using a reading test that consists of different passages on verbal, mathematics and science topics. Students' scores on the reading test were used to measure students' achievement in the Marsh and Hau (2003) study.

Students' academic self-concept was measured using students' responses on academic self-concept items in a cross-curriculum competences questionnaire in PISA program.

Marsh and Hau (2003) employed multilevel modelling analysis in which students were placed in level 1, schools placed in level 2 and countries placed in level 3. A school's average achievement was measured by the average students' scores on the reading test in each school. Multilevel analysis helped to determine the variance in BFLPE size between countries (Marsh and Hau, 2003).

Marsh and Hau (2003), predicted that ASC is affected by academic achievement in that a change in ASC may lead to a change in academic achievement. Thereby, an increase in academic achievement leads to academic self-concept enhancement. However, Marsh and Hau (2003), found a positive effect of an individual student's academic achievement on academic self-concept, but a negative effect on school average achievement on ASC. The negative effect was found to be smaller than the positive effect.

The interaction between an individual student's academic achievement and school average achievement was small and insignificant. A students average achievement slightly varied from country to a country since the sample size was large (Marsh and Hau 2003). These findings were cross-culturally consistent in the 26 countries and this provides cross-cultural evidence of the BFLPE model. The size of BFLPE significantly varied from country to country. Marsh and Hau (2003) concluded that academically selective schools were found to have negative effects on students' academic self-concept; average-ability students tended to suffer a low academic self-concept when they compare themselves with high achieving students.

This study was replicated by Seaton et al (2009) where they increased the population, the number of countries involved and the number of collectivist and developing countries. This

replicated study also tested the variation in BFLPE between collectivist and developing countries compared to developed countries. The results provided further cross-cultural evidence of BFLPE since they found a negative effect on school-average ability on academic self-concept in all 41 countries. In terms of country by country variation in the size of BFLPE, Seaton et al (2009) found a small but significant variation between countries and the effect appears consistence across the 41 countries. This study provides evidence that BFLPE is not exclusive to one culture or to only developed countries, but it occurs in collectivist and developing countries.

In a response to the criticism of the BFLPE model, Seaton, Marsh and Craven (2010) examined the role of the students and contextual characteristics in moderating the BFLPE. Those characteristics were: students and schools socio-economic status; six psychological dimensions of self-regulation; motivation, self-efficacy, study methods, cognitive (collaborative) and meta-cognitive (control) learning strategies, behaviour; individual ability anxiety social behaviour: comparative and cooperative orientations, sense of belonging and student-teacher relationship. This study employed data from the PISA 2003 study which included 265,180 fifteen years old students from 41 countries. This study focused on the Mathematics self-concept which was measured using 5 items required on the 4 points likert-scale. The student's ability in PISA 2003 was measured by a general test of academic ability. Socio-economic status was measured by collecting information from students about the level of their parents' education, educational resources at home and cultural processions. Self-regulation dimensions were measured by Zimmerman's psychological dimensions questionnaire. The data analysis employed a multi-level regression analysis which tested students on three levels; individual level, school level and country level. The findings in this study are summarised as follows:

- Socio-economic status did not have a relationship with Mathematics self-concept. The students from a high socio-economic status had higher mathematical self-concept, but this was due to their high ability. In terms of BFLPE, socio-economic status did not moderate BFLPE which means that students suffered the same BFLPE regardless to their socio-economic status.
- Motivated students, intrinsically and extrinsically motivated, had higher mathematics self-concept than less motivated students. In terms of the BFLPE, none of the two types of motivation moderated the BFLPE. Even highly motivated students suffered from the BFLPE.
- High self-efficient students also suffered from the BFLPE, which indicates that even when feeling confident of success, a task does not prevent the negative effect on the average ability of the school; BFLPE.
- Students who used learning strategies; cognitive or meta-cognitive, had higher Mathematical self-concept than those who do not. In terms of the BFLPE, students who used cognitive learning strategies such as memorisation suffered less BFLPE than students who used elaborate learning strategies. This indicates that surface learning or cognitive learning may moderate BFLPE.
- High ability students in high ability schools had high Mathematical self-concept. However, those with high ability had lower Mathematic self-concept compared to high ability students in average ability schools. This study provided evidence that BFLPE is general on all ability levels.
- Highly anxious students had lower Mathematical self-concept than less anxious students. Anxiety in this study was found to moderate the BFLPE negatively. Highly anxious students in high ability schools had a lower Mathematical self-concept than other high ability students in average ability schools and even lower

than high ability students in other high ability schools. This was because students felt more anxious being at high ability schools (Seaton et al 2010).

- Students who were reported to have cooperative and competitive orientations, had a high sense of belonging and good relationships with their teachers had higher Mathematical self-concept. The only moderator that was found to be significant in regard to the BFLPE, was the cooperative orientation. High ability students in high ability schools, which follow cooperative learning, suffered a lower Mathematics self-concept than students in other schools. This was because it was more competitive in high ability schools requiring students to work more cooperatively (Seaton et al 2010)

Another internationally supporter of the BFLPE model is provided by Nagengast & Marsh (2011). This study aimed to investigate the BFLPE in a specific academic subject, science. This study is considered the first BFLPE that focuses on only one specific academic subject; science. This study relied on data published by the Program of International Students Assessment 2006 (PISA), which measures students' abilities in different subjects; one of them science. 15 year old students from 57 countries participated in PISA 2006 program. Over 10.000 students participating in the PISA program attended UK schools in England, Wales, Scotland and Northern Ireland. This is the largest representative sample ever in BFLPE studies of cross-cultural and nation-wide schools in UK. This study, Nagengast & Marsh (2011), is considered the first BFLPE study that targets secondary schools in UK since all previous studies were carried out in primary schools.

Students' science achievements in this study were measured by 120-minute tests that run in the PISA 2006 program. The science academic self-concept, on the other hand, was measured by the 4 point likert-scale where, 1 represents a 'strongly agree' response and 4 indicates 'strongly

disagree'. The questionnaire consists of 6 items that measure a science self-concept.

Nagengast & Marsh (2011), found that the school-average achievement in science had negative effect on science academic self-concept, with a larger effect in UK than on the international level. The individual-average science achievement had a positive effect on the science academics self-concept; high ability students displayed a higher science academic self-concept than equal-ability students who attended low ability schools. Students on all levels, school and country levels, suffered from the BFLPE. High ability students in high ability schools showed lower science academic self-concept than those who attend low-ability schools. The size of the BFLPE was larger in UK than the international level.

More evidence of the BFLPE is found in the Liem, Marsh, Martin, Mclnerney & Yeung (2013) study which investigated within-school ability streaming. Ability streaming, or grouping settings, was tested in various BFLPE research; however; Liem et al (2013), has been chosen in this study because it aimed to report any gender or ethnicity influence on the BFLPE results. Liem et al (2013), pinpointed that the ability grouping setting was not completely implemented across schools in the previous contexts that examined the BFLPE because some US or Australian schools did not follow ability streaming systems. Liem et al, (2013) also identified some methodological gaps in previous ability streaming research that examined the BFLPE model as they only employed "two-level modelling in which students were placed in either class or school" (p. 331).

The Liem et al (2013) study was carried out in the Singapore context, where ability grouping is a national educational policy. In Singapore schools there are three streaming ability levels: high-ability schools, middle-ability schools and low-ability schools. There were 4461 7-9 grade students in nine schools across Singapore participated in this study. This study employed Self-Description Questionnaire II (SDQII) which measures academic self-concept in different

subjects. For the purpose of this study, Liem et al (2013) has chosen 5 items to represent English academic self-concept and 5 items to represent Mathematical academic self-concept. All items have to be rated by respondents on a likert-scale from 1-6; 1 (false) and 6 (True). Their academic achievement, on the other hand, is measured using scores of students in English and Mathematics primary school leaving exams prior starting their secondary school.

Liem et al (2013), employed multi-level modelling analysis in four levels: students on level 1, classes on level 2, streams on level 3, and schools on level 4. They examined the relationship variance within each level and between the four levels. Liem et al (2013), found that an individual's prior achievement had a positive effect in academic self-concept. Students in high-ability streaming had lower ASC in English and Mathematics than those who attended low-ability streams. They also found that the effect of stream-average achievement on Math ASC was stronger than class-average achievement and similar on English ASC. In terms of gender, there was no evidence that indicated the influence of gender on ASC. However, the average ability of the class was found to have negative effect on students ASC. The equally able students had lower self-concept when they compared themselves with other students who out performed them. This study provided another evidence of the BFLPE in streaming ability settings.

Marsh, Abduljabbar, Morin, Parker, Abdelfattah and Nagengast, (2014), conducted a study that examined the BFLPE application of Saudi Arabian boys and girls in single-sex schools. They compared the results with those conducted in U.S schools. Besides the BFLPE, the study also aims to investigate Mathematics self-concept, positive effect, coursework aspiration and achievement. For the purpose of the study the researchers relied on TIMSS database. TIMSS 2007 is an international comparative assessment aiming to evaluate teaching and learning in mathematics and science for students around the world.

Relying on TIMSS dataset, 4243 boys and girls in single-sex schools in Saudi Arabia alongside 7377 American students in co-educational schools participated in the TIMSS2007 study. All participants had to take part in a mathematics test ability that included multiple choice items as well as open-ended questions. The students had to respond to a questionnaire that requires Agree-Disagree responses. The questionnaire measures Mathematic self-concept, Mathematic coursework aspiration and Mathematic positive effect.

The findings from this study are summarised as follows:

- On the achievement test, U.S students scored significantly higher than Saudi students. In terms of gender, U.S boys achieved higher than girls on the achievement test; whereas, Saudi girls scored higher than boys in the same test.

- In contrast to the above finding, Saudi students scored higher on the three psychometric factors, mathematic self-concept, positive effect, and coursework aspiration, than American students. Even so,, girls in U.S schools scored higher on the three psychometric factors than boys. Although girls out performed boys on the Mathematics test in Saudi Arabian schools, boys scored significantly higher than girls on Mathematic aspiration and positive effect, but there was no difference between boys' and girls' Mathematic self-concept.

- In terms of the BFLPE, the class-average achievement was significantly negative on students' Mathematics self-concept, positive effects and coursework aspiration across the sample. This study provided further evidence on the generalizability of BFLPE.

- The size of the BFLPE in Saudi Arabian schools when compared to U.S schools did not significantly vary. This would indicate that the type of school, single-sex or co-

educational, would not have effect on the size of the BFLPE.

Marsh et al. (2015), conducted a large cross-cultural study investigating the BFLPE generalizability on Western, Asian and some of the Middle-Eastern Islamic countries. 13 countries were involved on this large-scale study. The countries representing the Western hemisphere were Australia, England, Norway, Italy, Scotland and the U.S. Taiwan, Hong Kong, Japan and Singapore represented the Asian countries, and Iran, Kuwait and Tunisia representing the Middle Eastern Islamic countries. .

In this study, the researchers used a database from TIMSS2007 that measures mathematics ability. This is considered the first cross-cultural study of the BFLPE that did not rely on PISA database as used in Marsh and Hau's (2003) study. There were 117,321, 7th and 8th grade students from 13 countries participating in this study. Students' mathematic abilities were measured using a mathematics test that consists of multiple choice items as well as constructed response. The students also had to respond to a Mathematics self-concept questionnaire that required ranking a statement on whether they agreed or disagreed using the likert-scale.

Marsh et al (2015), found that the negative effect of the average achievement of the class on students' mathematics self-concept test were substantially significant across the 13 countries. The results provided further evidence of the generalizability of the BFLPE and were consistent with previous research which relied on the PISA dataset. Another finding emerging from the data analysis showed that the size of the BFLPE appeared larger when the students were older. Furthermore, the results showed that the smaller the scope for comparison in this environment, the larger the size of the BFLPE would be. For example, in this study, class-average achievements had a greater negative effect on Mathematics self-concept than a school-average achievement.

Regarding the cultural differences, the BFLPE appeared smaller across the Islamic countries

compared with the Asian and Western countries. The results show a consistency with Abu-Hilal & Bahri (2000) and Marsh et al (2014). Marsh and his colleagues justified this finding because students in the Islamic countries tended to receive less evaluative feedback about their achievement than students in the Asian and Western countries. However, the result would have been more acceptable if the researchers considered that the single-sex schooling in the Middle-Eastern countries were a reason why the BFLPE appeared smaller compared to Asian and Western Countries.

Some concerns were raised regarding Marsh et al (2015). First, the study was conducted in 2015 using dataset from 2007 i.e. eight-year old data. Considering there was a global movement in all life areas due to vast technologic developments, it would be subject to concern how valid the data would be after eight years. Accordingly, how has the recent Arab movement influenced education in the Middle East and influenced students' attitudes towards schools?

Another concerns the context of the Middle Eastern Islamic countries. There is a cultural divergence between the three countries used in this study and the rest of the Middle Eastern countries. Tunisia follows a co-educational schooling system and is a socialist democratic society compared to the rest of Middle Eastern countries. Kuwait is a conservative Islamic Middle Eastern country where single-sex schooling is predominant. The socio-economic status of Kuwait is high compared to some other Middle Eastern countries, which also reflects on the standard of their education. Iran does not share many cultural aspects with the rest of the Arab Middle Eastern countries. The concern here is that it is difficult to generalise a Middle Eastern country as a whole region since the demographical aspect of the countries are different. Middle Eastern countries differ in the schooling system, socio-economic status, educational policies and some contextual aspects from each other and the rest of the world.

2.5.3 Criticism of BFLPE model

The BFLPE research was debated by some scholars. Conceptually, the BFLPE did not differentiate between self-concept, self-esteem and self-efficacy, but rather view the three concepts as interchangeable (Terrell and Watson 2003). Terrell and Watson, referred to Marsh and Hau's study (2003) with concern. However, the questionnaire Marsh and Hau used were explicitly academic items, as it measured verbal and Mathematic self-concepts. Marsh and Hau, drew their methods from a multidimensional perspective whereas, self-concept has different facets. Each facet is divided into a specific subject. Academic self-concept is divided into Mathematics, English, Science, etc. and they have also state that academic achievement in that study did not correlate with the global self-concept or self-esteem. Also, self-efficacy measures tend to be different from SDQs since it measures students' perception of their ability to carry out a task.

The methodology of the BFLPE seems to be a challengeable issue raised by some responses to the BFLPE research findings. Dia and Rinn (2008), claim that the BFLPE is very narrow when dealing with social comparisons and does not consider self-reference, contextual issues such as mode of study, socio-economic status of students and a school's culture. The BFLPE does not consider a student's characteristics such as their motivation, mood and anxiety or their cognitive skills. However, the BFLPE is not assuming that social comparison with others is the only way that affects students' academic self-concept. There are certainly other effects alongside a peers' comparison such as those stated by Dia and Rinn (2008). The BFLPE provides one explanation of why high ability students may suffer a decline in their self-concept when they are placed in high ability contexts. After Dia and Rinn (2008) there was more research in the BFLPE that also examined those other factors stated by Dia and Rinn. Seaton et al (2009) tested the BFLPE in individual and collective cultures and Seaton et al (2010)

tested self-regulation theory such as cognitive and non-cognitive approach of learning, motivation and anxiety as well as the socio-economic status of schools and students.

Plucker, Robinson, Greenspon, Feldhusen, McCoach & Subotnik (2004), assert that the BFLPE is a temporary occurrence because students may feel isolated in the new school setting, but these feelings would vanish after they engage in the new class. The aforementioned added that the BFLPE research has not considered the aspect of social engagement, acceptance and development, the personal identity or motivation of the students. However, the methodology employed by Marsh since 1984 has been systematically developed and there have been parallel studies such as in Marsh (2007), who found that the BFLPE has a long lasting effect that persists even after graduation. In terms of social/personal development and its effect on the BFLPE results, Seaton et al (2010) has covered most of those issues such as self-regulation and socio-economic status. However, they have recommended more examination using mixed method research, such as the current study.

Plucker et al (2004), also criticized the lack of Marsh and Hau (2003) transparency, in that their research did not provide enough details about the effectiveness of selective or gifted schools. Marsh responded that the BFLPE does not tend to provide a judgement on the effectiveness of a certain school type over the others, nor does it tend to suggest changes in educational policies. Even this study would not aim to favour single-sex school or co-educational schools. It will only compare the results between both types of schooling. However, the next section will evaluate both school settings.

2.6 Single-Sex Schooling vs Co-Educational Schooling

There is a debate between the advantages and disadvantages of both single-sex and co-educational schools types. There is no doubt that any system, whether educational or none-educational, has its own pros and cons and neither types of schooling would show any benefits over the other. However, this section will evaluate both school types and reveal the benefits of each one.

Some of the arguments about this issue believe that single-sex schools provide females academic success because girls' schools can focus on girls' interests and encourage them to compete with boys in subjects that are viewed as masculine (Mael, Alonso, Gibson, Rogers & Smith, 2005) . However, other authors believe that single-sex schools may fail to achieve gender equality since girls would not be able to share experiences with the opposite gender and may lead to gender inequality outside of schools (Dale, 1969, 1971, 1974, Marsh, Smith, Marsh, and Owens, 1988, Sullivan, 2009). If those arguments applied to the current study, we would expect to see girls showing higher academic self-concept than boys in single-sex schools. Girls would feel less deprived if they were studying at the same schools as boys and they would have greater opportunity for success, but they would have lower general self-concept as they will feel unimportant compared to boys outside schools.

Mael, Alonso, Gibson, Rogers & Smith (2005), carried out a meta-analysis of 40 studies that evaluated the single-sex school versus co-educational schools. Most of these studies were conducted in U.S schools, and most single-sex schools were private. The findings from the analysis showed that single-sex schools are more beneficial in terms of academic achievement than co-educational schools. Most studies in the review showed that boys and girls in single-

sex schools achieved higher grades than their peers in co-educational schools on the achievement tests. In terms of self-concept, Mael et al (2005) reported predominantly high self-concept in favour of single-sex schools over co-educational schools, especially for boys. On the other hand, most studies reported no difference between single-sex and co-educational schools in self-esteem or the global self-concept.

In the current study, the situation would be the opposite. Co-educational schools in Jordan are almost private and the single-sex schools are public. Considering high-achievement leads to high-self-concept and vice versa, it would be envisaged that students in co-educational schools in Jordan would report higher academic self-concept than their peers in single-sex schools. If single-sex schools were proved to be healthier for self-concept, then it would be expected, in the current investigation, that students in single-sex schools have higher academic self-concept than those who attend co-educational schools.

Pahlke, Hyde & Allison (2014), conducted a meta-analysis of 184 studies that evaluated both single-sex and co-educational schooling systems. Mathematics, science, verbal performances, gender, social relations and self-concepts are the variables that were used among the 184 studies. They found no significant difference between both types of schools in either the self-concept nor any of the other variables.

However, Dale (1969, 1971, and 1974), compared co-educational with single-sex schooling in relation to students' satisfaction, social relations, and personality. His instruments also included statements that measured self-concept. Dale found that students at co-educational schools showed higher self-concept in comparison to students who attend single-sex schools.

Marsh et al. (1988), argue that co-educational schools are more beneficial than single-sex schools in terms of self-concept since the former provide students, males and females, with a natural social environment helping them to take up their roles in society. Marsh et al (1988),

conducted a study to investigate the effect of transition from single-sex to co-educational schooling on self-concept. The study was carried out over four years in three stages: pre-transition (year1), in the transition (year2) and post-transition (year3). This study examined students' self-concept in Mathematics and English. The results showed that students' self-concept in Mathematics and English increased from year 1 to year 2 providing evidence of the benefit of co-educational schooling in enhancing self-concept.

Sullivan (2009), assumed that in single-sex schools, boys would have lower academic self-concept in mathematics and science, with girls suffering a low academic self-concept in English and modern languages with the opposite case in co-educational school. He based this assumption because in single-sex schools, boys or girls would not have an opposite gender to use as a frame of comparison. They are more likely to use their peers' ability to establish their own academic self-concept. This would indicate that gender would influence the BFLPE results in single-sex schooling.

In terms of the BFLPE, Sullivan (2009) suggests that gendered norms enforcement models would indicate negative effects on academic self-concept similar to those effects introduced by the BFLPE model. As gendered-atypical interests and abilities are strongly enforced in a co-educational school setting, it would be expected that girls would suffer low academic self-concepts in mathematics and science whilst boys would have low academic self-concept in English and modern languages. Students may also suffer low self-concept depending on a teacher's gender. For example, if the teacher was female, boys then would have lower self-concept since their teacher would not be able to act as a role model for boys. In this case single-sex schooling would be more beneficial for boys.

2.7 Gender differences in Self-concept

Psychological research, especially in the area of education, has been widely focused on the issue of gender differences in self-concept and its impacts. Empirical evidence on gender differences in self-concept shows that boys have higher self-concept and self-confidence than girls (Carpenter and Busse, 1969, Rosenberg, 1979, Wylie, 1979, Marsh, Barnes, Cairns & Tidman, 1984). Studies that show a lower girls' self-concept compared to boys asserts some socio-cultural reasons that would affect girls' judgement of themselves. In some societies, women appear to be undermined and thought to have less capability than men. This superiority of men in those societies, leads to a lowering of a woman's self-concept.

However, there is a limited number of studies reporting the predominance of girls' global self-concept or self-esteem over boys such as those which are reported in Wendland (1967) and Schroeder (1973). Wendland (1967), replicated the Tennessee Self-Concept Scale (TSCS 1996), that measures self-concept, on 685 14-year-old male and female students from white and black backgrounds in US secondary schools. Wendland found significant variance in self-concept scores in favour of girls over boys regardless of ethnicity. Schroeder (1973), on the other hand, reported a significantly high self-concept for girls compared to boys among 568 college students.

In terms of academic self-concept research findings, it is found that Mathematics and science were boys favoured subjects whilst English and modern languages were girls typical subjects. In a study carried out by Brush (1978) boys showed less anxious and more confidence than girls in Mathematics. More evidence of the predominance of boys in mathematics self-concept over girls is found in Sherman (1980) who investigated mathematics self-concept on 110 eleventh-grade boy and girl students. In Sherman's study Boys perceived their mathematic

abilities higher than girls. Further evidence was found in Stevenson and Newman (1986) who investigated the attitudes of 255 16-years-old students toward mathematics and English. They found that boys had a better attitude towards mathematics than girls which reflected their mathematic academic self-concept, whilst girls showed more positive attitudes towards reading and spelling than boys.

Since self-concept research has effectively developed in terms of its methodology, new measurements of self-concept appeared such as the Self-Description Questionnaire (SDQ) by Professor Herbert Marsh. The studies that employed SDQ has provided further evidence of the gender difference in self-concept. Marsh, Smith & Barnes (1983), investigated the academic self-concept of 9-13 year old students. 655 boys and 498 girls have responded on the SDQ. The results showed a higher self-concept for girls in reading and overall school performance compared to boys; however, girls reported lower self-concept in physical ability and mathematics. More evidence supports the variation of self-concept scores between boys and girls found in Marsh, Parker & Barnes (1985). In this study, 901 Australian high school students have completed SDQs. The results showed significant difference between boys and girls academic self-concept in that girls showed higher English self-concept than boys and boys, on the other side, showed a more positive mathematic self-concept. This is more evidence of gender stereotypical subjects such as mathematics being viewed as a masculine subject whereas English is viewed as a feminine subject.

More evidence of gender differences in self-concept are found in Marsh, Abduljabbar, Abu-Hilal, Morin, Abdelfattah, Leung, Xu, Nagengast & Parker (2013), who conducted a study using international trends in a Mathematics and science study (TIMSS2007). In this study, they compared the self-concept of students in four Arab countries (Saudi Arabia, Jordan, Oman

and Egypt) with English speaking Anglo countries (England, Scotland, Australia and U.S). This study was a remarkable one of self-concept research as it is the only cross-cultural study that compares Arab context, in which single-sex schooling is predominate, with western countries. This study solved some methodological weaknesses in the TIMSS2007 study, involving reliability and invariance measurements, due to negative wording, that would have an effect on the constructive validity of the study (Marsh et al., 2013).

Marsh et al (2013), found that an Arab country's students have higher academic self-concept than a Western country's students, but lower achievement results. Gender differences among students in the Arab countries favour, girls. Girls scored higher on the motivational constructs which include self-concept as well as an achievement measure. However, in the Western countries, boys showed higher scores on both motivational constructs and achievement tests than girls. This study implicitly decreases the gender influence on the BFLPE since the results showed that girls gained higher academic self-concept based on the ability level of themselves or their peers, not because of the gender influence.

Abu-Hilal (2001), justified girls' better achievement over boys because boys in Arab countries have more freedom than girls, implying they are less focused than girls on school coursework. Although, boys showed higher self-concept than girls because they are more praised by their parents.

2.8 The distinctions of the current investigation

Although the big-fish-little-pond-effect has been internationally examined in different educational settings and factors such as, cultures, gender, ethnicity and socio-economic status, there are some gaps that require further research. This study aims to fill some gaps in previous research. The distinctions of the current investigation lies in the context of the study, the school settings and the gender differences.

The context of this study would be considered as a unique context. Jordan is a developing country and its culture is Arab-Islamic oriented. To my knowledge, the BFLPE has only been examined in four Middle Eastern countries; Saudi Arabia, Kuwait, Tunisia and Iran. All of these countries have different contextual aspects from the Jordanian context in terms of the educational system, socio-economic status, and some of the cultural aspects. Saudi Arabia according to Marsh et al (2014), ran a comparison between the results in single-sex Saudi schools and co-educational Western schools, because of the absence of co-educational schooling in Saudi Arabia. However, the Saudi context differs from the Jordanian. The Saudi Arabian educational system is predominantly a single-sex system in both public and private sectors and from elementary education to University level. However, the educational system in Jordan follows a single-sex school system in the elementary and secondary education, but it also has co-educational schools and mixed-sex higher educational institutions. The two countries seem to be divergent even though they share the same language, religion and culture; therefore, I would expect the results in this study to be different from Marsh et al (2014).

Another BFLPE study of an Arab country is Tunisia. In Marsh et al (2015), Tunisia was one of the PISA's target countries. Although Marsh's cross-cultural study showed high consistencies among the 41 countries; country variation would be a subject of concern. This

study would not be able to generalize its results across the Arab countries, but it would indicate an applicable result in further researches. The Arab context in general and the Jordanian in particular is that it is, in most Arab countries, Islamic oriented. In most countries a single-sex schooling system is predominant whereby males would show more power than girls and the participation of women in society is still limited compared to the developed, and particularly, western countries. In the same study, Marsh et al (2015) examined the BFLPE in the Kuwaiti context. Although Kuwaiti and Jordanian contexts shared many characteristics, such as the Arab culture and the religion of Islam, Kuwait is superior socio-economically than Jordan and this reflects on students' attitudes towards school. Kuwaiti students would be less deprived than Jordanian students because they would be offered more opportunities than Jordanians, who would have to compete for fewer educational and career opportunities. Since the Jordanian context is more competitive, it would expect to find a larger size of BFLPE than Kuwaiti context.

In terms of schooling, as mentioned earlier, single-sex schooling is predominant. However, there are other private and public co-educational schools. There is no research that examined the BFLPE model in single-sex schools comparing the results to those from the co-educational school, especially in an Arab context, where the single-sex schooling system predominates. The only study found is Marsh et al. (2014) in which they compared students' self-concepts in the Arab world to the students' self-concepts in western countries. However, In Jordan, both school types; single-sex and co-educational schools, are available and include both public and private sectors.

Furthermore, the study of gender differences in the BFLPE application has not been deeply investigated. There are very few BFLPE studies that included gender and none of the previous studies has gender as a main focus. It is believed, among the BFLPE studies, that there are no

significant differences between the boys and girls BFLPE. However, considering new school settings and new context or culture, this study might provide new evidence regarding the gender effect on academic self-concept and the BFLPE.

Previous BFLPE studies did not investigate the standards of comparison that students use to establish their ASC. The BFLPE is only based on the assumption that students compare their academic ability with their peers in the class, however, this study may show different types of social comparisons that tend to establish students' academic self-concept.

2.9 Summary of the literature review

This study aims to investigate the BFLPE model of whether a school or class-average ability has a negative effect on academic self-concept in single-sex schooling, versus co-educational schooling. Since the model belongs to the self-concept research, the literature review provides rich details on the history of self-concept research and the theories that are related to it. The relevant theories of self-concept to the current study were presented.

The literature also illustrated the development of self-concept research and the shifting from the one-dimensional perspective to the multidimensional. Since the BFLPE model emerged from multidimensional perspectives, more focus on this chapter was given to the academic facet of self-concept. Multidimensionality of self-concept, according to the literature, requires a frame of reference or a model to be fully understood. This led psychologists like Shavelson and Marsh to create models that examine the very specific facets of self-concept such as the BFLPE model by Marsh in (1984).

The Literature review explained fully the BFLPE model and evaluated its implications. It also provided the most relevant empirical studies of BFLPE to the current investigation. The distinctions of the current investigation were highlighted at the end of this chapter. The rich details about BFLPE and the theories behind it, the next chapter will explain the methodology employed in BFLPE model and the current investigation.

Chapter 3: Methodology

3.1 An introduction

The primary aim of this study was to examine the BFLPE model in boys' and girls' single-sex and co-educational schools in Jordan. The purpose of this study was to examine students' academic self-concept in four subjects. Arabic, English, Mathematics and Science in relation to gender and school's type, single-sex versus co-educational. This study had a secondary aim to investigate the types of social comparison students use to establish their academic self-concept and whether gender is a comparative standard that influences academic self-concept.

Therefore, this study endeavours to answer the following research questions:

1. Does the BFLPE apply to single-sex and co-educational schools in Jordan?
2. Does gender and school type influence the BFLPE results?
3. What are the types of social comparison that students use in Jordanian schools to establish their academic self-concept? Is there any evidence that gender influences the academic self-concept?

This study also hypothesizes the following:

H01: There is no negative effect of school-average ability on academic self-concept.

Alternative: School-average ability has negative effect on students' academic self-concept.

H02: There is no relationship between gender and the BFLPE.

Alternative: There is a relationship of gender and the BFLPE.

H03: There is no relationship between school type and the BFLPE.

Alternative: There is a relationship between school type and the BFLPE.

In order to answer the three research questions and test the above hypotheses, a mixed method research design was employed. The methodology of this chapter is organised as follows: Section One: will provide an overview of research approaches.

Section Two: will evaluate the mixed method design and the design of the study.

Section Three: will present the research instruments; ability test, questionnaire and interview. It will also discuss the validity and reliability of those instruments.

Section Four: will briefly comment on the issue of translation in this study.

Section Five: will present the sampling process of the study.

Section Six: will reveal the administration of this study; pre-administration and post-administration including the ethics process adhered to.

Section Seven will briefly summarise this chapter.

3.2 An overview of research approaches

Research is defined as a way of investigating the way data is gathered in order to interpret phenomena (Cohen et al, 2007). Research represents the researcher's philosophy i.e. views of the world. Literature, has identified three common philosophies in research methodology: positivism, constructivism, and pragmatism. It would be worthwhile briefing each research philosophy so that a differentiation can be made between the one that shaped the current design from the other philosophies.

The Positivism view believes that truth is a single construct and can be obtained through narrowing the focus of a problem, identifying the cause and effect, understanding the relationship between variables and testing a theory by detailed measurements (Slife & Williams, 1995). Positivists identified their approach of testing a theory as 'Quantitative approach'. This is the principle of those who adopt positivists philosophy. Bryman (2001), described quantitative research as a research approach that relies on numerical data to explore the relationship between theory and research, in order to establish an objective social reality. Creswell & Plano Clark (2007), stated that quantitative research involves the use of close-ended instruments such as surveys that measure attitudes, behaviours or performance. The analysis of this sort is data is statistical or numerical in nature. Bryman (2001), identified three main aspects of the quantitative research:

1. A deductive approach to the relationship between theory and research.
2. It incorporates the practices and norms of the natural scientific model.
3. It views social reality as an external objective reality.

(p. 20)

Another research philosophy is the constructivism or interpretivism. Constructivists explore multi realities from a bottom-up process in which people's views establish the understanding of those realities. Constructivism starts from very deep public perceptions to the general theory/theories (Denzin and Lincolin, 2005). The principle approach for those who adopt constructivist view is the qualitative research. Qualitative research is defined by Denzin and Lincolin (2005) as:

> "A situated activity that locates the observer in the world. It consists of assets of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves and interpretive, naturalistic approach to the world. This means qualitative researchers study things in their natural settings trying to make sense of phenomena in terms of the meanings people bring to them" (p. 3)

Denzin and Lincolin's definition above illustrated the nature of the qualitative research and its strategies. Qualitative research relies on descriptive, narrative or interpretive data that are obtained from people by means of interviews, photographs, recordings, field notes and memories. Creswell & Plano Clark (2007), stated that the analysis of the qualitative data involves the interpretation of transcriptions, images, voice-recordings into categorical information.

However, there is a long standing debate between the quantitative approach and the qualitative research methods. It is argued that the former eliminates research bias since a researcher does not have direct contact with the participants; unlike the latter where the researcher relies in collecting data on direct communication with the participants. It is argued that the quantitative

approach allows generalisation since it targets larger population. The qualitative approach only ensures its applicability to other similar situations (Creswell and Piano Clark, 2007). These controversial issues led some scholars to search for a new approach that compromises the previous two research approaches; thus, a pragmatic view has risen.

Blumer (1969), defined pragmatism as a new philosophy that explains the adjustment between the positivism and constructivism approaches. It declines the constructivism view that reality can be seen through individuals' thoughts, but those thoughts are the tools to approach reality. It also rejects the positivism's perspective that reality is identified through a relationships cause and effect, but it claims that those relationships require actions which are driven from individual thoughts. Thus, pragmatics have created a new research approach called *'mixed methods research'* that combines the positivist quantitative research and the constructivist qualitative research. Mixed methods research approach is the research approach employed in this study.

3.3 Mixed Method Research Approach

This study employed a mixed method research design. Creswell & Plano Clark (2007), defined mixed method research as:

> "A research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in a research process. As a method, it focuses on collecting, analysing and mixing both quantitative and qualitative data in a single

> study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone."
>
> (p. 5)

Mixed method research has existed for decades. Johnson et al (2007), reported that mixed method research was used in the early 20th century but it was not an independent research approach itself since researchers who employed mixed method design at that time had only used it because it was necessarily to answer their research investigations. According to Creswell and Piano Clark (2007) who have categorized the history of mixed method research approach into four periods: formative period, paradigm debate period, procedural development period and advocacy as separate design period.

In the formative period researchers such as Campbell and Fiske (1959), Sieber (1973), Jick (1979) and Reichardt and Cook (1979), employed multiple forms of data; quantitative and qualitative, in their researches. Their studies were subject to concern as to whether a combination of two different forms of data is possible. The use of mixed method research had grown out in the second period paradigm debate period and create a debate about the use of two different models; quantitative and qualitative, in one design. Smith (1983), argued that mixed method research was incompatible because it was not possible to converge two research paradigms together. Researchers such as Rossman and Wilson (1985), Bryman (1988), Richardt and Rallis (1994) and Greene and Caracelli (1997), defended the use of multi paradigms in one research design as both paradigms used would have to be explicitly acknowledged in research. However, mixed method research has developed further. In the procedural development period, researchers such Greene and Caracelli (2003), Brewer and Hunter (1989), Morse (2003), Creswell (2002), Newman and Benz (1998), Tashakkori and

Teddie (2003) and Bamberger (2000), have moved toward the procedures by conducting a mixed method research. Mixed method research procedures include research problem, sampling, data collection and the issue of validity. The recent period of mixed method research has acknowledged mixed method research as a separate research design from the two traditional designs; quantitative and qualitative. Tashakkori and Teddie (2003), Creswell (2003) and Johnson, Onwuegbuzie and Turner (2007), have developed a mixed method research methodology that has its own applications and designed.

3.3.1 The Purpose of mixed method research design

A mixed method research design serves purposes or answers questions that cannot be met by either quantitative or qualitative investigation. For example, a research question would be better answered using results from quantitative and qualitative data. One type of data may provide support for the other. A comparison between results from two types of data would provide a satisfactory answer for the research question (Creswell and Piano Clark, 2007).

Creswell and Piano Clark (2007), claim that mixed method research tackles the weaknesses that would emerge from using a single research approach. Quantitative research, does not reach the context or participants directly and people's opinions are not explicitly heard; thus, qualitative research is an alternative way of tackling this problem. On the other hand, qualitative research is subject to a researcher's personal bias as questions asked, and researcher's interpretation, would serve his/her research purposes. This problem does not seem to affect the quantitative query. Since this study requires the explicitly of a participant's direct

voice, the understanding of the context, and avoiding researcher's bias, a mixed method research provides the alternative method to tackle those weaknesses.

Furthermore, mixed method research is practical, according to Creswell and Piano Clark (2007), since mixed method researchers are free to use the tools that fit their research, regardless of whether it is quantitative or qualitative or are moving from deductive to inductive or vice versa, to answer their research query. It is also practical because it mixes numbers with words to provide a clear comprehensive interpretation of a researcher's results.

However, in terms of timing and effort, mixed method research requires more time and greater effort to be conducted than a single research approach, because it conducts two different types of data using different data collection instruments. It also requires that researchers are trained in both quantitative and qualitative research skills, Creswell and Piano Clark (2007).

3.3.2 Rationale for using mixed method approach in this study

Academic self-concept research requires students to be able to perceive or judge their academic abilities. Those perceptions are based on the standards of comparison with others. The BFLPE asserts that the average ability of students may have a low academic self-concept when they compare themselves with higher ability students. The standards of comparison in the BFLPE model are implicit. The literature by Festinger (1952) and Meisel & Blumberg (1990), found that some students may prefer to compare themselves with their friends; others might choose a same-ability students to compare themselves with; some would use the same gender comparison and others may compare themselves with the brighter or the most popular students in the classroom. BFLPE model only assumes that average-ability students compare

themselves with higher ability students which leads to a low academic self-concept, but it does not indicate the type of comparison. None of the previous BFLPE research tried to investigate the types of social comparison that would cause the BFLPE. Thus, there is a need for a method that would compromise the relationship between academic self-concept and ability to provide a better understanding of the process of social comparison in the model.

The current investigation takes on board the criticism raised by Dai and Rinn (2008), who claim that the BFLPE model does not consider the contextual and personal characteristics of a classroom or its students. According to Dai and Rinn, the BFLPE omits the ways students evaluate their abilities, the abilities of others, the influence of the opposite gender in mixed-sex settings or the type of school measured. They also respond to Marsh , Seaton, Trautwein, Ludtky, Hau, O'mara, and Craven (2008), by recommending a mixed method research that would cover these contextual issues and personal characteristics. Therefore, by employing a mixed method design in this study, I would be able to investigate the types of comparisons that students use when establishing their academic self-concepts. I would be able to investigate the influence of gender on academic self-concept as well as the type of schools used; single-sex versus co-educational schools. The next section will explain the current research design in more details.

3.3.3 The current study design

A Research Design is the style, procedure and way of conducting a research. Like any other research, mixed method research is conducted in different styles. Creswell and Plano Clark (2007), suggest that researchers should be aware of the different research designs. Tashakkori

and Teddie (2003), found 41 different mixed method designs amongst the literature in different disciplines. Those designs differ in the methods used, because some of them may put more weight on one approach, such as quantitative or qualitative, than the other whilst some may use both quantitative and qualitative data with equal weight.

The literature of Morse (2003), Greene and Caracelli (2003), Tashakkori and Teddie (2003) and Creswell and Piano Clark (2007), suggested that a research design should consider the research problem/focus, time limits, resources and the weight of quantitative and qualitative data. The current research design follows these criterion. The primary purpose of this study is to measure the effect of the school-average ability on students' self-concept, in the BFLPE. This aim will be examined using quantitative data. The secondary aim in this study is the social comparisons that students use when they make judgement about their academic abilities. This aim will be investigated using qualitative data. Therefore, this study will follow an unequal emphasis in its design i.e. more weight will be put on one dataset than the other. This study will put more emphasis on the quantitative than the qualitative data. Morse (2003), suggests that weighting decisions should be made based on where the theory derived. Thus, the weighting decision in this study is primarily based on the original theory of the BFLPE model, which was predominantly tested using quantitative approach. Results from the secondary source of data, qualitative, will be embedded in the quantitative design. However, both datasets are collected sequentially in two stages and analysed separately with the results reported separately in section three.

The design employed in this study is named in the literature as *'The embedded mixed methods research design'.* Creswell (2012), pinpointed the strengths and challenges of using an embedded design. This design is more manageable, especially for new researchers, since it requires less time and resources than other designs. It is a flexible design since it is suitable for

a single researcher or team of researchers. It is appealing to those who are accustomed to either quantitative or qualitative approaches, because it allows researchers to either embed the qualitative within quantitative or vice versa. Research that employs embedded research may benefit with the advantage of publishing the findings from each dataset separately. However, this design is challenging for some researchers. The purpose of using each data type has to be stated clearly. Embedded design does not allow merging or triangulating results in overall findings; thus, results from each dataset have to be reported separately.

Hanson, Creswell, Piano Clark, Petska, and Creswell (2005) and Creswell and Piano Clark (2007), identified two cases in which embedded design is used.

1. In experimental studies where researchers embedded qualitative data to "develop a treatment, to examine the process of an intervention or the mechanism that relates variables, or to follow up on the results of an experiment.
2. In the correlational studies in which researchers embedded qualitative data to explain the mechanisms that form the relationships between variables. The correlational model of the embedded design is believed to suit this study because the nature of this research is not experimental and it only examines the relationships between academic self-concept, gender and school types.

3.4 Data collection

This study relies on both quantitative and qualitative data in order to answer the research questions. Therefore, there is a need for a data collection process. Data collection involves setting up research instruments that suit each type of dataset. The following section will discuss the research instruments employed in this study.

Data collection requires *'research methods/instruments/tools'*. Research tools are associated with the research approach. There are tools that are associated with the quantitative approach such as, questionnaires, checklists, official statistics/records, and tests. Other tools are associated with the qualitative approach such as, interviews, observations, voice recordings and photographs (Bryman, 2001, Neuman, 2003). For mixed research designs, it is more common for the researcher use two different tools in collecting quantitative and/or qualitative data. However, Creswell and Plano Clark's (2007), argue that since researchers may analyse qualitative data quantitatively or analyse quantitative data qualitatively, mixed methods researcher would be able to rely on one instrument for both data. For example, a researcher may include the likert-scale questions in an interview or use open-ended items in a questionnaire. Another example is to calculate the frequencies of words in interview transcripts.

In the current investigation, three research instruments will be used. For the purpose of quantitative data collection, this study relies on the PISA, Programme of International Student Assessment (2000) ability test and an academic self-description questionnaire (ASDQ). The interviews with students are conducted for the purpose of qualitative data collection.

3.4.1. Ability test

The BFLPE asserts that students' and schools' average ability affects students' academic self-concept. To measure the average ability of students/schools, there is a need for students to take an ability test. The ability test in this study replicates a test template from the PISA 2000 study (OECD 2001a). PISA is an international programme that assesses students' abilities in English, Mathematics and Science in over 41 countries worldwide. PISA offers different tests templates for researchers and the templates are made available on this website http://www.oecd.org/pisa/pisaproducts/pisa-test-questions.htm. For the purpose of this study, I have chosen two templates from the reading literacy test 2000 templates that are believed to suite the age of the participants and the context (OECD 2001a). The PISA reading literacy test consists of continuous passages that require narration, exposition and argumentation as well as non-continuous passages that are shown in graphs, tables or lists (OECD 2001a).

The first text template used in this study is a narrative passage about how bees produce honey. The second text is a timetable of opening and closing times of five libraries in Moreland. According to the PISA 2000 manual, these texts tend to help students, to read, to learn and enhance "their proficiency in retrieving information, understanding texts at a general level, interpreting them, reflecting on the content and form of texts in relation to their own knowledge of the world, and evaluating and arguing their own point of view" (OECD, 2001a, p. 19). The first text is a scientific text that requires students to understand the content, retrieve information and to answer questions about it. This text tests students' scientific knowledge as well as to test their reading literacy skills. The second text is more complicated in nature since it does not provide detailed information like the first text. It shows slot-table of the opening and closing times of foreign libraries (foreign for the context of Jordan). This type of text requires students to think mathematically to answer the questions about it. For example, students have to work out mathematically that the library opens after a certain time. Hopmann, Brinek, and Retzl

(2007), criticized the PISA test because it only measures reading literacy and should not be used to estimate students' ability on other subjects. They also claimed that the PISA study does not measure the curriculum that is taught at schools. However, I believe by choosing those two texts, I have covered different ability skills including reading literacy, scientific knowledge, mathematical ability and foreign language knowledge since the students have to think of the librarian system as a foreign system. On the other hand, the text of honey-making text is taught at the Jordanian curriculum at some point during school age but not in the 10^{th} grade curriculums. The second text is a common text and students would come across similar text in their school curriculums.

The variety of texts required different types of questions. The ability test items in this study consist of six questions. The type of question varies between close-ended questions that require circling the correct answer and open-ended questions that require descriptive answers. The variety of the types of question suits the individual and gender differences. For example, Powney (1996), believes that gender difference in performance is affected by the mode of the test. Murphy (1982), Stobart et al (1992), Bolger and Kellaghan (1990), found that boys do better than girls in multiple choice questions and girls do better in course-work. Ellwood (1995), asserted that girls might be less confident in multiple choice questions than boys. Gibbs & Murphy (1994), claimed that girls are disadvantaged by multiple choice questions, because of their high anxiety. Therefore, if the ability test was made of only open-ended questions that require narrative answers, it would be expected that girls would score higher than boys. Alternatively, if the test was made of closed questions, boys would show higher ability than girls on the test scores.

The reading literacy test in the PISA is based on the Item Response Theory (IRT) that estimates the chances of a respondent answering a question correctly in a certain task (OECD, 2001a). It also indicates a person's proficiency in terms of a tasks difficulty. In this study, the level of the

ability test's items vary between, easy, average and difficult. This procedure helps to categorise students by basing the test on their ability level. If all questions were on one level, students would end up on one or two ability levels. For example, if all questions were of an average level of difficulty, only two levels of ability would emerge. Those who answered all questions or those who did not answer any question.

In terms of the quantification of students' scores on the ability test, the correct answers are graded 1 mark, the wrong answers are graded 0 mark and the missing answers are ungraded with a minus. The overall marks are summed up for each student. A student's ability would be related to students' academic self-concept, which is measured using the questionnaire.

3.4.2.1 Reliability and Validity of the Ability test

Although PISA template of the ability test is widely used and has evidenced its robustness, the validity and reliability of the ability test has to be examined independently in this study. In order to ensure the validity of the instrument, there is a need for testing its reliability (Bryman, 2001 and Marsh, 1990). Reliability indicates internal consistency of the measure. Validity, on the other hand, indicates that a study responds accurately to what is being measured (Cohen et al, 2007). Cohen et al (2007) suggests that "reliability is a precondition of validity and validity may be sufficient but not necessary condition of reliability" (p. 133). However, there is no perfect measure and full validity should be viewed as "a degree rather than an absolute" (Ibid p. 133).

For the purpose of the reliability test, coefficient alpha is used for each subscale counted. Coefficient alpha (known as Cronbach alpha), is a test of the internal consistency of a measure (Bryan, 2001). The satisfactory alpha value stated by Westergaard et al (1989) is above .70. The alpha value of the six questions reading the literacy test in this study was .75 which indicates a reasonable internal consistency.

The construct validity of the ability test was examined using the Exploratory (EFA). Exploratory Factor analysis is an applied statistical technique that is used to develop a research instrument, to understand the structure of a set of variables, or to reduce to the number of variables in an instrument to a manageable size (Costello & Osborne, 2005, Field, 2013).

Field (2013) recommended steps in conducting EFA. First, analytics have to ensure the reliability of the measure. The reliability of the ability test has been conducted earlier in this section. The second step, and prior the main factor analysis, is testing the correlations between variables. This is known as correlation matrix check (Field, 2013). Correlation matrix concerns the variance between variables. This variance is either unique variance for that variable which makes it a different variable from other variables or common variance which is shared variance with the variance in other variables (Field, 2013). The common variance between factors which is known as communality. Communality assumes that the common variance between variable is set at 1.0. Any variance greater than 1.0 between variables is considered a common variance (Field, 2013). However, variables that correlate higher than 0.9 or lower than 0.3 would be problematic for the instrument and they should be excluded (Field, 2013).

Correlation Matrix check is conducted on the 6 ability test's questions and the results are presented in the correlation matrix table in Appendix H. The results showed that the correlation values between the variables vary between 0.13 and 0.6. This means there were no extremely high correlations between the variables. However, there was a correlation lower than 0.3 between Q3 in the first reading text and the rest of the questions. According to Field (2013) this variable should be eliminated; however, there is a reasonable reason for retaining this variable. Since ability test's questions were designed to test different aspects and levels of academic abilities, it was expected that the correlations between the questions would vary. There was an intention that one of the six questions has to be more difficult than the rest of the questions in order to discriminate the high academic ability level from the average and low

academic ability levels. Q3 seems to be the question that was only answered by high ability students. This seems to explain why Q3 has lower correlation with other questions. However, if Q3 continues to raise a problem in the factor analysis, this item will be reconsidered.

Factor analysis runs in two stages: factor extraction and factor rotation (Costello & Osborne, 2005, Field, 2013). Factors extraction is the process of "deciding how many factors to retain" (Field, 2013, p. 977). This process is based on eigenvalues that determine the importance of a factor. Any Factor with an eigenvalue greater than 1.0 is an important factor and is recommended to be retained (Kaiser, 1960). According to Field (2013) Kaiser's criterion is based on the assumption that the variation explained by a factor and 1.0 eigenvalue is statistically substantial. Field (2013) suggested that Kaiser's criterion of factor extraction is accurate when the questionnaire consists of less than 30 items, and when the sample size is more than 250 participants as in this study.

There are different ways of conducting a factor extraction offered by statistical software packages such as SPSS (Statistical analysis software package). For the purpose of the factor extraction, this study will conduct a scree plot and Principle Axis Factoring.

Scree Plot is a graph that represents the factors of the instruments and its eigenvalues. It consists of a slop or line that is drawn upon the eigenvalues of the factors. The slop has a cut-off point called the point of inflexion which starts from the point the slop starts to change up dramatically (Field, 2013). Any factor that falls on the left of the point of inflexion is determined to be retained. The following figure (3.1) represents the scree plot of the ability factors:

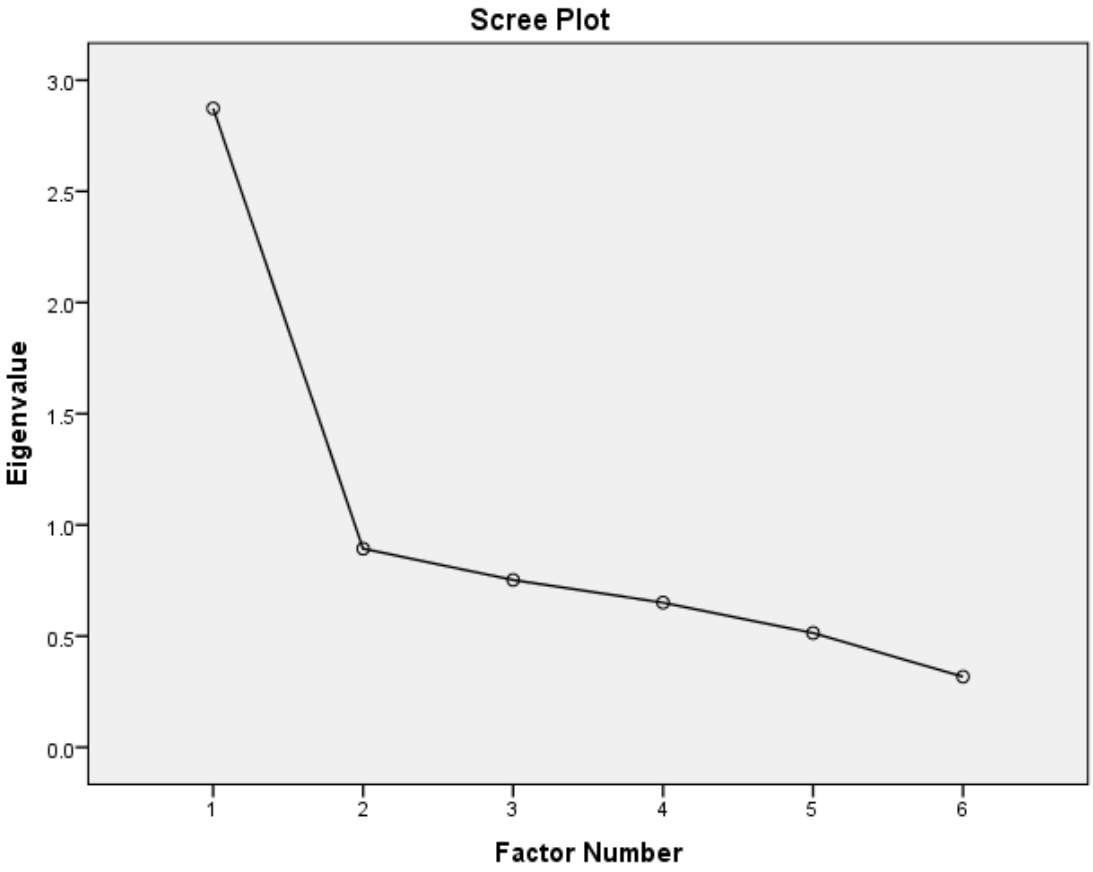


Figure 3.1: Scree Plot of the Ability Test

Figure (3.1) showed that the point of inflexion starts from Q2 or factor 2. This is the point where the slop starts to change dramatically. The number of factors on the left of the point of inflexion is one factor which factor 1. This means that, in the ability test, only one factor represents academic ability. It is consistent with the aim of ability test since it is only designed to test academic ability.

In additional to Scree Plot, a Principle Axis Factoring (PAF) were conducted suing SPSS. The results of the PAF is presented in the following table 3.1:

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.873	47.885	47.885	2.359	39.321	39.321
2	.893	14.881	62.766			
3	.752	12.540	75.306			
4	.650	10.840	86.146			
5	.514	8.563	94.710			
6	.317	5.290	100.000			

Table 3.1: Extraction Method: Principal Axis Factoring. Of the ability test

The results of the PAF shown in table (3.1) indicate that the number of factors with communality above 1.0 is only one factor. This means academic ability is represented in one factor in the ability test. The ability test consists of 6 questions and is designed to test academic ability only; thus, it is expected that the factor extraction only retained one factor.

The second step of the EFA is factor rotation. Factor rotation refers to the degree to which the variables load on the extracted factors (Field, 2013). Factor rotation aims to "simplify and clarify the data structure" (Costello & Osborne, 2005, p.3). There are two types of factor rotation referred to by the literature: Orthogonal rotation and oblique rotation. Orthogonal rotation ensures that factors stay independent or unrelated; whereas, oblique rotation are allowed to correlate with each other (Field, 2013, p.680). Since the items of the ability test measures only one factor which is academic ability, it is expected that they will be related. Therefore, oblique rotation will be conducted.

Factor rotation relies on the correlation matrix in loading variables into factors. The significant of the loadings depends on the sample size according to Stevens (2002). He recommended that for a sample of 200, the value of the loading should be greater than .364 and for a sample of 300, the loading value should be greater than .298. Since the sample of this study is 269 i.e. between 200 and 300, I believe that a loading value of .3 would be adequate.

Factor rotation is conducted using SPSS. There are different methods of conducting factor rotation offered by SPSS such as direct oblimin. This method allows factors to correlate and suitable for small scale studies like this study. Direct oblimin shows which items or variables loads on each factors. Since the ability test was extracted to one factor, factor rotation cannot perform on one extracted factor because all variables will be loaded on that factor. However, Direct oblimin factor rotation would perform on the ASDQII since it is designed to measure more than one factors. Factor analysis of ASDQII will be explained in the next section.

3.4.2 Questionnaire

The BFLPE model relies on testing the effect of academic ability on academic self-concept. Academic self-concept, in this study, is measured by the academic self-description questionnaire (ASDQ) which was developed by Marsh (1990). The ASDQ is the most diverse measure of academic self-concept because it aims to test the multidimensionality of self-concept in educational/academic settings. This questionnaire was designed in two versions; the ASDQI, which suits pre-adolescent age and ASDQII, which suits an adolescent (over 14 year olds). The ASDQI/II is a result of the development in self-concept measures and was drawn from the Self-Descriptive Questionnaire (SDQ). This was originally designed to test the proposed dimensionality of self-concept in the Shavelson et al (1979) model (explained in section three; chapter two, in more detail). The Shavelson et al (1979) model allocated academic self-concept within one higher order. Self-concept, is the first factor in the higher order and is divided into academic and non-academic factors. The academic factor is divided into four subjects, English, History, Mathematics and Science self-concepts. The Self-Description Questionnaire (SDQ) by Marsh, Smith and Barnes (1983), measures the academic

and non-academic facets of self-concept. It consists of four non-academic scales; physical ability, appearance, relationship with peers and the relationship with parents. The three academic scales; Mathematics (Mathematics is a second order factor), Reading (verbal is a second order factor) and all school subjects (Academic self-concept is a first order factor).

The SDQ was also used furthered by Marsh and Shavelson (1985) to develop another model of self-concept. Marsh/Shavelson's model (1985), asserted that one high order would fail to explain the relationship between academic and non-academic self-concept and the relationship between the two second order factors with the first higher order factor; general self-concept. It also failed to explain the relationship between the subjects' self-concepts. The Marsh/Shavelson model, placed academic self-concept in two higher order academic factors; Mathematics academic self-concept and verbal academic self-concept; represented in figure (3.2):

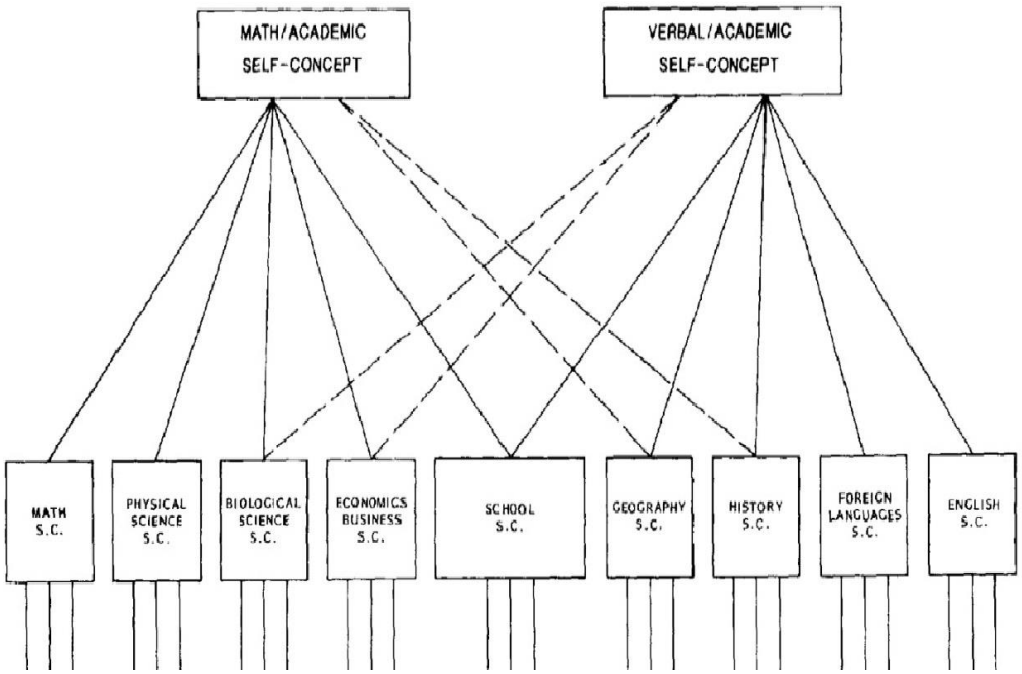


Figure 3.2: Marsh/Shavelson model (1985)

In figure (3.2) academic self-concept is divided into Mathematic self-concept and verbal self-concept. The verbal self-concept consists of English and foreign languages subjects; whereas, the Math self-concept consists of mathematics and physical sciences subjects. There are subjects that can be counted as either verbal or mathematical subjects; History, Geography, Economics/Business and Biological sciences. In additional to those subject's self-concept, the model includes an overall school self-concept.

However, Marsh (1990) found that the two high order factors model, verbal and mathematics, fell short in explaining some other school subjects such as arts, computer sciences and music. He asserted that there was a need for more developed models that allow more subjects to be included. Thus, Marsh (1990) tested two instruments that measure specific subject self-concept; academic self-description I and academic self-description II (ASDQII). The difference between the two questionnaires is that the first questionnaire is suitable for students in pre-adolescence, of ages 10-13 year olds; whereas the second, is suitable for adolescent students aged 14-16 year olds. This study uses the ASDQII since the participants' age falls between 15-16 years old.

The ASCDII measures academic self-concepts on 15 school subjects; English Language, English Literature, Foreign Languages, History, Geography, Commerce, Computer Studies, Science, Mathematics, Physical Education, Health, Music, Art, Industrial Art, and Religion. For the purpose of this study, the researcher has chosen to focus on the core subjects in Jordan which are Arabic, English, Mathematics and Science. These subjects are considered core subjects, because students have to study them in both elementary and secondary education. These four subjects are scheduled for more than 5 lessons a week whereas other subjects are attended by students for 2-3 lessons weekly. Even so, some of them do not start physics, biology, geography or computer science until adolescent age, in additional to the four school subjects

The items of the Self-description set of questionnaires, which the ASDQII is one of them, are based on the tripartite theory of attitudes by Rosenberg and Hovland (1960), which categorised the components of attitudes into three categories: affective, cognitive and behavioural component. The cognitive component of attitude refers to one's thoughts, beliefs and knowledge of an object; a student believes he is doing well at Mathematics. The affective component of attitude indicates one's feelings and emotions about an object; a student likes English classes. The last component of attitude is a behavioural component which asserts that attitudes predict or influence behaviour; a student would refuse to go to school and would cry if he was forced to do so. However, the assumption behind the behavioural component of attitudes was challenged by several protagonists using empirical evidence. Millar and Tesser (1986) found that the affective and cognitive components of attitudes did not correlate with, or express, behaviours. Thus, many researchers of attitudes and the attitudes' measures have primarily focused on the affective and cognitive components of attitudes. Although Marsh (1990) (ASDQI/II) was not transparent about the attitudes scales used in his questionnaire, the items used in the questionnaire only measured the cognitive component of self-concept. Academic self-concept only involves personal thoughts, beliefs and knowledge of a student's academic ability, or of a cognitive comparison with others in a certain subject, rather than feelings and interests in that subject. The questionnaire items run in parallel across the subjects (Marsh, 1990). For the purpose of this study, I have chosen four item statements from the ASDQII that lies parallel between the four subjects. The statements are: *'Compared to others my age, I am good at (school subject)', 'I am satisfied with how well I do in (school subject)', 'I learn things quickly in (school subject)', and 'I have always done well (school subject)'*.

All statements in the ASDQII require an answer on an eight-point response; (1) *Definitely False, (2) mostly false, (3) false, (4) more false than true, (5) more true than false, (6) mostly true, (7) true, and (8) Definitely*. The number of response scales that should be included in a

questionnaire has been widely researched. The literature of Garner (1960), Green and Rao (1970), Marsh and O'Neill (1984) and Preston and Colman (2000), suggest the more response categories that are employed in a measure, the more information can be retrieved. However, Green and Rao (1970) found that using more than seven categories would only provide a research with only a little more information. Miller (1956), in his article about human capacity of processing information, suggested that the span of the human mind can distinguish seven different items (give or take one or two items), which limits the human capacity to making a judgement about an object up to seven. It also suggests that any more categories beyond the seven response categories, would not retrieve much information. Marsh and O'Neill (1984), claimed that using an eight point response scale would make the tasks more distinct in that it indicates the extent to which a respondent agrees or disagrees with a statement. In terms of the internal consistency of the response scales, Cicchetti, Showalter, and Tyrer (1985), Oaster (1989) and Preston and Colman (2000), found that the internal consistency of the category responses is stabilized between seven and nine items. This suggests that any measure with fewer response categories than seven, or more than nine, would be internally inconsistent. Preston and Colman (2000), found that a measure with seven to nine response items maximizes the information retrieval better than a measure with fewer response items.

Marsh and O'Neill (1984), suggests that an eight-point response scale eliminates response bias. To explain this claim fully, it would be better to briefly define bias and its types. Response bias refers to the intention of a respondent to an answer a researcher's questions, inaccurately or untruthfully in a way that would mislead the researcher. Response bias has different forms: response style and response set (Lanyon, 1982). Response style bias, according to Lanyon, refers to the respondent's intention to systematically respond on a set of questions. For example, a respondent on a questionnaire would choose to respond on all items with an 'agree' category. Watkins and Cheung (1995), identified two types of response style bias: acquiescence and

extreme responding. Paulhus (1991), defined acquiescence responding bias as the tendency to agree on all statements in a measure. Watkins and Cheung (1995), pointed out that acquiescence responding bias was solved in many studies by providing a mixture of positive and negative items in a questionnaire. Paulhus (1991), found some evidence of eliminating acquiescence bias by separating the items content to specific domains. In Marsh et al (1983), the SDQ design used negative wording of some attitude statements to control the acquiescence bias. Likewise, Marsh's ASDQI/II, used a mixture of negative and positive items to control this type of bias. The SDQs and ASDQI/II separated the items of each subject's self-concept to eliminate any possibility of acquiescence bias.

However, Marsh (1987) found that children and preadolescents do not tend to give valid responses to the negatively worded items. This acts negatively on the adequacy of the measures. Melnick and Gable (1990), found that low ability adult students tended to provide inconsistent responses on negatively worded items. Schriesheim and Hill (1981), advised researchers not to use negative statements in their questionnaires, because they found that by using a mixture of positively and negatively worded items in their study, they lacked internal consistency. Van Sonderen, Sanderman and Coyne (2013), tested the effectiveness of negatively worded items in reducing response bias. They found no evidence that negative items would prevent acquiescence bias, but it caused inattention/confusion in the respondents. Barnette (2000), suggested to use alternative ways of dealing with response style bias than negatively wording the items. He suggested giving more response options other than yes or no, or agree or disagree. In the ASDQII used in this study, respondents have eight options to choose from when responding on each item and is believed to eliminate the acquiescence response bias.

Another type of response style bias is the extreme responding bias. Extreme responding bias is defined by Paulhus (1991) as "the tendency to use the extreme choices on a rating scale" (p.

49). For example, a student may choose to response on the ASDQII's statements with (1) strongly disagree or (8) definitely agree. Paulhus (1991), added that extreme response bias occurs because of situational factors such as ambiguity, emotional arousal and speediness. A questionnaire's items has to be worded clearly and carefully, because if the respondents fail to understand the meaning of the item, there will be a tendency to either leave them unanswered, use extreme form of agreement or disagreement or in some cases use the midpoint such as 'Neither agree nor disagree". Some respondents may choose an extreme category such as strongly disagreeing to show their emotional disagreement with a statement. For example, if a student was asked to respond on the following statement: "*I'm the worst student in the class"* with (1) strongly disagree to (8) definitely agree, the wording of the statement may cause an emotional arousal which compels the student to strongly disagree with it. Speediness is another cause of extreme response bias. Respondents may rush themselves to complete a questionnaire quickly that there will be a tendency to choose one or two response categories to answer the whole questionnaire. However, the ASDQII used in this study offers solutions for most of the extreme response bias causes. The ASDQII's statements are worded clearly and carefully in a simple language suited to the adolescent age. The statements avoid any negative emotional arousal such as worst, failure, stupid etc. The speediness problem can be solved by good admiration practice, which will be explained fully later in this chapter. An example of good administration practice is when all participants are asked to complete the questionnaire and hand it back to the administrator at the same time. The midpoint response bias can also be reduced by producing two mid points; (4) more disagree to agree and (5) more agree to disagree. In this case a respondent has to choose one of the two points, to express his moderate level of agreement or disagreement, rather than relying on one point such as neither 'disagree nor agree'.

Response set bias, on the other hand, refers to the intention of giving a certain picture about a subject by answering a set of questions consciously or unconsciously in a certain way (Lanyon

1982). For example, a student may evaluate his teacher as best performed because they might fear him. An example of response set bias is the 'Social Desirable Responding Bias'. Paulhus (1991), defined social desirable responding bias as "the tendency to give answers that make the respondent looks good" (p. 18). Paulhus (1991), offered different procedures to control social desirable bias. First, a researcher may use rational techniques such as using more response options than yes or no responses. This would give respondents more room to think about the statements and evaluate the extent to which they agree or disagree with them. Second, a researcher may use a statistical technique such as factor analysis. In factor analysis, researchers built a set of questions to respond on a factor. The highest loading questions to that factor, most significantly correlated items, is chosen in the final measure. For example, Marsh et al (1982) started their SDQ with 100 items, and after performing factor analysis 66 items were loaded onto the factors, revised and chosen for the final version of the SDQ. More details about factor analysis will be explained later in this chapter. Third, following good administrational practice of the measure would eliminate social desirable response bias. For example, the anonymity of the respondent when administering questionnaires would reduce bias. This can be done by asking students not to provide their names and separating participants from one another; especially acquaintances. Good administration practice is provided in Marsh et al (1983) and Marsh (1990) in the SDQ and ASDQI/I.

3.4.2.1 Reliability and Validity of the ASDQII

In this study of academic self-concept, items are categorized into four subscales; English self-concept, Arabic self-concept, Science self-concept and Mathematics self-concept respectively. For the reliability test, the coefficient alpha is calculated for each subscale. The alpha value ranged between .902 - .948 which indicates a high internal consistency. In addition to the

Subject Specific Reliability Test, all items that constitute the ASDQII in this study were subject to a reliability analysis test. The coefficient alpha for the 20 items together was found to be .956, which indicates a high reliability measurement.

The Construct Validity was also tested in this study. The Construct validity refers to the degree to which a measure reflects the construct that it intended to measure (Gorard, 2001, Cohen et al, 2007, Bryman, 2001). A Construct Validity of a measure is tested through an Exploratory Factor Analysis (EFA).

However, Field (2013) suggested conducting a r-matrix analysis (correlation matrix) prior factor analysis. R-matrix calculates the relationships between variables. Variables that correlate higher than 0.9 or lower than 0.3 would raise a problem and they should be eliminated (Field, 2013). The 20 items in the ASDQII used in this study were subject to a r-matrix test. The correlational table (see Appendix H) showed no excessively large correlation coefficient among items. None of the correlation was greater than .9. Most correlations are around .5 which indicates fair correlations between variables. Therefore, all items in the ASDQII to be initially retained for a factor analysis.

The main factor analysis is conducted in two stages: factor extraction and factor rotation. Factor extraction determines how many factors to be retained. Similar procedures conducted in the EFA of the ability test will be followed on the ASDQII. Factor extraction process will conduct a Scree Plot and Principle Axis Factoring (PAF).

Scree plot showed the eigenvalues of each factor in graphical figure. The following figure (3.3) showed the scree plot of the 20 ASDQII items:

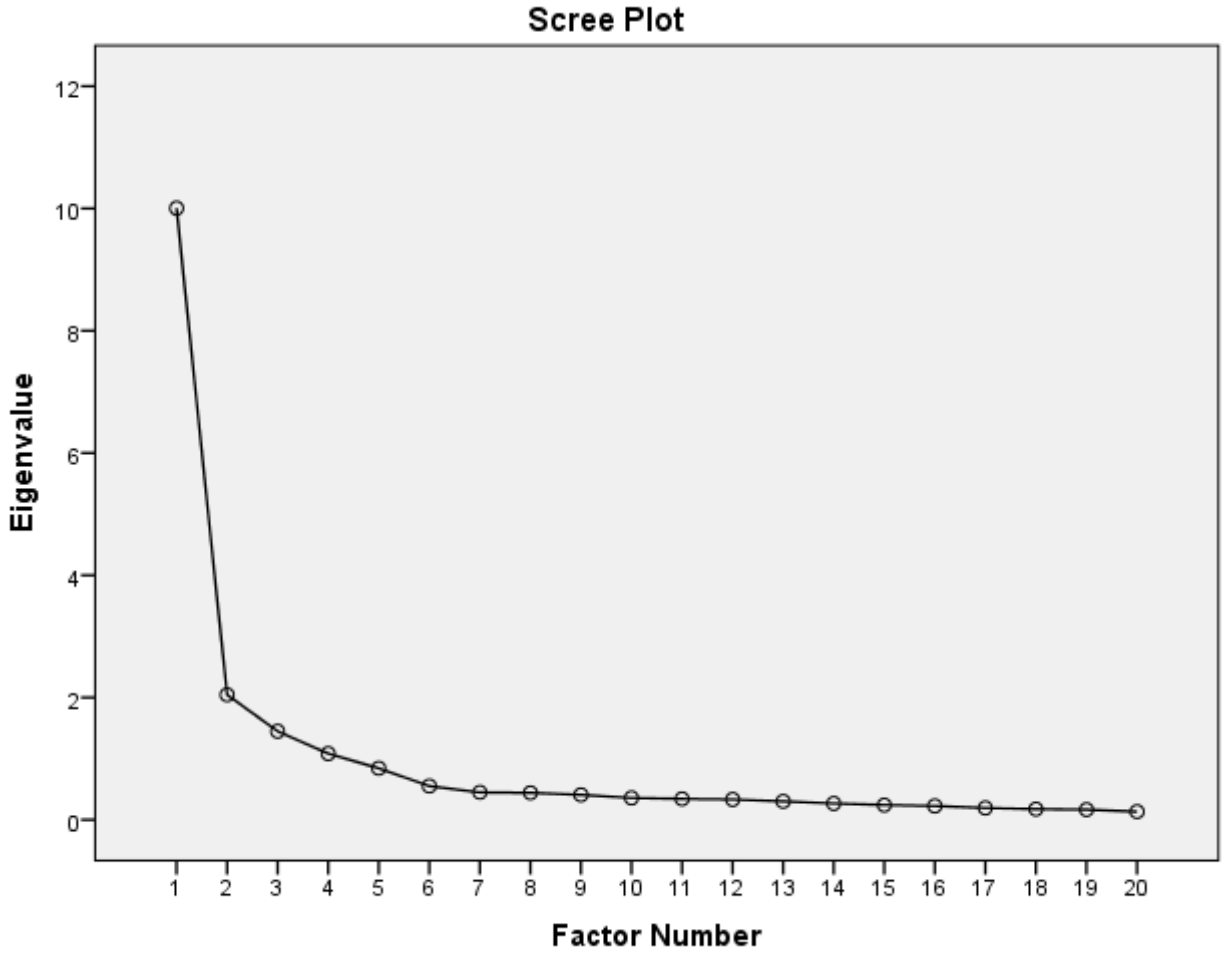


Figure 3.3: Scree Plot in exploratory factor analysis

As shown in figure (3.3) every factor of 20 ASDQII is associated with an eigenvalue. The point where the slop of the line that drawn on the eigenvalues starts of changes up, is called the point of inflexion. The point of inflexion determines the cut-off point of which factors to be retained. In Figure (3.3), the point of inflexion is 5. Any factor in the left side of the inflexion point should be retained. This means that four factors to be retained in the ASDQII in this study.

Principle Axis Factoring (PAF) is recommended when the data is not normally distributed as in the case of the current study (Costello & Osborne, 2005). PFA assumes that the communality is greater than 1.0. Since communality concerns the shared or common variance between variables that constitute correlation matrices, PFA calculates the correlations between variables and factors and then loads the highest correlated variables with a factor (de Winter & Dodou,

2012). The 20 items of the ASDQII used in this study were subject to an extraction factoring. The following tables (3.2) showed the SPSS output of the extraction factoring:

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.005	50.025	50.025	9.682	48.408	48.408	3.603	18.013	18.013
2	2.045	10.223	60.248	1.744	8.721	57.129	3.391	16.954	34.968
3	1.447	7.237	67.485	1.188	5.940	63.069	3.292	16.458	51.426
4	1.083	5.414	72.898	.778	3.888	66.956	3.106	15.531	66.956
5	.842	4.210	77.109						
6	.551	2.757	79.866						
7	.448	2.239	82.105						
8	.441	2.206	84.311						
9	.408	2.038	86.349						
10	.356	1.782	88.132						
11	.341	1.707	89.839						
12	.332	1.662	91.501						
13	.301	1.506	93.006						
14	.267	1.335	94.341						
15	.241	1.206	95.547						
16	.226	1.131	96.678						
17	.192	.961	97.640						
18	.175	.875	98.515						
19	.165	.825	99.340						
20	.132	.660	100.000						

Table 3.2: Extraction Method: Principal Axis Factoring.

The Principle Axis Factoring (PAF) extracted all factors that have eigenvalues greater than 1.0 (based on Kaiser's Criterion). The results showed that all variables in the ASDQII are extracted into four factors. This means that the eigenvalues associated with each factor represent the variance explained by those four factors. The ASDQII in this study is designed to measure four factors: Arabic self-concept, English self-concept, Math self-concept and Science self-concept.

However, factor extraction is not enough to conclude the ASDQII items or variables measures the four factors. There is a need for further step to test the rotation of factors.

Factor rotation is conducted using oblique rotation. Oblique rotation is used when the factors are expected to be related. Oblique rotation is more common in social sciences, particularly in the field of Education; however, it depends on the theoretical ground of the research. Since this study measures four different factors; four subjects' self-concepts, and those subjects' self-concept contribute to the overall academic self-concept, it is expected that factors will be related. Therefore, oblique rotation is best to suite the purpose of this study.

SPSS offers different methods of Oblique rotation. One of them is the direct oblimin. This method is suitable for a small data set (Field, 2013). The 20 items in the ASDQII used in this study were tested using the direct oblimin factor rotation and the results are presented in the following table 3.3:

	Factor			
	1	2	3	4
Q9	.921			
Q10	.837			
Q11	.827			
Q12	.694			
Q4	.407			
Q6		.880		
Q8		.878		
Q7		.826		
Q5		.740		
Q19			-.986	
Q18			-.850	
Q17			-.718	
Q20			-.699	
Q13				-.892
Q15				-.805
Q14				-.764
Q16				-.663
Q3				-.507
Q1	.312			-.354
Q2				

Table 3.3: Rotated factor Matrix for the ASDQII

The factor rotation table showed that variables loaded on four factors. The loading value is greater than .3 which indicates a significant loading of factors as proposed by Stevens (2002). Factor 1 represent the Arabic self-concept. Factor 2 represents The English self-concept. Factor 3 represents the Math self-concept.. Q5, Q6, Q7, Q8 represent Arabic self-concept factor, Q9, Q10, Q11, Q12 represent English self-concept factor, Q13, Q14, Q15, Q16 represent Science Self-concept factor, and Q17, Q18, Q19, Q20 represent Math self-concept factor. Q1, Q2, Q3, Q4 were designed to measure general school self-concept; therefore, they were not expected to to load on any factor. However, they loaded on different factors. Q1 loaded on Arabic and Math self-concept. Q2 did not load on any factor. Q3 loaded on only the Math self-concept. And Q4 loaded on only the Arabic self-concept. Therefore, for the sake of the reliability of the measure,

a decision was made by the researcher to exclude the first 4 items of the ASDQII from the study.

In a summary, the factor analysis, factor extraction and factor rotation, showed that the ADSQII measures four factors: Arabic self-concept, English self-concept, Science Self-concept and Math Self-concept. Correlation matrices were measured indicate fair correlation between variables; .5 correlation value. Variables were expected to be related since they contribute to the overall academic self-concept. Factor extraction analysis was conducted and the results showed four main factors to represents the variables. Factor rotation, on the other hand, showed that The ASDQII items loaded on four factors that represent four subjects' self-concepts. However, factor rotation discovered that the first four items seemed to be problematic since they were not designed to measure the factors that they loaded into. Therefore, those items were excluded from the measure.

3.4.3 Interviews

Qualitative data is collected by using Semi-structured interviews. Bryman (2001), stated that in the semi-structured interviews, a researcher has a list of questions or topics to be covered known as 'interview guide'. This kind of interviewing, according to Bryman (2001), offered a greater opportunity for the interviewees to feel free to answer the questions raised by the interviewer, as well as offering flexibility for the interviewer to expand on the scheduled questions and raise sub-questions.

Cohen et al (2007) and Bernard (1988), suggest that a semi-structured interview is best to be followed when the research has a clear focus so that the most specific issues can be addressed. The purpose of the interviews in this study is to understand the ways students compare their academic performance with each other and to investigate the influence of gender on those comparisons.

Before conducting the interviews for the main study, a piloting trial for the interview instrument was carried out. Piloting, according to Cohen et al (2007), means to trial the instruments used in a research on a group of learners similar to the learners targeted for the real study. They added that the research benefits from piloting , enabling them to identify any ambiguity or difficulty in the instrument. It would also raise any concern about the settings and preparation of the data collection process.

The piloting of the interviews was held with 4 students; 2 boys and 2 girls, in the 10^{th} grade, who did not take part in the main study. The four interviewees were chosen randomly by the researcher from single-sex and co-educational schools in the northern directorates in Jordan. Interviews in this piloting study have two lists of questions to be asked: one for single-sex

schools and the other for the co-educational schools. Students in the co-educational schools had to answer the same questions as the single-sex schools' students, but with an additional two questions about the opposite gender; "*how do you feel when girls do better than you (a male student) at your school?" and "how do you feel when you (a male student) do better than girls at your school?* Those two questions were reversed for girls.

The interviews were held in Arabic and asked 15 (for single-sex schools) and 17 (for co-educational schools) open-ended questions (for the copies of interview questions, please refer to the appendix). The questions being asked in the interviews sought information about how students judge their academic abilities? How well they are doing at school in comparison to other students? What are the influences of other students' performance on one's own academic self-concept? Those three key queries do not only aim to understand the mechanism of social comparison in academic self-concept, but it also aims to explain the effects of class-average ability on one's academic self-concept. Though, some of the interview questions seek information on the influence of gender on academic self-concept.

The piloting of the interviews revealed some problematic issues. In terms of the number of questions listed, the interviews revealed that 15 open-ended questions were too many and students had to rush themselves to answer. This left no room for the researcher to expand on the questions. Therefore, a decision was made by the researcher, based on the piloting study, to reduce the number of interview questions to 6 questions as follows:

1. How do you judge how well you are doing at school?
2. How well are you doing at school compared to other students at school?
3. How do you feel when other students do better than you at school?
4. How do you feel when you do better than other students at school?

5. How do you feel when girls in your age that you may know do better than you at schools?

6. How do you feel you do better than them at school?

The interviews also revealed that it was not necessary to have a different list for single-sex and co-educational schools. Questions 5 and 6 asked students about the influence of the opposite sex in/outside their schools on their academic self-concept. Therefore, only one list of interview questions will be asked in the main study.

In terms of the contextual issue, the researchers were not able to hold face-to-face interviews with female students due to cultural barriers; therefore, the researcher sought assistant from female teachers, who were on a postgraduate level, to hold interviews with female students on behalf of the researcher. The teacher-interviewers were trained on the way to open the interview and address each question. Training demonstrated how to expand some questions, if needed, by giving them some expectations of what a girls' response on the questions would be. The interviews with female students, in the main study, were also conducted by female assistants.

The date and place of the interviews were convenient since interviews were held a week after students completed their questionnaires and were held in the same schools which interviewees attend. However, it was revealed from the piloting study that holding interviews with students in a private room made them feel nervous and sometimes uncomfortable; therefore, the interviews in the main study were held in the student's common room, but in a quiet time while other students are in the classes.

Issues of validity and reliability of the interviews were referred to in the qualitative research and trust issues will be discussed in the next section.

3.4.3.1 Trustworthiness

The qualitative research aims to measure any trustworthiness in the study. Trustworthiness in qualitative research has to meet five key standards: *Credibility, Transferability, Dependability, Conformability and Authenticity* (Lincoln and Guba, 1985, Flick, 2014, Bryman, 2001, Seale et al, 2004). This section will evaluate the interviews in this study based upon the five standards aforementioned.

Credibility in qualitative research parallels internal validity of the quantitative approach. It gives an indication as to the degree of confidence in the research findings on whether they are believable (Lincoln and Guba, 1985, Flick, 1998, Bryman, 2001, Seale et al, 2004). Lincoln and Guba (1985), set up certain procedures to be followed to ensure the credibility of the research. First, all interviewees have to be informed of the purpose of the research and interviews. The interview seeks their honesty in answering the questions to establish a good understanding of the research problem. The interviewees in this study were encouraged to answer the questions as frankly as possible; however, they were granted the opportunity to skip any question they do not feel comfortable with.

Nevertheless, (Bryman, 2001) asserts that the fitness of the research method employed and the questions asked is one way to ensure the credibility of the study. Interview questions in this study were aimed at gathering students' perceptions about their academic self-concept. For example, asking the interviewees how they *thought* they are doing at school would provide the researchers with a different perception as to what the students use to judge their actual academic performance at school. During the interviews, some students mentioned only one way of judging his academic ability, a further sub-question of *would you think of any other way to judge your academic performance?* Was raised.

There are other ways of ensuring credibility in a study. Familiarizing the researcher himself with the context is one way to ensure credibility (Seale et al, 2004). The researcher has good knowledge and background about the context since he worked as a primary school teacher for two years. Furthermore, the interview recordings were replayed to the interviewees whereby confirmation and declaration was sought. In addition, the interviewees were given the opportunity to add or comment on any of the questions being asked, or the issues being raised (Bryman, 2001). To increase the credibility of the study, Lincoln and Guba (1985), suggested that the findings from the interviews will be compared with previous research. Since this study will compare its findings with previous studies, it would raise the question of the extent to which qualitative results can be applicable to other future situations. This will be discussed in the next section, transferability.

Lincoln and Guba (1985) and Bryan (2001), defined transferability as the applicability of a study's findings to other contexts or situations. It indicates the extent to which results obtained in a qualitative research can be replicated in different contexts and compared with other studies. Bryan (2001) believes that transferability parallels the external validity in quantitative research, but the former claims the applicability of qualitative findings into other situations or contexts. The latter indicates the generalizability of quantitative results.

In order to achieve this condition of trustworthiness, researchers have to provide detailed information about the study, including the methods used, the sampling and the administration process and the time consumed during the data collection process (Flick, 1998). Lincoln & Guba (1985), warned that transferability would only be possible if the researcher provided rich data for the research, enabling him/her to decide whether transferability is applicable to his/her context. This study has achieved this condition, because the full details of the interviews, and the administration process, are being discussed in this chapter.

Dependability, parallels the reliability which, according to Lincoln and Guba (1985), indicates that if a study is to be replicated in the same context using the same methods and the same participants, the study findings should be the same as the original one. They also claimed that dependability is tied to credibility, ensuring the latter would achieve the former. However, to achieve dependability of the data, researchers have to be as transparent as possible about the research design, the data gathering methods and the implication of the study by Lincoln and Guba (1985). In this study, piloting would allow the researcher to evaluate the dependability of the measurements by comparing the findings in the pilot study with those that emerge from the main study. The researcher, in this study, has been as transparent as possible in the methodology of this research, including the administration process.

Conformability, indicates that a research should be free from personal interference or bias and the research findings should only emerge from the participants' experiences, ideas or opinions (Lincoln and Guba, 1985 and Bryan, 2001). Using semi-structured interviews help to reduce the probability of a researcher's bias since it relies on planned guidelines and prepared questions. To avoid an interviewer's bias s/he should use direct questions such as, *Do you compare yourself with other students in the class?* Indirect questions were assuming the social comparison by asking; *How well do you do at school compared to other students?*

3.5 Translation and Adaptation Issues.

The academic self-description questionnaire, together with the PISA reading literacy test, has been adapted from the OECD (2001a) and Marsh (1990) and translated into Arabic (the language medium of Jordanian schools). The researcher has translated the measurements, but in consultation with an authorised translator. However, there was a need for slight modifications on the measurements.

The introductory instructions of the original questionnaire in Marsh (1990), and the PISA ability test, would be difficult to understand when they are translated into Arabic. Thus, the researcher wrote a new questionnaire introduction whereby the instructors would be more attuned with Arabic speaking students. The researcher has also added the school's name and class to the heading of the instruction so schools' data can be separated.

3.6 Sample

Sampling refers to a subset of participants within a large population which estimates the characteristics of that total population (Cohen et al, 2007). Bryan (2001) identified two different types of sampling, and depending on the selection of the sample, which are probability and non-probability samples. He explained that the probability sampling depends on a random selection of individuals, from the total of participants, ensuring an individual will have an equal chance of being selected. In the non-probability sampling the selection is non-random and the chances for an individual to be selected is unequal, thus, some individuals may have more chance to be selected than others. The probability sampling is considered representative of the total population, while the non-probability sampling is non-representative; its results cannot be generalised on the total population. However, the aim here is to conduct a probability

representative sample; therefore, I will only discuss the probability sampling and focus on the type of probability sampling employed in this study.

Bryan (2001) identified four main types of probability sampling: simple random sample; systematic sample; stratified random sample and multi-cluster sample. A simple random sample is a basic form of probability sampling where the opportunity of selection among individuals is equal (Bryan, 2001). In this sample type, researcher randomly shortlist the participants to be chosen for a sample. The selection has to be random and in this type of sampling researchers would assign participants as numbers, before randomly drawing a set of numbers revealing the participants in the study. A systematic sample, on the other hand, does not differ much from the simple random sample. This system depends on randomly assigned participants in a table, or a list of numbers, where a systematic strategy of drawing the numbers would represent the study. This requires a systematic strategy, such as choosing the odd numbers, 1,3,5,7, and so on. However, those two random samplings lack the possibility of equal representation of a population, such as representing different departments in a university. In this case, stratified random sampling would be appropriate. A stratified random sample, according to Bryan (2001), refers to "stratifying the population by a criterion (such as departments, gender, race) and selecting either a simple random sample, or a systematic sample, from each of the resulting strata" (p. 90). In the university example, a researcher may identify 4 departments as 4 strata, randomly assigning the students in each department in a list, before selecting random numbers from the list. However, this type of sampling is only feasible when the strata are close to each other. Or in a wider context, where the population is spread in a wider area where conducting a random sample from all schools, in all regions, in a country would not be feasible. Thus, the multi-stage cluster sampling would bring the solution. A multi-stage cluster sample indicates the grouping of a large population into different groups or clusters and randomly choosing a sample that would represent each cluster, before finally

selecting a random sample from the sample of each group (Bryan, 2001). For example, a researcher may seek to randomly select a sample of primary students in the UK. The context can be grouped into different regions such as South, South East, South West, and North etc. The researcher may then randomly choose a sample of five directorates from each region. He/she may then select a random sample of five schools from each of the five directorates.

However, based on the literature of Bryan (2001), Cohen et al (2007) and Neuman (2011), the decision of selecting a probability sampling depends on the population, feasibility and the strategies of conducting a sample. In conducting a probability sampling, the size of the total population can be either known or unknown. For example, it would not be possible to gain figures pertaining to the number of 10^{th} grade students in a region (as in this study), so the size of population is unknown. On the other hand, a decision about selecting a sample has to consider how feasible conducting a sample is. For example, conducting a sample from different parts of a country would be expensive and time consuming. In this study it is not feasible to conduct a sample from all regions, in Jordan especially, because the researcher is located in the far north of the country. Furthermore, the sample has to be well representative of the population to allow generalizability; thus, a researcher may collect information about the population, identify its clusters and characteristics, before making a decision about the sample design.

A decision is being made in this study to conduct a systematic multi-stage cluster sample. The multi-cluster sample, consists of 10^{th} grade basic education students in Jordanian single-sex schools and co-educational schools. The schools which took part in this study are mixed of private and public schools in rural and urban areas. Although the schools were selected from the northern regions of Jordan, the Jordanian context is homogenous. The vast majority of students share the same ethnic background, culture and language, thus, a larger sample size would not create large variation which would affect the generalizability of the results. Bryan

(2001), supported this claim by suggesting that the sample be subject to some considerations as to time and cost, homogeneity and heterogeneity of the population.

Nevertheless, the reasons for choosing this sampling design is due to the lack of an exact population census. Also, the population, representing all 10^{th} grade students in Jordan, is spread all over the country and it would not be feasible for one researcher to travel across Jordan collecting data consuming money and time. Further to this, a multi-stage cluster sample would allow a wide representation of the whole sample and increase the generalizability of the results.

The sampling process in this study is multi-staged. First, the researcher has identified the regions in the north of Jordan, by directorate. According to the Jordanian Ministry of Education's official website, there are 14 directorates of education in the north regions of Jordan. The 14 directorates were assigned randomly with numbers from 1-14 and a clustered based on the first 6 odds numbers. The aim was to randomly select 12 single sex and co-educational schools from the 6 directorates. After selecting the 6 directorates, the researcher has obtained a list of schools in each directorate from the Ministry of Education website. Schools were assigned in 6 different lists:

1. Public, single-sex, schools for boys.
2. Public single sex-school for girls.
3. Private single-sex schools for boys
4. Private sex-schools for girls'
5. Public co-educational schools and
6. Private co-educational schools.

The schools in each list were placed in a table with numbers and a random selection of 2 schools were made. This sampling process provided the study with a final sample of 12 schools. However, the number of 10th grade students varies from one school to another, but appropriate for the sample size required.

The sample size in this study started with 300 male and female students distributed over 10 single-sex and co-educational schools. The sample size was determined using the G-power statistical computer programme. Based on G-power analysis, each group has to have a minimum of 65 cases. In this study there are four groups: males in single-sex schools; males in co-educational schools; females in single-sex schools and females in co-educational schools. Therefore, there will be a need of a minimum sample of 260 participants for the current study. The output of the G*power (software v3.0.10 by Faul, Erdfelder, Buchner, and Lang, 2009) analysis is summarised below:

F tests - MANOVA: Special effects and interactions

Options:	Pillai V, O'Brien-Shieh Algorithm	
Analysis:	A priori: Compute required sample size	
Input:	Effect size $f^2(V)$	= 0.25
α err prob	= 0.05	
Power (1-β err prob)	= 0.95	
Number of groups	= 4	
Number of predictors	= 2	
Response variables	= 1	
Output:		
Denominator df	= 61.000	

Total Sample Size = 65

However, of the 300 male and female students who were asked to fill out the ASDQII, 31 invalid questionnaires were rejected. A total of 269 questionnaires were used in this study where 152 (56%) of the sample were males and 117 (44%) were females; both of whom attending single-sex or co-educational schools. In additional to the questionnaire, 8 interviews with 4 males and 4 females in single-sex and co-educational schools were conducted. The next section will reveal the administration of the study in more details.

3.7 The administration of the study

The administration of this study was carried out in two stages: pre-administration and post-administration. The pre-administration stage will reveal the ethical approval obtained, the arrangements for data collection processed and the contacts with the schools. The post-administration, on the other hand, will display the ability test administration, distribution of the questionnaires and conducting the interviews.

3.7.1 Pre-administration

Having conducting this study's ability tests, the students' questionnaire/interviews were finalised/consulted through the supervisory team and the researcher sought ethical approvals from the institution, to which this study will be presented, the Jordanian educational authorities and participants. Ethics is very important in social research and has influences on the findings. Ethics helps researchers to gain credible, honest and correct data from the participants, but it

has to be considered in an appropriate way (Bryman, 2001). The ethics in this study follow the ethical guidelines for educational research presented by the British Educational Research Association (BERA). The guidelines give a pathway of how to respect the context and the participants through an ethically acceptable position.

Thus, at the institution level, Durham University has an ethical policy where all studies have to pass an ethical committee approval before they are being conducted. A tract of the study briefing, the purpose, context, participants and instruments used was submitted to the ethical committee who reviewed the current study and issued an approval.

An ethical approval was requested from the Jordanian Ministry of Education asking for permission to allow access to the schools and administer the study. The request letter stated the name of the researcher, the title of the research, the purpose of the study, the context, the methods used and the process of treating the data collected including accessibility: who can look at the data; and storage i.e. where the data will be kept and for how long. The minster has reviewed the study with a committee and issued an approval letter to allow the researcher to access schools and collect data.

This study has also sought the participants' agreement to take part in the interviews. A consent letter was sent to the 8 students' parents with details about the purpose of the interview, time/place of the interview and the security/privacy of the data. Bryman (2001) & Wiles et al (2008), assured the confidential treatment of the data and tackled the major ethical issues by preventing any harm to the participants. The consent letter ensured parents that the data will be only used by the researcher for the purpose of the research and it will be kept in a secure place. Also, the questionnaire and reading test have clearly stated that the data will be kept safe by the researcher.

BERA, also emphasised the participants' right to withdraw from a study at any time even if their withdrawal would affect the results. Participating must be optional for individuals or organisations and they must not be forced to participate. The guidelines insisted that the participants must be made aware of this right before getting involved in the study which would use up the researchers' time and efforts. In the ability test and questionnaire, students were informed that taking part is optional and if they did not wish to take the test, and/or fill out the questionnaire, they could return them blank to the researcher. The consent letters state the participant's right of withdrawal from the study at any time during the interview. Parents had to sign the consent letter and return it to the researcher. The 8 students randomly chosen for the interview have agreed to take part in the study and have returned the consent letters signed by their parents.

3.7.2 Post-administration

After all ethical approvals were obtained, the researcher contacted the relevant schools to arrange a data and time for collecting data. The data collection process depends on the design of the study. Since this study employs an embedded mixed methods research design, both types of dataset, quantitative and qualitative, can be collected at the same time and be referred to as concurrent data collection, or sequentially i.e. collecting one type of data precedes the other type of data (Creswell & Plano Clark, 2007). Since quantitative data is overwhelmingly qualitative data, the quantitative data obtained by the ability test and academic self-concept questionnaire are being collected in the first stage whilst interviews are being held in the second stage.

The initial plan was to test students' abilities first and distribute the questionnaires the following week after the test. By doing so, the study guarantees no interference between the

test and the questionnaire. Since the researcher cannot administer the tests and the questionnaires to all schools at the same time, guidelines and training were given to the teachers who are in charge of the classes involved to administer the instruments on behalf of the researcher. It has been agreed with the head-teachers, and the teachers in the schools, to ensure that the instruments will be kept sealed and will be administered on the data and time agreed. However, the training session with teacher-administrators agreed to place students in positions where they would not be able to look at each other's sheets. The training and guidelines instructed the teachers to read the questionnaire aloud for the students and insisted on avoiding misinterpretation of any question by paraphrasing any difficult question if needed. There were no problems and test sheets and questionnaires were returned to the teacher-administrators who handed them to the researcher.

Following the test and the questionnaires, the face-face interviews with 4 male and 4 female students were conducted. Since the researcher was not able to conduct interviews in the female schools due to cultural barriers, assistant female postgraduate teachers were sought. The researcher has met with the female interviewers and has explained the interviewing process. The researcher, however, conducted the interviews with male students by himself. A comparison between his interviews and those conducted by female assistants was made to ensure that the female interviews were conducted in the same standard as the male interviews. The interviews were semi-structured and a list of questions were prepared. Additional questions also emerged during the interviews in both male and female interviews. Interviews were aimed at pertaining a student's perceptions about their academic performance and to understand the moderators who establish those perceptions. This aim was explained to the interviewees by the researcher and the assistants. The interviews tried to develop rapport at the beginning i.e. a positive relationship with the interviewees. This has also been delegated to the assistant that an interview rapport is followed by greeting the interviewees, asking them how they are and how

their days were. The interviews then started with recording interviewees' information, name, gender, age, school name and grade followed by a reading of the interview instructions. The interviewees' were informed that they have the right to withdraw from the interviews at any time as well as their right to omit any question that they do not feel comfortable to answer. Subsequently, the purposes of the study were explained to the interviewees. Interview questions started with general questions about how well students are doing at their schools to the very specific of how well they are doing comparing to the opposite gender. Interviews ranged between 25-30 minutes and were recorded on paper and on tape-recording. Records from the interview were prepared to be analysed.

3.8 Summary

This chapter started by introducing the research problem, questions and hypotheses. After that, the three common research philosophies; positivism, constructivism and pragmatism were discussed together with how those philosophies created the different research approaches. The three research approaches where; quantitative, qualitative and mixed methods researches were evaluated. As this follows a mixed methods research approach, there is a focus on pragmatic research philosophy and mixed methods research approach. However, a differentiation and evaluation between the three approaches was made and the rationale of using the current approach was explained.

After identifying the research approach, which is followed in the current study, there was a review of the history of mixed methods research and the purposes of using a mixed methods approach. Mixed methods research came to combine the strengths of the two common approaches; quantitative and qualitative, as well as tackling the weaknesses of those two

approaches. However, depending on which type of data has more focus in the study, a mixed method design was chosen. Research design is the style by which the study will be conducted. Because this study will primarily reliant on quantitative data, an embedded mixed methods research design was chosen. This design allows embedding one type of data into the other. In this study, qualitative data will be embedded within quantitative data to explain the mechanism of the main variable; academic self-concept and provide further support for the findings from the quantitative data. The reasons of choosing this design were explained because it is suitable for graduate students with small studies, requires less time, less financial fund and offers great opportunity for the researcher to investigate a secondary aim within a primary one.

Since mixed method research requires two different types of data, the data collection process, including data collection methods, was revealed. In this study, ability test, academic self-concept questionnaire and interviews will be conducted. The rationale of choosing the three instruments are explained. The issues of validity and reliability of the quantitative data methods were checked using static techniques such as coefficient alpha value and confirmatory factor analysis. The ability test and questionnaire were found to be internally consistent, reliable and valid. An interviews' trustworthiness was also evaluated using Bryman (2001) criterion. The criteria of evaluating trustworthiness includes *Credibility, Transferability, Dependability, Conformability and Authenticity*. The issues of translation and adaptation of the measurement was also discussed.

After identifying the research design, and data collection methods, this study presented the sampling procedures. The sample of this study was chosen to be a probability sample i.e. a randomized sample. The type of randomized sample conducted in this study is the systematic multi-stage clustering sample. This type of sample suits a large coverage population like the population in the current study. The sample aimed at diversity and targeted both gender; males

and females; as well as two school types; single-sex and co-educational schools. The sample size was determined using a static program called G*power which calculates the sample size using power analysis. Although 260 would be enough to run the current study, a sample of 300 students was selected; data of 269 students were found valid.

At the end of this chapter, the administration of the study was revealed. The administration process includes the ethical approval obtained, contacting the relevant schools and administering the measures. The administration of the measures was carried out in three stages: ability test day, questionnaire day and the interviews. The data was collected sufficiently and no problematic issues were reported. Data was organized and prepared for the analysis which will be discussed in the next chapter.

Chapter 4: Data Analysis

4.1 Overview

This study aims to investigate the Big Fish Little Pond Effect (BFLPE) model among boys/ girls in single-sex and co-educational schools in Jordan. The BFLPE asserts that school-average ability has a negative effect on students' academic self-concept. For the purpose of the investigation 269 male/female students have completed an ability test and an academic self-concept questionnaire (ASDQII). The ability test and ASDQII will be analysed using a two-way analysis of variance (ANOVA). The analysis will answer the following :

- *An individual's own ability is predicted to have a positive effect on a students' Academic Self Concept (ASC); whereas, a School-average ability is predicted to have negative effect on students' ASC (the BFLPE).*

Alongside with this prediction, this chapter will test the following full hypotheses:

4. Does the BFLPE apply to single-sex and co-educational schools in Jordan?

5. Does gender and school type influence the BFLPE results?

6. What are the social comparison standards that students use in Jordanian schools to establish their academic self-concept? Is there any evidence that gender influences the academic self-concept?

This study also aimed to test the following hypotheses:

H01: There is no negative effect of school-average ability on academic self-concept.

Alternative: School-average ability has negative effect on students' academic self-concept.

H02: There is no relationship between gender and the BFLPE.

Alternative: There is a relationship of gender and the BFLPE.

H03: There is no relationship between school type and the BFLPE.

Alternative: There is a relationship between school type and the BFLPE.

For the purpose of the analysis of the ability test and ASDQII, two-ways ANOVA is conducted. ANOVA refers to the analysis of variance. It tests the differences between groups' means. It also tests any effect, association, or relationship between groups and variables. If groups' means were equal and no differences found, null hypothesis would be accepted. If groups' means were different, null hypothesis would be rejected and alternative hypothesis would be confirmed. ANOVA also indicates the significance of the differences between groups' means (Neuman, 2013, Newman & Benz, 1998, Field, 2013).

Field (2013) pointed advantages of using ANOVA over other basic statistical tests such as t-test. It enables analytics to compare two or more groups which cannot be performed in a simple statistical test. ANOVA also enables analytics to tests two or more independent variables at the same time. For example, this study could test four subjects' self-concepts on two groups; gender and school type, at the same time.

In a basic statistical test, two or more groups have to be analysed independently which increases the chances of errors type 1 i.e. the chances of making mistakes. The acceptable chance of errors or making mistakes in social sciences is 0.05 i.e. 5%. Running two basic statistical tests on the same data would increase the chance of error to the double; 0.10, 10% (Field, 2013).

However, ANOVA does not explain the size of the difference between variables and groups. Therefore, there is a need for an effect size test to measure the size of the difference. In this study, a Cohen's *d* effect size formula will be used to determine the size of the differences between groups. The following formula is used to calculate Cohen's *d* effect size:

$$d = \frac{\mathrm{M1} - \mathrm{M2}}{\mathrm{SD\ pooled}}$$

M1 is the mean of the first group minus M2 is the means of the second group divided by the pooled standard deviation (SD pooled). SD pooled is calculated using the root of the squared standard deviation of each group added up and divided by two as in the following formula:

$$SD\ pooled = \frac{\sqrt{(SD^2\mathrm{group1} + SD^2 group2)}}{2}$$

Cohen (1988) provided interpretation of the *d* value as over 0.2 value is a small effect size, over 0.5 is a medium effect size and over 0.8 is a large effect size. Small effect size means that there is a significant effect or association but it needs to be interpreted carefully and may require further investigation. Medium effect size is an effect or association that is large and consistent enough to be seen by the naked eye. Large effect size is very significant and substantial effect or association (Cohen, 1988). Effect size in this study will only be reported when there is a significant association between variables.

In addition to the ability test and ASDQII, six students (three boys and three girls), attended face-to-face interviews. The interviews aimed to investigate the types of socielyal comparison made in the classroom.

This chapter is organised into eight sections.

Section One; is an overview of the chapter.

Section Two; will present the analysis of the ability test scores and examine the effects of gender and school types on academic ability.

Section Three; will analyse students' responses to an academic self-concept questionnaire. It will measure students' academic self-concept and it will investigate the effects of gender and school types on academic self-concept.

Section Four; will test the direct effect of the individual student's own ability on his/her academic self-concept.

Section Five; will test the effect of the school-average ability on students' academic self-concept and report any significant difference between male and female students (gender) and between single-sex and co-educational schools (school type).

Sections Six, Seven, Eight and Nine; will test the effect of school average ability on four subjects' self-concepts: Arabic, English, Mathematics and Science and the variance between gender and school types.

Section Ten; is a summary of the quantitative results.

Section Eleven is the qualitative data analysis. This section will reveal the analysis of the interviews using Constant Comparative Analysis (CCA).

4.2 Ability Test

The students' response on the ability test have been calculated for each student under the Ability Test Score (ATS) variable. The mean (M) and standard deviation (SD) of academic ability are calculated for both gender: male and female; in both school types: single-sex and co-educational schools; as presented in the following table (4.1):

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	4.23	1.84	5.42	.75	4.53	1.71
Female	4.91	.92	5.44	.71	5.02	.90
Total	4.53	1.53	5.42	.73	4.74	1.43

Table 4.1: descriptive analysis of the ability test. M=Mean, SD=Standard deviation.

A two-way Analysis of Variance (ANOVA) has been conducted to compare the relationship of gender, and school type (single sex/co-educational), with their academic ability, as well as the interaction between gender and school type on academic ability. A two-factor ANOVA shows no significant relationship between gender and academic ability $F(1, 265) = 3.02$, $P = 0.08$, but there is a significant relationship between school type and academic ability; $F(1, 265) = 18.29$, $p < 0.05$. Students at co-educational schools (M=5.42, SD=.73) have higher academic ability than students at single-sex schools (M=4.53, SD=1.53). Cohen's *d* effect size value $d = 0.7$ indicates a medium effect size. There was no significant interaction between gender and school type on the ability test $F(1, 265) = 2.70$, $p = .102$.

4.3 Academic Self Concept

All students in this study have completed 20 items on the ASDQII (Academic Self Description Questionnaire II). The means and standard deviation of students' responses on the questionnaire are distributed in the following table (4.2):

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	5.66	1.46	6.63	.92	5.90	1.41
Female	6.30	1.22	6.65	1.08	6.35	1.19
Total	5.94	1.39	6.60	.98	6.10	1.33

Table 4.2: descriptive analysis of academic self-concept scores. M=Mean, SD=Standard deviation.

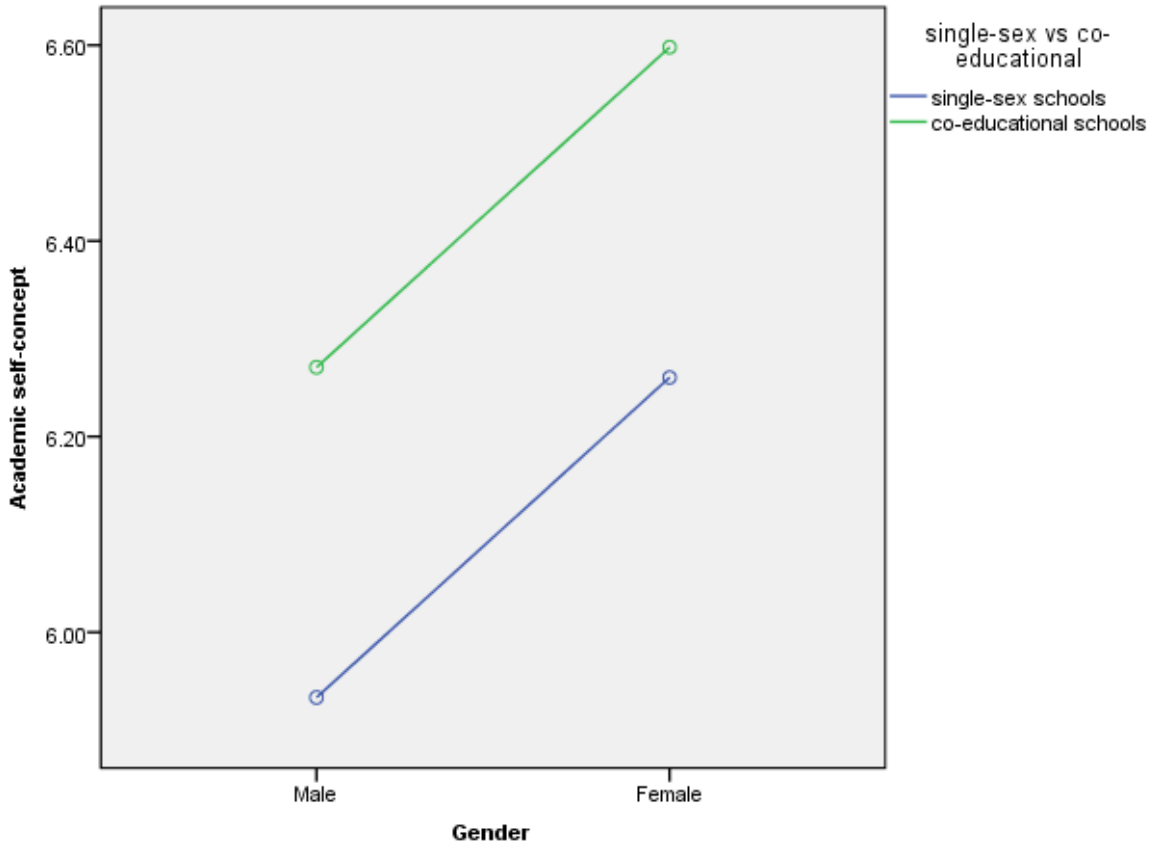
The students' scores on the ASDQII questionnaire were subject to a two-factor ANOVA. The two factors being: gender and school type. The analysis aimed to test the association of each factor with academic self-concept as well as the interaction between the two factors. The results show no significant association of gender with academic self-concept $F(1, 265) = 2.264$, $p = .134$ but the association between school type and academic self-concept was significant $F(1, 265) = 10.75$, $p=0.001$. Students at co-educational schools showed higher academic self-concept ($M = 6.10$, $SD = 1.33$) than students in single-sex schools ($M=5.94$, $SD=1.39$). The size of the difference in academic self-concept between co-educational schools and single-sex

schools is *d*= 0.5 which indicates a medium effect size. The interaction effect between gender and school type was found to be non-significant (1, 265) = 3.619, p= 0.058.

4.4 Individual Ability vs Academic Self Concept

A two-way ANOVA was used to test the association between an individual student's ability and their academic self-concept and the interaction effect on gender and school type. The results from the analysis are presented in the following figure (4.1):

Figure (4.1) Estimated Marginal Means of The effect of individual student's own ability on Academic self-concept



The results show a significant positive association of students' academic ability with academic self-concept F(1, 263) = 7.15, p=0.008. This indicates that an increase in a student's ability leads to an increase in his/her academic self-concept. The interaction effect of gender with

individual ability was significant; F (1, 263) = 8.71, p=0.003. The female students show higher academic self-concept (M=6.35, SD=1.19) than male students (M=5.90, SD=1.41). The size of the interaction was d= 0.3 which indicates a small size of interaction. The interaction effecting school type with individual ability is non-significant F (1, 263) = 0.033, p=0.85.

4.5 School Average Ability vs Academic Self Concept (The BFLPE)

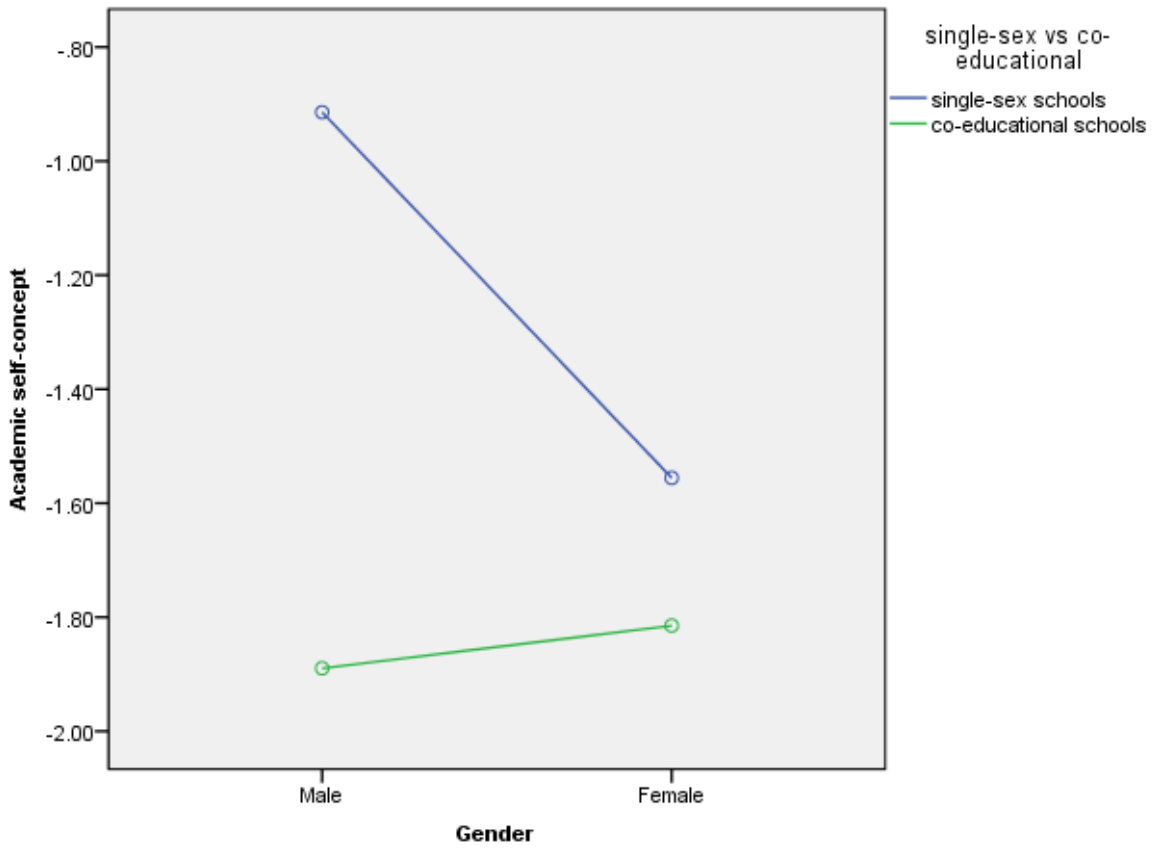
The schools' average ability has been measured by assigning the average ability of each school to each individual student. The school average ability was found to have a negative effect on students' academic self-concept for the whole population, M= -1.35, SD=1.33. This indicates that the BFLPE, the negative effect of school-average ability on Academic Self Concept, exists among students in the current population. The following table presents the means and standard deviation of the negative effect of school-average ability on academic self-concept among gender and the two school types; single-sex and co-education schools:

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	-.91	1.46	-1.88	.92	-1.15	1.41
Female	-1.55	1.22	-1.81	1.08	-1.61	1.19
Total	-1.20	1.39	-1.85	.98	-1.35	1.33

Table 4.3: descriptive analysis of the negative effect of school-average ability on Academic Self Concept. M=Mean, SD=Standard deviation.

The main aim of this study is to test the association of gender and school type with the BFLPE results, therefore, a two-way ANOVA was conducted. The results from the analysis show that the association of gender with the BFLPE results was non-significant $F(1, 265) = 2.26$, $p=134$, but the association of school type with the BFLPE results was significant, $F(1, 265) = 10.75$, $p= 0.001$. Students who attend co-educational schools, where the average ability of the school is higher, suffered a lower academic self-concept M= -1.35, SD= 1.33 than other students who attend single-sex schools, M= -1.20, SD= 1.39. Cohen's *d* value 0.5 suggests a medium effect size. The interaction between gender and school type is non-significant $F(1, 265) = 3.61$, $p=0.058$. Those findings are presented in the following figure (4.2):

Figure (4.2) Estimated Marginal Means of the negative effect of school average ability on academic self-concept



The effect of school-average ability, in the BFLPE, has also been tested on four subjects' self-concepts: Arabic, English, Mathematics and Science. The school average ability is found to be negative on the four subjects' self-concepts and will be presented in the following sections.

4.6 School Average Ability vs Arabic Self Concept (The BFLPE)

School average ability was found to have a negative effect of students' Arabic self-concept for the entire population M= -1.66, SD=1.59. This negative effect is referred to as the BFLPE on Arabic self-concept. The following table (4.4) presents, in detail, the mean and standard

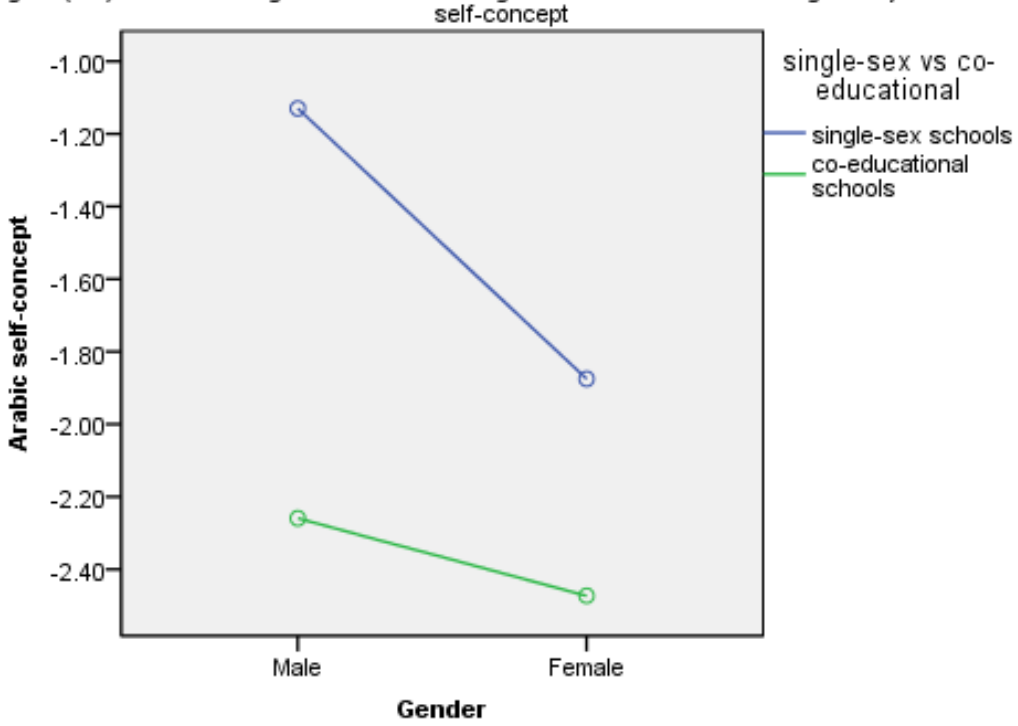
deviation of the negative effect on school-average ability with the BFLPE, for male and female students in single-sex and co-educational schools:

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	-1.13	1.75	-2.25	1.03	-1.41	1.67
Female	-1.87	1.49	-2.47	1.02	-2.00	1.42
Total	-1.46	1.68	-2.34	1.02	-1.66	1.59

Table 4.4: descriptive analysis of the negative effect of school-average ability on Arabic self-concept. M=Mean, SD=Standard deviation.

The association of gender and school type with the BFLPE on Arabic self-concept were subject to a two-way ANOVA. The two-way ANOVA, shows that gender and school type have significant association with the BFLPE in Arabic self-concept: gender; $F(1, 265) = 4.59$, $p=0.03$ and school type; $F(1, 265) = 14.92$, $p=0.00$. Girls faced a larger decline in their Arabic self-concept (M=-2.00, SD=1.42), than boys (M= -1.41, SD=1.67). Cohen's *d* value 0.3 indicates a small significant size of difference between girls and boys. Furthermore, students who attended co-educational schools suffered a lower Arabic self-concept (M= -2.34, SD=1.02) than those who attended single-sex schools (M= –1.46, SD=1.68). Cohen's *d* value 0.6 indicates a medium and significant effect size. The interaction between gender and school type is non-significant ($F(1, 265)$ $p=0.23$). The results are represented in the following figure (4.3):

Figure (4.3) Estimated Marginal Means of the negative effect of school-average ability on Arabic self-concept



4.7 School Average Ability vs English Self Concept

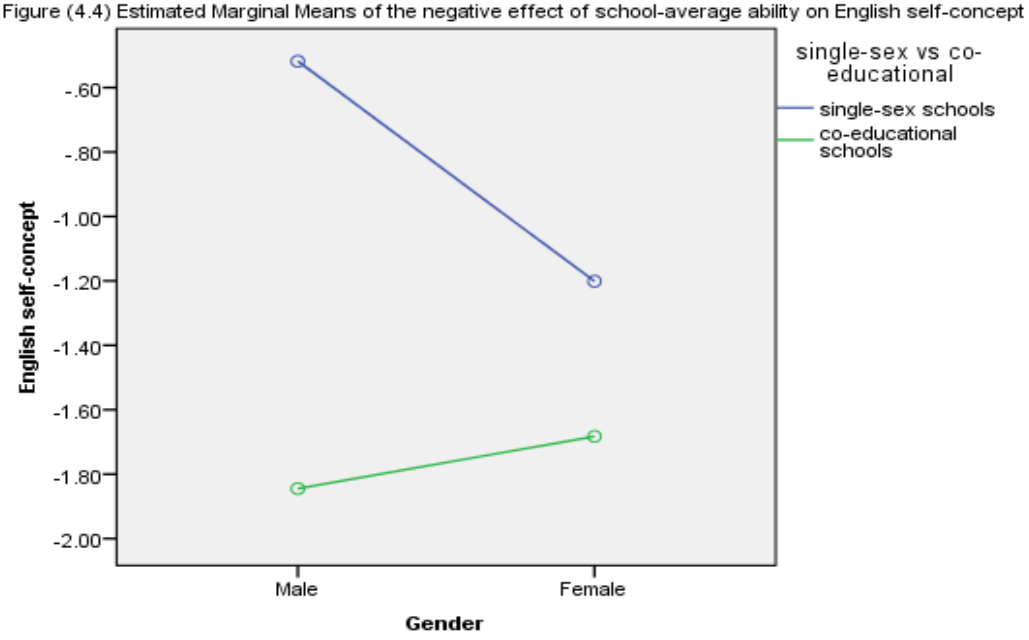
A school-average ability, has a negative effect on students' self-concept in the English subject. This negative effect of school-average ability is referred to as the BFLPE. The following table (4.5) presents the means and standard deviations of the BFLPE in English subjects among boys and girls in single-sex schools:

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	-.51	1.98	-1.84	1.49	-.84	1.95
Female	-1.20	1.80	-1.68	1.39	-1.30	1.72
Total	-.82	1.93	-1.78	1.44	-1.04	1.87

Table 4.5: descriptive analysis of the negative effect of school-average ability on English self-concept. M=Mean, SD=Standard deviation.

The variance between both genders, and both school types, in the negative effect on school-average ability on English self-concept, is referred to as the BFLPE, and was tested by a 2-factor ANOVA. The analysis results show that the BFLPE on English self-concept did not significantly vary by gender ($F(1, 265) = .96$, $p=.32$), but significantly varied in terms of school types ($F(1, 265) = 11.58$, $p=0.001$). Students in co-educational schools have a lower English self-concept (M= - 1.78, SD= 1.44) than their peers in single-sex schools (M= -.82, SD=1.93). Cohen's *d* value 0.5 suggests a medium and significant size of difference between co-educational schools and single-sex schools. The interaction between gender and school type was non-significant ($F(1, 265) = 2.53$, $p=.11$). The following figure (4.4) represents those findings:

Figure (4.4) Estimated Marginal Means of the negative effect of school-average ability on English self-concept



4.8 School Average Ability vs Math Self Concept

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	-1.07	1.82	-1.75	1.29	-1.24	1.73
Female	-1.44	1.80	-1.35	1.80	-1.42	1.79

Total	-1.23	1.82	-1.59	1.51	-1.32	1.75

The preliminary analysis of means and standard deviation, showed that school-average ability has a negative effect on a Mathematic self-concept (M= -1.32, SD=1.75). This is referred to in this study as the BFLPE on Mathematic self-concept. The means and standard deviations of the negative effect of school-average ability on Math self-concept, among boys and girls in single-sex and co-educational schools, is presented in the following table (4.6):

Table 4.6: descriptive analysis of the negative effect of school-average ability on Math self-concept. M=Mean, SD=Standard deviation.

A two-way ANOVA was conducted to test the association of gender and school type with the BFLPE Mathematic self-concept. The analysis shows that gender has no significant association with the BFLPE in Mathematic self-concept ($F(1, 265) = 0.005$, $p=0.94$), nor the school type ($F(1, 265) = 1.35$, $p=0.24$). There was no significant interaction between gender and school type ($F(1, 265) = 2.29$, $p=0.13$). This indicates that boys and girls in single-sex and co-educational schools suffered the same level of decline in their Mathematic self-concept. Those results are represented in the following figure (4.5):

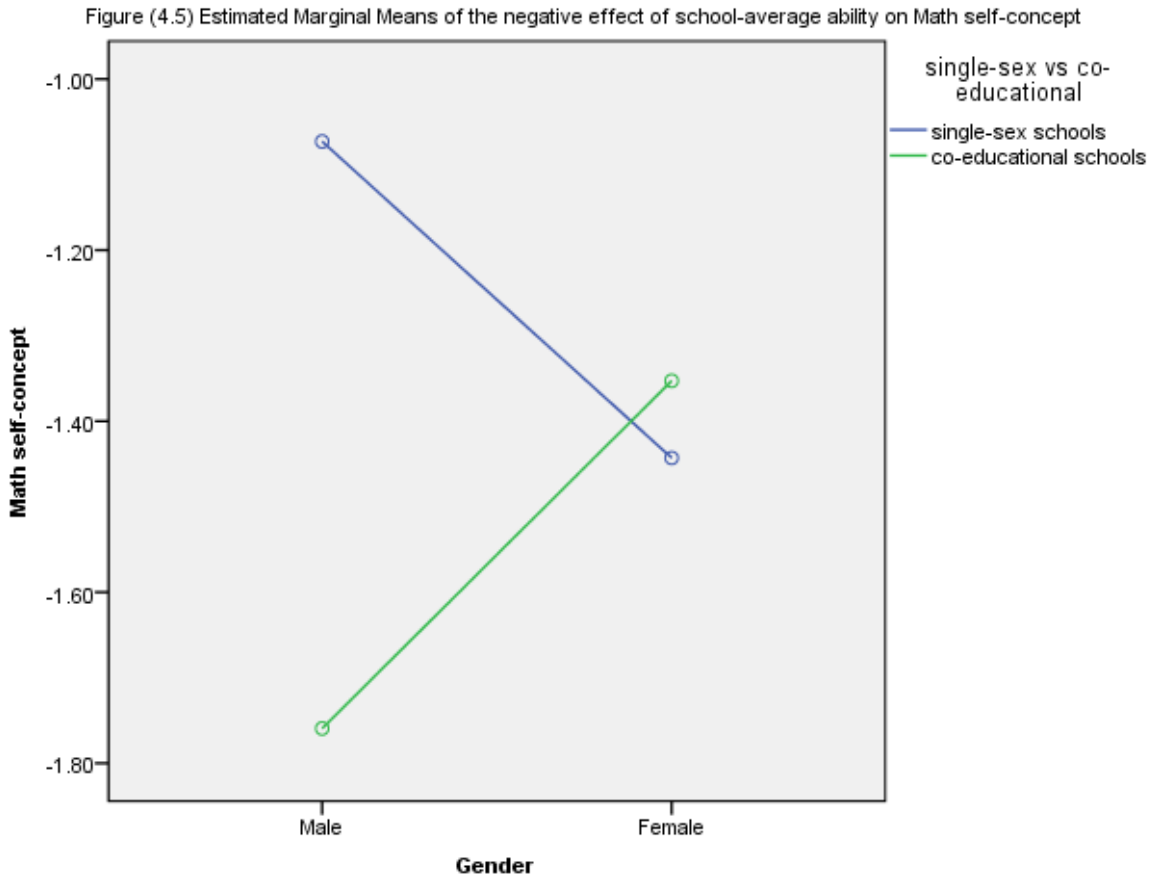


Figure (4.5) the negative effect of school-average-ability on males and female's Math self-concept in single-sex and co-educational schools.

4.9 School Average Ability vs Science Self Concept

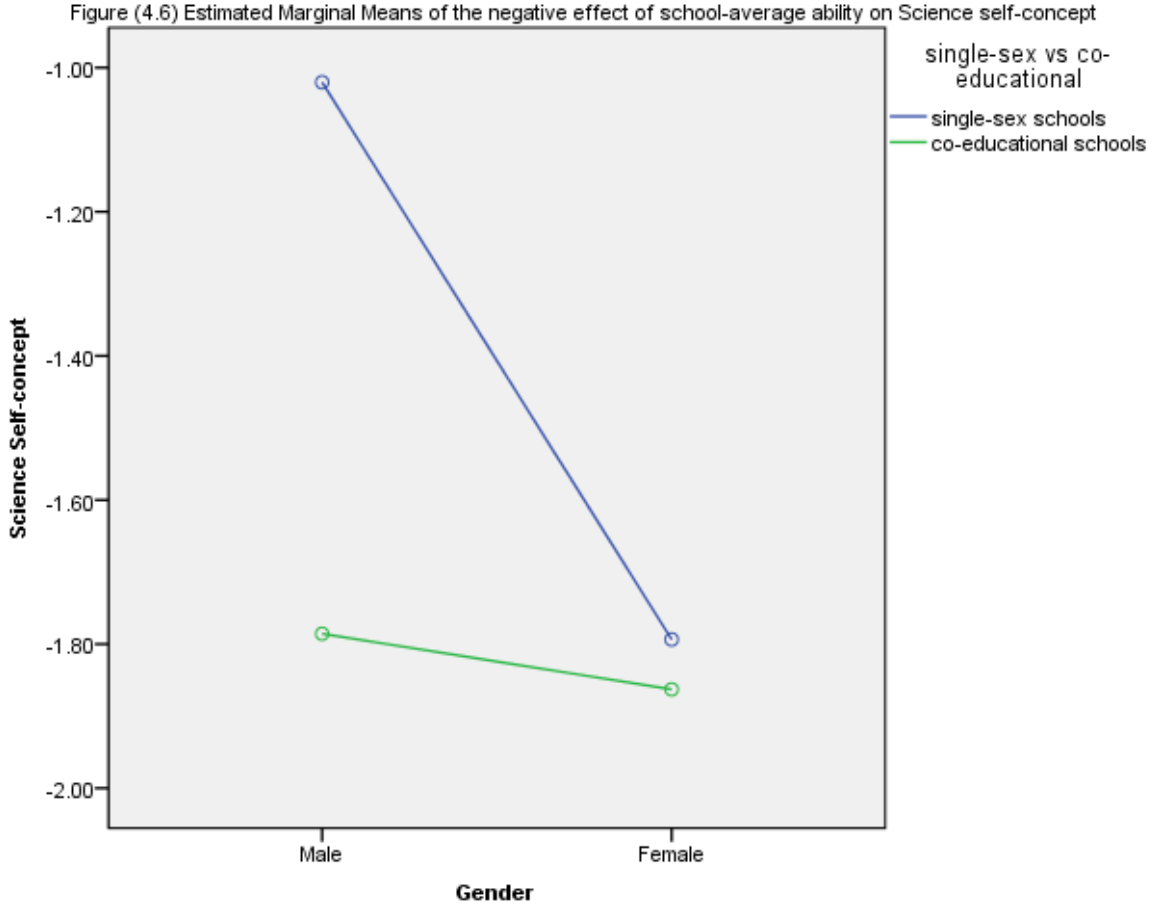
The fourth subject's self-concept to be tested in this study is the Science Self Concept. A school-average ability has a negative effect on students' science self-concept (M= -1.47, SD=1.53). This result is evidence of the BFLPE on Mathematics self-concept. The following table presents the negative effect of school-average ability (The BFLPE) on science self-concept among male and female students in two different type of schools; single-sex and co-educational schools (4.7):

	Single-sex schools		Co-educational schools		Total	
	M	SD	M	SD	M	SD
Male	-1.02	1.72	-1.78	1.29	-1.21	1.65
Female	-1.79	1.32	-1.86	1.20	-1.80	1.29
Total	-1.36	1.60	-1.81	1.24	-1.47	1.53

Table 4.7: descriptive analysis of the negative effect of school-average ability on Math self-concept. M=Mean, SD=Standard deviation.

In order to test the association of gender and school type with the BFLPE in science self-concept, a two-factor analysis was conducted. The results indicate that the negative effect of school-average ability did not significantly vary between either genders ($F(1, 265) = 3.76$, $p=0.053$) or school type ($F(1, 265)$, $p=0.058$). The interaction between gender and school type was nonsignificant ($F(1, 265) = 2.52$, $p=0.11$). This indicates that boys' and girls' science self-concept suffered by the same size of the BFLPE. Those results are represented in figure (4.6):

Figure (4.6) Estimated Marginal Means of the negative effect of school-average ability on Science self-concept



4.10 Summary of the results

The BFLPE asserts that an individual student's ability has a positive effect on his/her academic self-concept, whereas, the average ability of a school or class has a negative effect on students' academic self-concept. The data analysis in this study shows that male and female students, in single-sex and co-educational schools, suffered from the BFLPE. A Student's own abilities have a positive effect on their academic self-concept when controlling the average ability of the school/class. The increase in a student's own ability leads to an increase in his/her academic self-concept. However, the average ability of a school was proved to have a negative effect on students' academic self-concepts. The higher the average ability of a school/class is,, the lower

students' academic self-concept were. Those findings applied on four subjects' self-concepts; Arabic, English, Mathematics and science.

This study aimed to investigate the association of gender and school types with the BFLPE results. A two-factor Analysis of Variance (ANOVA) shows that gender has no significant association with the overall academic self-concept on three subjects; English, Mathematics and Science. This indicates that male and female students, in single-sex and co-educational schools, suffered the same size of the BFLPE. The association of gender with academic self-concept was only found to be significant but small in Arabic subjects. Girls have lower Arabic self-concept than boys.

The 2-way ANOVA has shown that school types have a medium and significant association with the overall academic self-concept, as well as a subjects' self-concept; Arabic and English. Students who attended co-educational schools showed a lower academic self-concept to Arabic and English self-concepts, than students who attended single-sex schools. The school types are found to have no significant association with Mathematics and Science self-concepts. This indicates that male and female students in single-sex and co-educational schools suffer the same effects of the BFLPE in Mathematics and Science subjects.

4.11 Qualitative data analysis

Qualitative data analysis interprets written, verbal or visual materials into meaningful statements that explain the implicit and explicit aspects of phenomena (Silverman, 2005, Flick, 2014, Bryman, 2014, Ely et al, 1991). Different forms of qualitative analysis have been identified, and these are dependent on the research theory, design and methods being used (Creswell & Plano Clark, 2007). This study employs an embedded mixed methods design in which interviews were conducted for the purpose of gathering qualitative data. Data from the interviews was then analysed using qualitative methods to address the research question (Ibid). Thus, a Constant Comparative Analysis (CCA) method has been employed to analyze the data.

Traditional qualitative analysis methods aim either to test an existing theory or create new theory. Those methods that aim to test existing theories tend to rely on coding first then analyzing. The methods of analysis that aimed to generate new theories tend to rely on inspecting new ideas from the data without coding (Glaser, 1965 p. 437). The purpose of CCA, according to Glaser (1965), is to combine the traditional methods of qualitative analysis. Which systematically helps to generate a theory by using a joint coding and analytic approach as well as it helps to develop or test an existing theory. Since the purpose of the interviews of this study is to investigate the types of social comparison proposed by Festinger (1954) as well as exploring new standards or tools of comparison that students use, I believe that the CCA suits well the purposes of interview in this study.

Lincoln and Guba, (1985) and Kelle (2004), suggested that CCA follows a systematic strategy with the researcher starting by familiarising him/herself with the data. Thus the transcripts were scrutinized in order to identify the key meanings, phrases or statements emerging from them. This will help to identify any negative or "deviant" cases and sift the most rigorous data which

answers the research question. In this first step of analyzing the interviews, the transcripts were treated as a whole narrative text rather than individual answers to specific questions. This helped to gain a better understanding of interviewees' views on the whole matter. This also helps to check the consistency of participants' responses on the whole interview than on each individual question.

The literature on the ways of analyzing interviews such as Lincoln and Guba, (1985), Kelle, (2004), Silverman, (2005), Flick, (2014), Bryman, (2014), Ely et al, (1991), Creswell & Plano Clark, (2007), has emphasized the importance of coding in interviews. The next section will outline in detail the process of coding the interviews in this study.

4.1.1.1 Coding

The second step in the CCA analysis is the coding. Bryman (2001 P:392), described coding as "reviewing transcripts and/or field notes and giving labels to component parts that seem to be of potential theoretical significance and/or the appear to be particularly salient within the social words of those being studied". Raymond (1992) and Creswell & Plano Clark (2007), suggested that coding starts by categorizing the data in units such as phrases or sentences, and labelling those units. Those units are also known as themes.

Glaser (1965) discussed the matter of coding in interviews and highlighted two ways of coding. Codes that emerge from a theory and codes that emerge from the data. According to Glaser (1965) a theory can suggest themes that categorize interviewees' different responses or interview's findings. The purpose of interviews in this study is to explore the types of social comparison proposed by Festinger's social comparison theory (1954); upward and downward comparisons. Those types are used as themes to categorize interviewees' responses/statements.

Therefore, any interviewee's statement that indicates a comparison with others who are better off in ability was placed in the upward comparison coded category and any statement that indicates a comparison with worst off in ability was placed in the downward comparison coded category.

However, coding that comes from an original theory does not help analysts to create or develop a new theory, Glaser (1965) suggests creates new themes from the dataset. This study aims also to explore the standards students use to compare themselves with each other. There is no previous theory that suggests the ways students compare themselves with each other and the literature on this matter is very limited. Therefore, the analysis of the interviews created new themes to cover the standards of comparison. Thus, any interviewee's statement that indicates a way of comparing his/her ability with others is placed in the category of social comparison standards. The name of each category, particularly in the social comparison standards which were not based on a previous theory, was assigned using words or phrases from the transcripts such as participation, homework etc.

Categories and themes that emerged from the students' interviews are illustrated in the following figure (4.10):

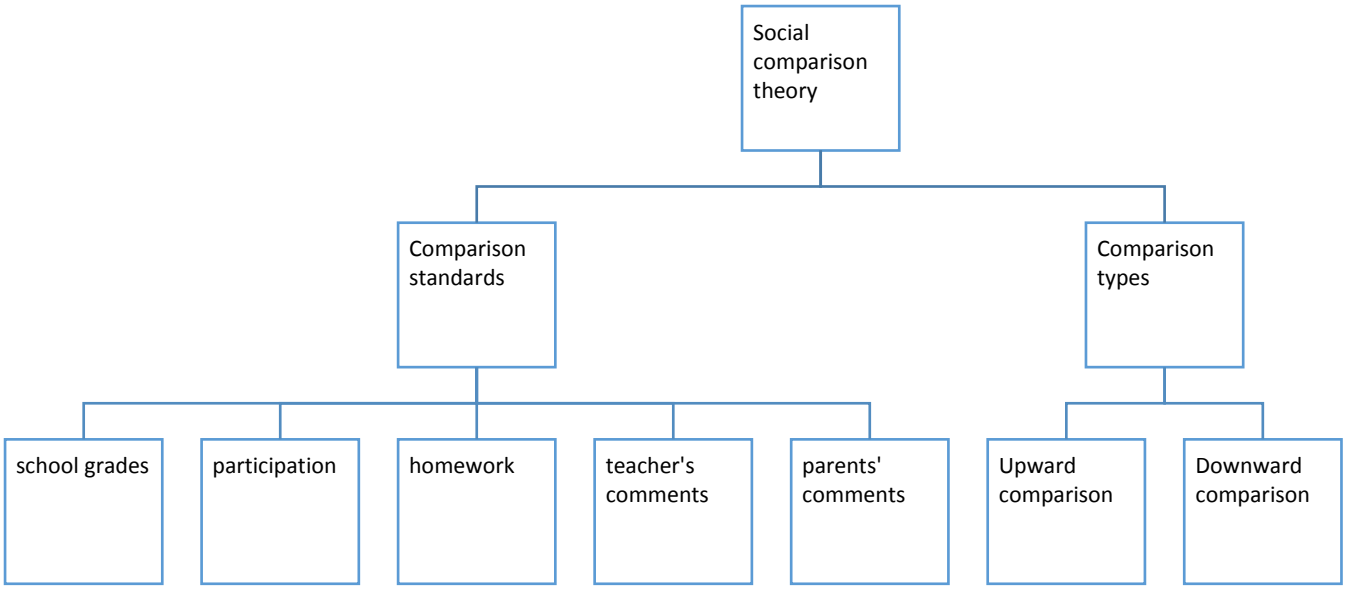


Figure 4.7: The social comparison types and standards in the students' interviews

Figure (4.7) showed that students' responses on the interviews fell in two main categories: social comparison types and social comparison standards. As proposed by Festinger (1954) students make upward comparison with others who are more able than themselves and downward comparison with others who are worse off than themselves. Therefore, two themes emerged in this categories: upward comparison and downward comparison.

The interviews also showed different standards that students use to make a comparison with others. Five social comparison standards emerged that are: school grades, participation in the class, doing homework, teachers' comments or appraisal, and parents' comments or appraisal. Those five standards were labelled in new themes or sub-categories under the main category; social comparison standards.

The previous steps helped in defining the coding categories; however, Raymond (1992) suggested further steps when coding interviews which were followed in the current study. Raymond (1992) suggests classifying relevant information from the transcripts. This was done in this study by underlining words or phrases in the transcripts and labelling them with the relevant category's name. For example, if a student referred to a comparison he/she made with

the top student in the class, assuming that student is an average ability student, his/her statement would be underlined and labelled as an upward comparison.

Raymond (1992) emphasized testing the reliability of coding. It is to ensure that the coding category achieves the purpose of the interviews. The main two categories in the interviews; types and standards, serves two different purposes The two types of social comparison; upward and downwards, indicates who students compare their academic abilities with. The standards that students use to make a social comparison, on the other hand, indicates how students compare their academic abilities with each other. For example, upward comparison is not a tool of comparison but a target to compare with.

Another way of ensuring the reliability of coding is by measuring the frequency of each theme in the interviews (Raymond, 1992). When tested the frequency of the types of social comparison, it appears that the eight interviewees, three males and four females, referred to upward and downward comparisons they made inside and outside the classroom. This high frequency of response may indicate a consistency or reliability in the measure. Likewise, grades were also frequently mentioned by the interviews. The eight male and female interviews have referred to schools' or exams' grades as a way to make a social comparison. The second most frequent standard of comparison that was mentioned by the interviewees was teachers' comments. Five interviewees referred to their teachers' comments in the class as way to distinguish each other's abilities. As well as teachers' comments, parents' comments have an influence on the way students compare themselves with each other. Five interviewees referred to what their parents say as a way of judging their abilities. Participation as a tool of comparison was mentioned in four interviews. Homework, on the other hand, was used a standard of comparison by two interviews.

Reliability also ensures that students were able to distinguish the types of social comparison from the standards. Glaser (1965) suggests analysts compare incidents in each category with each other and with other incidents in other categories. When the types of social comparison were compared with the standards of social comparison, it appears that they could not replace the standards in their categories. It did not make any sense when the types of social comparison were used to answer a question about the tools students used to compare their abilities with each other. However, there was an interaction between the types and the standards in that students used the standards of comparison to make an upward or downward comparison. For example, a student may use an exam's results to compare his achievement with the achievement of the top student in a class.

The last step in the CCA is the delimiting and writing a theory. Since the coding system was followed in the study exclusively searched for types and standards of social comparison, there was no irrelevant categories or themes that required revising or removing. The standards of comparison found was compared to the limited literature on this matter such as Blanton, Buunk, Gibbson, and Kuyber (1999) and Huguet, Dumas, Monteil, Genestoux (2001), Skaalvik and Skaalvik (2002), Parsons, Adler and Kaczala (1982), Felson (1981, 1989, 1993), Felson and Reed (1983) which found evidence of similar standards of comparison to the one found in this study. Writing up the theory, however, requires using quotation from the interviews in regard to each theme or category (Glaser, 1965). For example, a claim, that students would make an upward comparison with others who are better off and this comparison may have a negative effect on their academic self-concept, would be supported by quotes from the interviews. This will be presented in detail in chapter five; findings and discussion.

Chapter 5: Findings and Discussion

This chapter discusses the study's findings from the data analysis. Since an embedded mixed method design is employed, quantitative and qualitative findings are discussed separately. The quantitative data aims to investigate the BFLPE in the Jordanian context. It also aims to investigate the effect of gender; male and female, as well as schooling type; single-sex and co-educational, on the BFLPE. The qualitative data aims to investigate the social comparison standards made by students in the classroom.

To meet those aims, this study looked at three research questions:

1. Does the BFLPE apply to single-sex and co-educational schools in Jordan?

2. Does gender and school type influence the BFLPE results?

3. What are the social comparison standards that students use in Jordanian schools to establish their academic self-concept? Is there any evidence that gender influences the academic self-concept?

This study also aimed to test the following hypotheses:

H01: There is no negative effect of school-average ability on academic self-concept.

Alternative: School-average ability has negative effect on students' academic self-concept.

H02: There is no relationship between gender and the BFLPE.

Alternative: There is a relationship of gender and the BFLPE.

H03: There is no relationship between school type and the BFLPE.

Alternative: There is a relationship between school type and the BFLPE.

The academic self-concept has been a focus of educational research for decades. Empirical studies on the academic self-concept suggests that there is a tight relationship between students' academic abilities and their academic self-concept (Shavelson et al., 1979, Marsh et al., 1983, Marsh and Parker, 1984, Marsh and Shavelson, 1985, Marsh, Hau and King, 2002, Liu, 2009). Marsh and Parker (1984), found that students' own ability has a positive effect on their academic self-concept in that; high ability students tend to have high academic self-concept whilst low ability students tend to show a low academic self-concept. However, students' abilities alone do not distinguish high performing students from low performing students. There are factors, other than students' own abilities, that affect their academic self-concepts such as those suggested by He and Tymms (2014), "the learning environment in the school, the socioeconomic background of the students, the student's attitudes toward study, the academic achievement attained before entering the schools and many others" (p. 26). Marsh (2005), emphasised the learning environment of schools in forming students' academic self-concept. He asserted that students use the abilities of other students in the school to judge their own academic level. For example, a student would perceive his English ability as high compared to those who are less able than him. Another student would perceive his English ability as low compared to others who are better than him in English.

However, Marsh and Parker (1984) found that the average ability of the school or class has negative effect on students' academic self-concept. Students have lower academic self-concept when they attend high ability schools. For example, Marsh and Hau (2003) found that high ability students in a high ability environment have a lower academic self-concept than high

ability students in a mixed ability environment. This negative effect of school average ability is referred to as the Big Fish Little Pond Effect (BFLPE).

Marsh and Parker (1984), in the BFLPE frame of reference, asserted that an individual student's own ability has a positive effect on his/her academic self-concept; whereas, a school or class ability has a negative effect on a student's academic self-concept. In this study the BFLPE is tested in a new context regarding Jordan and two different schooling environments; single-sex schooling and coeducational schooling.

The organisation of this chapter will be as follows:

1. It discusses the first research question and the first hypothesis.

2. It discusses the effect of gender and schooling type on the BFLPE. This section answers the research question 2 and tests the second and third hypothesis.

3. It discusses the types of social comparison found in the interviews with boys and girls in single-sex and co-educational schools.

5.1 The Big Fish Little Pond Effect (BFLPE) in the Jordanian context

This section aims to answer the first research question of whether the BFLPE applies in a Jordanian context. It also aims to reject the 'Null' hypothesis that suggests there is no evidence of the BFLPE in the context of Jordan. The BFLPE predicts that individual ability has a positive effect on academic self-concept, while the average ability of the class has a negative effect on students' academic self-concept.

The findings from the data analysis indicates that the BFLPE applies to the Jordanian context. The Students own abilities, in this study, had a positive effect on their academic self-concepts (M=6.10). This indicates that when a student's ability is increased, his/her academic self-concept increased. However, the effect of the school-average ability on students' academic self-concept was negative (M= -1.35). This shows that when the ability of the class increased, students' academic self-concept decreased. Therefore, the null hypothesis: *"school-average ability does not have negative effect on students' academic self-concept"* is dismissed. Alternative hypothesis that "*school-average ability has negative effect on students' academic self-concepts*" is accepted.

Students in this study showed high academic self-concept. This is consistent with the Al-Srour and Al-Ali (2013) study, which also found a high self-concept amongst Jordanian students in primary schools based on their responses to the SDQI (Self-Description Questionnaire I). The literature of Oyserman (2001), Marsh and Parker (1984), and Marsh and Hau (2003), asserted that the academic self-concept is primarily based on academic ability. Students' high academic self-concept is due to their high academic ability. Marsh (1987) claimed that students' academic ability has a positive effect on the average ability of the school or class whereas the higher the students' ability is, the higher the average ability of the school would be. Since students' ability in Jordanian schools is high; the average ability of schools in Jordan is, consequently, high. The higher the average ability of a class or school, the lower students' average self-concept will be. Since the average ability of schools in this study were high, it is not surprising to find a strong support of the BFLPE. This finding is represented in Figure 5.1:

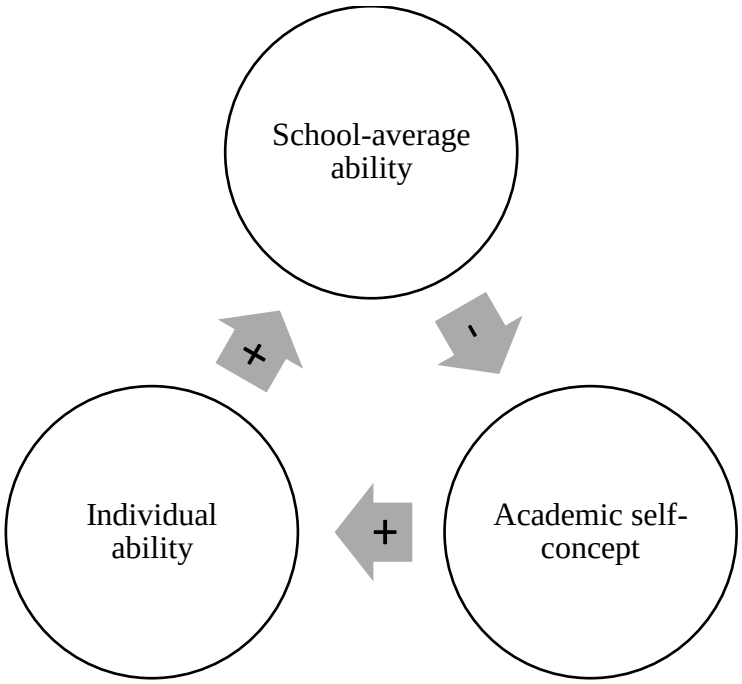


Figure 5.1: The big-fish-little-pond effect on academic self-concept

There would be some cultural reason that explains the current BFLPE findings. Education is very important for Jordanians. Jordanians view education as the key for a better future since it is a requirement in the Job market. This reason may create a competitive environment among school students who wish to progress to the university level and study one of the programmes that guarantees a well-paid job.

The school grade of the participants, tenth grade students, also played a role in the current findings. The tenth grade in Jordan is the final grade in the elementary education before students move to secondary schools. In this grade, students have to choose which secondary education direction to take. There are different secondary education routes in Jordan: Sciences, Arts, Informational technology, nursing and vocational routes. Every route requires a certain overall score in the tenth grade. For example, for a student to enter the sciences route, he/she would need an average score of 80% and above in all school subjects. For this reason, the tenth grade is a competitive class in Jordan as students compete for secondary school entries.

The BFLPE main finding in this study is consistent with the previous BFLPE findings. In Marsh and Parker (1984), an individual student's ability has a positive effect on his/her academic self-concept .59, but the effect of the school-average was a negative -0.27. The current finding is also consistent with Marsh (1987) which found that an individual's ability has a positive effect on academic self-concept .619; whereas, the school-average ability was found to have a negative effect on the students' academic self-concepts -.232.

The result in the current study also matches the findings from the cross-cultural researches of Marsh and Hau (2003), Seaton et al. (2009, 2010) Marsh et al. (2014) and Marsh et al (2015). Marsh and Hau (2003), found that the negative effect of a school-average ability on students' academic self-concept in academically selective schools, was consistent across 26 countries. The negative effect varied between -0.02 to -0.36.

Seaton et al (2009), also found that the school-average ability had a negative effect on students' academic self-concept in 41 countries. The negative effect varied between -0.014 to -0.713. In this study, Tunisia was the only Arab country that shared similar characteristics with the current study's context of Jordan. The negative effect of school-average ability on Tunisian students' academic self-concept was -0.161 which is very similar to the results found in the current study. This study was replicated in Seaton et al (2010) by adding more of a student's contextual characteristics into it. The negative effect of school-average ability on students' academic self-concept was -0.39.

The current finding is also similar to those found in some other Arab and Islamic countries such as in Saudi Arabia, Kuwait and Iran. In Marsh et al. (2014), the BFLPE in a Saudi context was -0.216 in girls' schools and -0.251 in boys' schools. In Marsh et al. (2015), the BFLPE was evident in the Kuwaiti, Iranian and Tunisian contexts. The BFLPE on academic self-

concept was -0.216 for Kuwaiti students, -0.268 among Iranian students and -2.16 among Tunisian students.

The BFLPE was evident in the four core subjects in this study: Arabic, English, Science and Mathematics. The individual's ability, in Arabic, had a positive effect on Arabic self-concept. The increase in Arabic ability increases Arabic self-concept. The high Arabic ability students showed high Arabic self-concept whilst low Arabic ability students showed low academic self-concept. However, the average ability of the class in Arabic had a negative effect on students' Arabic self-concept (-1.66). Students have a lower academic self-concept when they compare their Arabic abilities with more academically able students.

The findings in Arabic self-concept are consistent with the main findings in the overall academic self-concept. It suggests that, because the average ability of Jordanian tenth grade was high and competitive, students' Arabic self-concept was negatively affected. In comparison with the findings in other subjects' self-concepts, the size of the BFLPE in Arabic self-concept was larger.

sHowever, this study is the first study (that the researcher is aware of) which examines the BFLPE in specifically Arabic subject self-concept. Therefore, there are no previous studies of a specific Arabic self-concept to compare the current general result with. The current findings in Arabic self-concept suggests that the BFLPE spans all school subjects.

The BFLPE was also found in English self-concept. The Students' abilities in English language had a positive effect on their English self-concept. The high ability students in English had a high English self-concept and the lower English ability students had a lower English self-concept. The effect of the average ability of the class in English was negative (-1.04) which indicates that equally able students had a low English self-concept in high ability classes.

The finding, in English self-concept, is consistent with the overall academic self-concept and Arabic self-concept. In Jordan, English is a foreign language and an undesirable subject for students. For example, Abu-Melhim (2009) examined college students' attitudes towards learning English in Jordanian colleges and universities. He found that the majority of college students showed negative attitudes towards learning English. Some college students viewed English as a waste of time whilst others disliked the difficulty of the English language (Abu-Melhim, 2009). Al-Shourafa (2012), claimed that "despite the effort exerted by the ministry of Education in Jordan to develop students EFL writing skills in general and creative writing, including short story writing in particular, most students still face difficulties in executing their writing tasks and show a low level in their abilities to write in the target language" (p. 237). Jordanian students view English as a difficult subject requiring more skills and harder work than other subjects. Consequently, students' ability in English in this study was low which resulted on a lower average ability of the class or school. Since the average ability of school is low, the size of the BFLPE was low (Marsh and Hau, 2003).

The finding in English self-concept is consistent with the previous BFLPE research on overall academic self-concept; however, there is not a study that investigated the BFLPE on English as a foreign language, or on any foreign language. Thus, the result in the current study provides further evidence of the comprehensiveness of the BFLPE across core and non-core school subjects.

The students' abilities in Mathematics had a positive effect on their Mathematics self-concepts, in that Mathematics self-concept increases with the increase of student's Mathematics ability. Class-average ability in Mathematics had negative effect on students' Mathematics self-concept (-1.32); the increase in the average ability of a class in Mathematics decreases the students' Mathematics self-concept.

In this study, students' ability in Mathematics is high since their Mathematics self-concept is high. The higher the students' academic ability, the higher the average ability of the school will be. Therefore, the average ability of schools in Mathematics in this study were consequently high. Since the average ability of schools was high, it has a negative effect on students' Mathematics self-concept in that their Mathematics self-concept decreased (BFLPE).

There are some justifications of this result. The students in tenth grade compete in secondary education entries. Mathematics is required by all secondary education routes with less effect in the arts route. For high ability students, who would be competing for the Sciences route and nursing routes, which are considered the top secondary education routes, may have to show a high level of Mathematics when they apply for secondary schools. Mathematics is also important for those who are less able and competing for the information technology route, which also requires above average level of Mathematics.

Another reason that would explain the BFLPE result in Mathematics self-concept is students' attitudes towards Mathematics. Al-Srour and Al-Ali (2013), found that primary school students in Jordan showed a low Mathematics self-concept. This would be because of students' negative attitudes towards Mathematics as an "undesirable subject by students in many educational stages" (Ibid, p. 13). Although students have to achieve high scores in Mathematics to enter the scientific routes in secondary education, Mathematics is not a desirable subject for many Jordanian students. Thus, high ability students would not consider Mathematics for future university education. They would show less motivation, or interest, in Mathematics than similar ability students who are interested in further Mathematics courses at the university level. This would reflect on students' Mathematics self-concept as those who are interested/motivated in Mathematics would have higher Mathematics self-concept than those who are not. Previous studies, on the relationship between motivation, attitudes and academic self-concept, show that students who have a positive attitude towards study, and who are more motivated, are more

likely to have high academic self-concept (Guay, Ratelle & Litalien, 2010, Radi, 2013, Seaton et al, 2009, Marsh, Trautwein, Ludtke, Baumert and Koller, 2007). The high Mathematics self-concept, in this study, recorded an average ability of students in Mathematics which consequently become high. The high average ability of the school led to a decrease in students' Mathematics self-concept.

The Mathematics self-concept was one of the most popular self-concepts in the BFLPE research. The result of the Mathematics self-concept in this study comes in line with those results in Seaton et al. (2009), Seaton et al (2010), Marsh et al. (2014) and Marsh et al. (2015). Seaton et al. (2009) tested the BFLPE on Mathematics self-concept in a cross-cultural study of 41 countries. The findings in this study show that an individual's ability had a positive effect on a student's Mathematics self-concept. The positive effect varied in the 41 countries between 0.223 to 0.786. The negative effect of school-average ability on Mathematics self-concept varied in the 41 countries between -0.014 to -0.713

More evidence of the BFLPE in Mathematics self-concept was found in Seaton et al. (2010). The individual student's ability had a positive effect on Mathematics self-concept. The positive effect was 0.512. The average ability of schools had a negative effect on the students' Mathematics self-concept. The negative effect was -0.520.

Science self-concept among Jordanian students in this study was also affected by the BFLPE. The ability of an individual student's Science ability had a positive effect on his/her Science self-concept. This indicates that the level of a student's ability came in line with his/her Science self-concept. A low ability student shows low ability Science self-concept, an average ability student shows an average Science self-concept and a high ability student shows a high Science self-concept. However, the average ability of the class in Science had a negative effect on

students' Science self-concept (-1.47). An average ability student in a high ability school had a lower Science self-concept than when on the same level of ability in lower ability schools.

There are different reasons that might have led to this result. As mentioned earlier, tenth grade students compete for entries to the top secondary education routes. The Science route is the highest route that requires high scores in grade ten. This requires students to have a high scientific knowledge and skill. Therefore, this subject is more competitive for high ability students in the tenth grade.

Another reason that might have led to the BFLPE in Science self-concept, is students' attitudes towards Sciences. Hasan (1985), found a positive attitude towards Science among Jordanian primary school students. The students viewed Science subjects as interesting. Science seems to be a desirable subject for Jordanian students because it has a mixture of theoretical and practical tasks.

This finding is in line with previous findings of Science self-concept such as Nagengast and Marsh (2011, 2012). In those two studies, Nagengast and Marsh employed a Science dataset from PISA 2006 which was collected from 56 countries. It is the first two studies that focused on a Science self-concept in the BFLPE research. The results in those studies showed that the students' own abilities have a positive effect on their Science self-concept, but the average ability of the class had negative effect on students' Science self-concept (BFLPE). The negative effect of a school-average ability on Science self-concept varied and was evident in 50 of 56 countries, varying between 0.007 to -0.673. Those studies, alongside the current study, provided strong evidence of the general influence of the BFLPE on Science self-concept.

5.2 Gender and the BFLPE

Another aim in this chapter is to answer the second research question; "*Does Gender and School type influence the BFLPE?".* This research question consists of two parts: (a) the gender effect and (b) the school type effect on the BFLPE results. This section aims to answer the first part of the second research question regarding the gender influence of the BFLPE results.

The findings from the data analysis suggested that there is no significant gender influence on the BFLPE. This means that no matter what a student's gender is, all students experienced a decrease in their academic self-concept because of the negative effect of the class-average ability. The size of the BFLPE was similar in boys and girls. These findings accept the second null hypothesis; *"there is no relationship between gender and the BFLPE"* and decline the alternative hypothesis that; gender has an effect on the BFLPE.

This finding is consistent with the previous BFLPE research findings on gender. Marsh et al. (2007), examined the gender influence on the BFLPE in a Mathematics self-concept among German high schools. Although German high school girls showed lower Math self-concept than German high school boys, the size of the BFLPE was similar among boys and girls. Preckel, Zeidner, Goetz and Schleyer (2008), tested the BFLPE and gender ratio on girls and boys in gifted Israeli schools. The findings from this study showed no differences among Israeli boys and girls in academic self-concept. There was no significant difference in the size of the BFLPE either. They concluded that "*the effect sizes of the gender and gender ratio for explaining academic self-concept were rather small when compared to the effect size of individual achievement or class achievement"* (Ibid, p. 92-93). Marsh et al. (2014), also examined the BFLPE on Saudi single-sex boys and girls. Although Saudi girls showed a higher academic self-concept than Saudi boys, the size of the BFLPE was similar across gender.

This finding, the gender influence on the BFLPE, would be explained by the fact that the BFLPE mainly relies on academic ability. No matter what a student gender is, his/her academic ability will always show a positive effect on academic self-concept. Although, regardless what the gender of the class or school, the average ability of all students in that school would always have a negative effect on their academic self-concept.

In this study, the girls had a higher academic ability (M= 5.02, SD=.90) than boys (M=4.53, SD= 1.71). This is consistent with previous findings in PISA (OECD, 2006, 2009, and 2012) which shows that girls in Jordan outperform boys in literacy, Mathematics and Science. The Trends in International Mathematics and Science Study, TIMSS, (Mullis et al., 2004, 2008, 2012) also showed that the academic ability of the girls in Jordanian schools in Mathematics and Science is higher than the boys academic ability in those subjects. Since girls showed higher academic ability in the current study as well as in international assessments, their academic self-concept is expected to be high based on the fact that academic ability reflects positively on academic self-concept. This is evident in the current study's findings which showed that girls have higher academic self-concept (M=6.35, SD=1.19) than boys (M=5.90, SD=1.41). This finding is consistent with Matsh, Abduljabbar, Abu-Hilal, Morin, Abdelfattah, Leung, Xu, and Nagengast (2013), which compared the Mathematics and Science self-concept in TIMSS 2007 in Jordan and three other Arab countries with four Western countries. The results showed girls in Jordan, in particular, and in the Arab countries in general, have higher Mathematics and Science self-concept than boys. Abu-Hilal and Aal-Hussain (1997), tested the SDQ (Self-Description Questionnaire) on Arab male and female students in United Arab Emirates schools. The results showed that Arab girls have higher verbal, Mathematics and general self-concepts than Arab boys. Marsh et al. (2014), compared the academic self-concept between boys and girls in Saudi Arabia using data from TIMSS 2007. The results showed that Saudi girls have higher Mathematics self-concept than Saudi boys.

The comparison target, students prefer to use, would be another reason that led to the current findings. The findings of the gender influence on the BFLPE in this study would indicate that students chose same-sex comparisons to establish their academic self-concept, ensuring that no differences between boys and girls academic self-concept were found. The gender segregation in the single-sex schools would support this claim, because the opposite sex comparison is absent. The non-significant differences in students' academic ability, or academic self-concept, in co-educational schools would also support the previous claim that students chose same-gender comparison to establish their academic self-concept so that no differences in the size of the BFLPE between boys and girls was found.

It was also assumed that the gender segregation culture would affect academic self-concept; however, the current study's finding declined this claim. The writings on self-concept such as Shavelson et al. (1979), Marsh (1982), Marsh (1991) Abu-Hilal and Aal-Hussain (1997) proved that academic self-concept is not related to the general self-concept because, a high general self-concept does not indicate a high academic self-concept. Thus, no matter what man's status in their society and no matter how high their general, social or physical self-concepts are, it does not reflect on academic self-concept. An academic self-concept is based on academic ability, so a man would have high social self-concept, but because of his low academic achievements, he would show a low academic self-concept. It is misleading to assume that girls in Arabic and Islamic countries would have a lower academic self-concept because of the unequal environment they live in.

In terms of a subject specific self-concept, there is no gender influence on the BFLPE in three subjects: English, Science and Mathematics. However, there was a significant gender influence on the BFLPE in Arabic self-concept. The size of the BFLPE was larger among girls than boys. This means that a girl's Arabic ability was higher than a boy's which reflects on the high academic ability of schools where girls attend. In single-sex schools the gender differences in

the BFLPE in Arabic can be explained by the average ability of the class; however, in a co-educational school, the situation is different. The negative effect should be consistent or even larger on boys' Arabic self-concept than girls considering girls are abler. Girls suffered a larger BFLPE in co-educational schools than boys, which indicates that the opposite sex had a negative effect on girls' Arabic self-concept, alongside the school-average effect.

This is a contradictory finding since it is the first study in the BFLPE to find a gender influence on a subject of self-concept and it is not consistent with the findings in other school subjects; English, Mathematics and Science, in the same study. However, one of the reasons that led to this finding, is that the academic ability test in this study measures students' overall academic ability. There were probably gender differences in the Arabic academic ability among students in co-educational schools, which was not identified by the general ability test.

5.3 School type and the BFLPE

This section aims to answer the second part of the second research question: *"Does school type influence the BFLPE?* The findings from the data analysis shows that the type of school the students attend has an effect on the BFLPE. The co-educational schools significantly experienced a larger decline in their academic self-concept (BFLPE) than students in single-sex schools. The average ability of co-educational schools, in this study, was higher than the average ability of single-sex schools; the BFLPE was larger in co-educational schools. This finding decline the third null hypothesis that *"there is no relationship between school type and the BFLPE"* and accept the alternative hypothesis that *"there is a relationship between school type and the BFLPE".*

The finding of the school type influence on the BFLPE contradicts the findings in Marsh et al. (2014), which found no significant difference in the size of the BFLPE between single-sex

schools in Saudi Arabia and co-educational schools in Western countries. Probably this is because the comparison between single-sex schools and co-educational schools was made in different countries due to the absence of co-educational schools in Saudi. However, the comparison between the two types of schooling, single-sex and co-educational, is available in the Jordanian context. There is evidence that students in co-educational schools in Jordan have a better attainment than students in single-sex schools (OECD, 2009). Consistent with OECD (2009), the findings from the analysis in the current study show that students' in co-educational schools had higher academic ability (M=5.42, SD=72) than students in Single-sex schools (M=4.53, SD=1.53). The findings from the analysis also showed that students in co-educational schools had higher academic self-concept (M=6.60, SD=.98) than students in single-sex schools (M=5.94, SD=1.39). Academic achievement is an outcome of high academic ability. Since the achievement of co-educational schools is higher than single-sex schools, the ability of students in co-educational schools is consequently higher than students in single-sex schools. The higher students' academic ability in a schools is, the larger the negative effect of the average ability of that school will be. Thus, it is not surprising that the size of the BFLPE is larger in co-educational schools.

The, probable, reason that led to this finding is the fact that most co-educational schools in Jordan are either privately funded or state funded. Students have to pay high fees to be admitted to a co-educational school. In return, students have better teaching quality, personal and academic supervision, academic help and support, learning facilities and extra-curricular activities. The students who are paying high fees for their private education indicates that students in private schools come from a good socio-economic background. This evidence, in a OECD (2012) study, shows that the socio-economics of Jordanian private schools is higher than public schools. Unfortunately, a measure of socio-economic status was not included in this study. However, the evidence from OECD (2001a) and the research knowledge which

exists, suggests that the co-educational private schools in this study have high socio-economic status.

Empirical research such as those by Mueller and Parcel (1981), Coleman (1988), Bornstein and Bradly (2003), Sirin (2005) and many others, showed that socio-economic status has an established relationship with academic ability, and achievement, in that students' high socio-economic status would show a high academic ability and attainment. Academic ability plays a primary role in predicting a student's academic self-concept. Thus, there is a link between socio-economic status and academic self-concept which demonstrates that; a high socio-economic status reflects on a high academic ability and a high academic ability leads to a high academic self-concept. For example, students from high socio-economic status families would have better resources, facilities, support and help than those who would come from a low socio-economic status. This would reflect positively on students' academic abilities. When students' academic abilities rise, their academic self-concept increases. Thus, the contribution of SES over academic ability in predicting academic self-concept is weak (Seaton et al, 2010). Marsh and Parker (1984), found that a high socio-economic status had a positive effect on a students' academic self-concept in that students from a higher socio-economic background showed a high academic self-concept than others who came from a lower socio-economic background. Seaton et al. (2010) also found a positive effect of socio-economic status on Mathematics self-concept in that students from high socio-economic status showed higher Mathematics self-concepts than other students from other socio-economic backgrounds.

However, not all co-educational schools in Jordan, particularly in this study, are private or have high socio-economic status. Some co-educational schools in this study are state funded, but they are schools for privileged students. Those schools accept high achievers from public boys and girls single-sex schools. The purpose of these schools is to provide high achievers with extra academic support, to maintain their lasting high achievement. Since the academic ability

of the students in co-educational privilege schools is high, the average ability of these schools is also high. The average ability of a school has a negative effect on students' academic self-concept (BFLPE). Therefore, the BFLPE was larger in co-educational schools in this study. Equally, the able students had lower academic self-concept in co-educational schools in Jordan than the same ability peers in single-sex schools. This finding is in line with the previous BFLPE studies on academically selective schools for privilege, gifted and talented students. Zeidner and Schleyer (1999), compared academic self-concept amongst gifted elementary students in special classes and gifted students in mixed ability classes. They found that the gifted students in special gifted classes had lower academic self-concept than gifted students in mixed ability classes. This is because the ability of the gifted classes was higher than the ability in mixed ability classes. The high ability gifted students in special gifted classes had to compete with other high ability gifted students; whereas, the high ability gifted students in mixed ability classes had to compete with students who were less able than them.

More evidence of the effect of privileged schools is provided by Marsh and Hau (2003) which examined the BFLPE on academically selective schools in 26 counties. Those schools had very bright students. The findings from this study showed that academically selective schools had a negative effect on students' verbal and Mathematics academic self-concept. Those students in academically selective schools, had a lower academic self-concept then their peers in mixed abilities schools. This finding was consistent in the 26 countries.

Marsh et al. (2007), also examined the BFLPE on high academically selective schools in Germany. The German educational system is based on ability tracking, and schools are selected based on their ability; so there are schools for high ability students and other schools for lower levels of ability. The findings in this study demonstrated that by attending a high academically selective school has a negative effect on students' Mathematics self-concept. This study

provides evidence that high privileged schools also affect specific self-concepts like Mathematics.

In this study; however, the BFLPE did not differ between students in co-educational schools versus single-sex schools in Mathematics and Science self-concepts. Students in single-sex and co-educational schools suffered the same negative effect of school-average ability on their Mathematics and Science self-concepts, although, the average ability in co-educational schools was higher than the average ability of single-sex schools. Probably because Mathematics and Science are undesirable subjects among Jordanian students as was explained earlier.

The influence of school type on the BFLPE was also found in two subjects' self-concept: Arabic and English. The average ability, of school-average ability, had a larger negative effect on students' Arabic and English self-concepts in co-educational schools than in single-sex schools. Students in co-educational schools showed a greater decrease in their Arabic and English self-concept than students in single-sex schools. This is because the average ability of co-educational schools was higher than the average ability of single-sex schools.

Those findings, on the effect of school type on the BFLPE, contribute to the academic self-concept knowledge as well as the BFLPE knowledge whereby students were able to differentiate between the self-concept areas.

5.3 The Social comparison

This section aims to discuss the third research question: *"What are the social comparison standards that students use in Jordanian schools to establish their academic self-concept? Is there any evidence that gender influences the academic self-concept?* In order to answer this question, this section discusses the social comparison types and standards found among students when they judge their academic ability. The types and standards of social comparison are discussed based on the work proposed by; Festinger's (1954) social comparison theory,

downward and upward comparisons; Blanton, Buunk, Gibbson, and Kuyber (1999) social comparison choice; Rosenberg (1979) reflected appraisal and Skaalvik and Skaalvik (2002) external comparison.

However, the qualitative data analysis shows that social comparison exists among students in Jordanian schools. The interviews requested that students judge their own academic abilities based on a relative comparison such as their classmates, friends, or relatives. This is consistent with Festinger's (1954,) social comparison theory which hypothesised that individuals compare themselves with those who are similar to them. The comparison, with similar students, in Festinger's theory, provides individuals with diagnosed information for self-evaluation. This is also consistent with Stouffer et al. (1949), the relative deprivation theory, which hypothesised that individual's use the most relative reference to compare with. For example, students compare themselves with other students in their school because they are more relative to the comparison than children in other schools or non-educational settings. In Festinger (1954) and Stouffer et al (1949), two types of social comparison were identified, downward and upward comparisons, which are discussed in the next section.

5.3.1 The types of social comparison

The analysis of the interview identified the two main types of social comparison proposed by Festinger (1954); downward and upward comparisons. Upward comparison occurs when individuals compare their abilities with others who are better or abler than them; whereas, downward comparison occurs when individuals compare their abilities with others who are less able than them (Festinger 1954). For example, an average ability student would compare his Mathematics ability with the top student in the class in Mathematics (upward comparison). A

high ability student in Mathematics would compare his Mathematics ability with other students who are less able in Mathematics than him (downward comparison). The downward comparison has a positive effect on self-concept; whereas, upward comparison has a negative effect on self-concept (Blanton, Buunk, Gibbons, and Kuyber, 1999). For example, a student would have a high academic self-concept if he compared his ability with low ability students (downward comparison). The same student would have a low academic self-concept if he compared his ability with high ability students (upward comparison). In this study, both types of social comparison were evident in the interviews. The next section will discuss the findings in the analysis of the interview in this matter.

5.3.1.1 Downward comparison

The effect of downward comparison is evidenced to have a positive effect on students' academic self-concept. A male student at one of the single-sex schools responded on the question of how he would feel if he did better than other student's in his school by stating "*He would be proud of himself in front of other students".* Another male student in a different single-sex school also responded on the same question by "*I feel very happy and proud of myself".* The feeling of proudness for a good achievement was also evident among female students. A female at a single-sex school responded to the question of how she would feel when she achieves better grades than other students at her school by stating, "*I feel proud of myself and I hold my parents' heads up".* Holding a head up is an Arabic expression which means that someone is impressed with his/her own achievement, or sometimes other peoples' achievement, such as a teacher who is impressed with his student's achievement. The feeling of happiness as a result of a downward comparison was also evident in an interview with a female student in a different single-sex school. She responded on the same question of how she

would feel if she achieved better than other girls in her school by stating "*I would feel very happy; I would tease other girls [giggles]".* The downward comparison acts as a motivation for some students in a high ability setting. A high ability student, as he stated he was the top of his class in a co-educational school, would make it harder to stay in the top. He stated in a response on the question of how he would feel when he achieves higher than other students in his class by, "*I feel great and will work harder to stay in the top".* A female student in a co-educational school, who stated that she was the top student in her class, also commented on the question of how she would feel when she achieves better than her classmates in that, "*I feel great ... I always want to be in the top".* This response also indicates that downward comparison works as a motivator for students to work harder and maintain their academic level, especially in a high ability setting.

The analysis of the interviews showed that a comparison with the opposite gender was evident among male and female students in single-sex and co-educational schools in Jordan. Some students reported opposite gender comparisons outside school, such as comparisons with relatives and friends. In co-educational settings, opposite gender comparison was evident in the classroom. However, the effect of opposite gender comparison depends on the type of comparison whether downward or upward. Downward comparison with the opposite gender was evident in having a positive effect on students' academic self-concept; whereas, upward comparison with opposite gender was evident in having a negative effect on students' academic self-concept.

Downward comparison, with opposite gender, had a positive effect on students' academic self-concept. Students would have a higher academic self-concept when they compare their abilities with the opposite gender who would have a lower achievement. In the interviews, boys were asked about how they would feel if they did better than girls at school. An average ability male student, in a single-sex school, who was always compared to his cousin by his

parents because she does better than him at school stated that, "I *would feel proud of myself and would tell my parents to stop telling about her [his female cousin]".* Another student in a different single-sex school, who was always compared to his neighbour's daughter, stated that "*I would feel proud of myself, and I would make my parents proud of me in front of our neighbour".* Two students in different co-educational schools responded that they "*would feel happy and great"* when they do better than girls in their schools. Girls, on the other hand, benefited from downward comparisons with boys. Girls were asked how they would feel when they do better than boys they may know either at school or outside school. An average ability girl in a single-sex school stated that "*I would feel great because I always want to show them that girls are better than boys".* A high ability girl in a single-sex school responded that she "*would feel proud that she is doing better than boys".* Girls in co-educational schools also showed a good feeling when they made a downward comparison with boys. A high ability girl in co-educational school stated that she "*would feel happy and proud".* Another girl in a different co-educational school also stated she "*would feel happy".*

5.3.1.2 Upward comparison

The upward comparison was also evident in the interviews with boys and girls in single-sex and co-educational schools in Jordan. The effect of upward comparison was evidenced to have a negative effect on students' academic self-concept in this study. When students were asked how they would feel if they did worse than other students in their schools, a male student in one of the single-sex schools who was one of the bright students in his class responded that "*I would cry and ask my parents to speak to the teacher".* Another high-ability male student in a co-educational school responded as "*I would feel sad … I want to be always in the top"*. Another high ability student in a different co-educational school also stated that "*I would feel*

embarrassed in front of my teacher and parents". The negative effect of upward comparison on academic self-concept is also found among female students. An average ability female student in a single-sex school responded that she "*would feel bad and cry"* when other students in her class do better than her. A female student in a co-educational school, who stated that she was one of the top students in her class, stated that she, "*would feel embarrassed in front of [her] teachers, parents and friends"* if she did worse than other students in her class.

Those findings are consistent with the argument which found that upward comparison has a negative effect on students' academic self-concept. Martin (1986), claimed that upward comparison creates frustration, dissatisfaction and the feeling of inferiority. He added that downward comparison leads to the feeling of deprivation. Students in the interviews referred to the feeling of frustration and deprivation in their responses such as *crying, feeling bad, embarrassed;* these expressions indicate the feeling of frustration.

However, the upward comparison does not always have a negative effect on academic self-concept. In some cases, an upward comparison motivates students to work harder and improve their academic achievement. An average ability male student in a single-sex school responded on the question of how he would feel when he did worse than other students in his class with, "*I don't feel jealous, I wish the best for all students …it makes me feel I have to study harder".* In some other cases, upward comparison did not have an effect on students' academic self-concept at all. An average ability male student, in one of the single-sex schools, and an average ability female student, in one of the co-educational schools, stated that they "*would feel normal"* because they were not the best in their classes neither the worst.

An upward comparison with the opposite gender also has a negative effect on students' academic self-concepts. When asked how students would feel if the opposite gender did better than them at schools - an average ability student, in a single-sex school, responded on the

question of gender as "*my cousin in my age, I feel jealous when she get higher grades than me because my parents will tell me to compare myself with her"*. A high ability male student, in a single-sex school, stated that "*my neighbour's daughter studies all day and this makes me feel jealous because her parents will show off in front of my parents".* An average ability student in a co-educational school stated, *"I feel embarrassed ... I am a boy". The* girls also showed a lower academic self-concept when they experience upward comparisons with boys. Girls were asked how they would feel if a boy did better than them at school - an average ability girl, in a single-sex school, responded that she, *"would feel sad because boys think they are better than girls just because they are boys and they can have whatever they want".* A similar response was given by a female student in a different single-sex school who stated that she "*would feel jealous because boys think they are better than girls just because they are boys".* A bright girl in a co-educational school who stated she was the top student in the class responded that she *"would feel embarrassed"* and she wondered *"what if they are boys, are they better than us?".*

Those findings are consistent with Salovey and Rodin (1984, 1986), which claimed that jealousy usually emerged from a competition between individuals to accomplish a desire or an object. They added that jealousy emerging from social comparison involves a threat to self-concept. When a student feels jealous of others due to upward comparison, he/she would view himself as inferior and others as superiors in terms of academic ability. This means that others are better and abler than him/her. The feeling of inferiority indicates a low self-evaluation and a low self-concept.

5.3.2 The social comparison standards

Students use comparison standards when they compare their abilities with each other. The interviews in this study showed students compare their grades, participation, homework, teachers' appraisal with other students in the classroom. They use the outcomes of those comparisons to establish their academic self-concepts.

An academic self-concept reveals the perceptions that students hold about their ability or performance at schools (Marsh 2005). The analysis of the interviews show that the most common way used by the interviewees when they perceive their academic ability was the exams grades. When I asked an interviewee how well they thought they were doing at school, a male student in a single-sex school stated that he would use *"(his) grades on exams".* However, grades alone do not indicate how well a student is at school unless it is compared with a reference. For example, in a high ability class, a student who would achieve 9 out of 10 scores in an exam does not indicate whether he/she is in the top, middle or bottom of the class unless the scores of the rest of the class is available to him or her. If the rest of the class scored 10 out of 10 on the exam then that student would be bottom, but if the rest of the class scored less than 9 out of 10, then that student would be in the top of the class. Thus, I have asked the interviewee to explain how his grades would indicate his academic performance at school. He stated that *"yes, but the student who gets higher grades, is the top student in the class".* This statement indicates this student compares his exam grades with other students. This exam grade comparison with other students helps him to judge his academic ability and this judgement of ability indicates his academic self-concept. Thus, the higher the grades this student would achieve, the higher his academic self-concept will be. When the same student was asked how well he is doing at school compared to other students, he responded *"ok ... [explain]... I mean average ... I am not the best student".* This interview provides evidence of the negative effect

of upward comparison. Because this student compared his exams with other students who scored higher grades, his academic self-concept was lower.

The use of exam grades was also evident in an interview with a female student in a single-sex school who responded to a question of how would exam grades indicate how well she is doing at school? *"When I get high grades I know I am good student at the class".* This student has clearly stated that grades help her to perceive her academic level in comparison to others in her class. Another male student in a co-educational school stated that grades would indicate the ability level of a student among his peers as he stated *"marks on the exams show who is good and who is not".* The statement of this student indicates that students compare their grades with each other and they use the outcome of this comparison to establish their academic self-concept. Exam grades were used as a social comparison measure in several studies such Blanton, Buunk, Gibbson, and Kuyber (1999) and Huguet, Dumas, Monteil, Genestoux (2001). In these two studies, students compared their exam grades in different subjects with each other and used this comparison to evaluate their own performance. Skaalvik and Skaalvik (2002), claimed that exam grades given by teachers are an easy way for students to compare their academic abilities. They added that "grades may give the students a relatively accurate impression of their performance relative to other students in school" (p. 237). In schools where exam grades are not anonymous (published or posted to all students), exam grades are the most available comparison standard for students to use when they compare with other students. Students tend to use their exams grades to rank themselves relative to others in school.

However, in some schools, exam grades are anonymous (students do not see each other's grades). In this case students may use teachers' comments on exam grades in their comparison with each other. Skaalvik and Skaalvik (2002) claimed that "teachers may make comments in front of other students concerning their expectations in some cases" (p. 237). This was evident, in this study. In a response by a female student in a public single-sex school when asked about

the way she would judge her academic ability if other students did not tell her their scores or grades; *"hmm … teacher says the names of students who got the highest marks so I don't need to ask other students".* When the same student was asked about how well she was doing at school, she responded *"there are three girls better than me in my class … you can say I am fourth".* This student relied on her teacher's comments about the rank of students' abilities in the class. She recognised that there were three girls outperforming her at school, so she ranked her academic ability as the top fourth. This is more evidence of the negative effect of upward comparison on students' academic self-concept. Because this student had to compare her ability with three other students, who were better than her, her academic self-concept was lower than the other three.

The announcement of school grades, by a teacher, makes the social comparison available for all students to base their evaluation about their academic ability on. This is also found in a response by a male student in a co-educational public school who stated that *"teacher says who got the highest mark and we also ask each other what we got in the exam".* This student also relies on teachers' comments on exam results to judge his academic ability. When the same student was asked about how well he was doing at school, he responded *"I am one of the top".* This student compared his exams results with those mentioned by his teacher's comments and established that he was one of the top students. This is evidence of the positive effect of downward comparison since this student compared his grades with others who scored lower than him and he established a high academic self-concept.

In order to explore more scales of social comparison, I have asked the interviewees to identify any other ways they use to judge their academic performance at school. The second common way frequently mentioned by interviewees is participation in the class. Holding hands up is the way to participate and to answer a teacher's questions. The more frequent a student participates in a class, the brighter he/she would be viewed by other students. Skaalvik and

Skaalvik (2002), claim that a student can observe others who would be able to answer questions and provide solutions for problems and use this observation as a comparison standard to base his self-evaluation on. This is confirmed in an interview with a female student, in a single-sex school, *"when I hold my hand up to answer a question, teacher and other students know I'm good and prepared for the lesson".* This student was viewed by other students as a good student because she sometimes participates and answer teachers' questions. When she was asked about how well she was doing at school, she claimed that *"I am good compared to some others".* This indicates that this student established her academic self-concept as a good student, to some extent, on her participation in the class. This is evidence of the positive effect of downward comparison based on participation. Because this student compared her participation with others who did not participate, her academic self-concept was higher than some others. Another example comes from an interview with a female student in a co-educational school. This student was asked to identify others ways of judging her academic ability than school grades, she responded: *"hmm… participation in the class … I always hold my hand up to answer a question".* This student uses participation in the absence of other comparison standards to establish her academic self-concept.

In some cases, students who participate frequently get higher grades than those who do not participate. This is evident in an interview with a male student at a single-sex school when he stated *"I raise my hands to answers teacher's questions and the teacher said who participates get extra grades".* More support of this claim is found in an interview with a female student of a public co-educational school who stated *"teacher said students who participate in the class more get more marks".*

Another way of establishing academic self-concept is found through homework. Students who do their homework regularly seem to be considered as good students at school. When I asked a male student at a co-educational private school about any other way that he may use to judge

his school performance, he replied that *"homework, students who do their homework are good"*. This student compare himself with other students who do not do their homework and he used this comparison to establish his academic self-concept. When this student was asked how well he was doing at school, he replied *"I'm good ... there are other students better than me"*. Although this student was worse off than some other students, his downward comparison with other students, who do not complete their homework, made him feel good about his ability. This is further evidence of the positive effect of downward comparison. Another confirmation of the use of homework as a comparison of standard, found in an interview with a female student at a private co-educational school, stated that she *"always does (her) homework and (her) teacher said good students do homework"*. When this student was asked about how well she was doing at school, she responded that *"I'm the top"*. This student perhaps established her academic self-concept as a top student not only on exam grades but also on the completion of homework. However, both examples have only emerged from interviews with students from co-educational schools, which would indicate that homework at co-educational schools is very important in school evaluation.

Furthermore, some students rely on a teacher's evaluation to establish their perceptions about their academic abilities. When teachers appraise a student, that student becomes a comparative reference for the rest of the class. For example, a teacher would comment on a student's performance as the best student in the class, this would make other students compare their ability of the best student in the class and compete with him/her. Skaalvik and Skaalvik (2002), claimed that a teacher's verbal and nonverbal comments on students' performance provides other students with a frame of reference to compare with. A teacher's comments are either complementary for a direct observation, or compensatory for other observations (Skaalvik and Skaalvik 2002). In this study, a teacher's comments, and its role in social comparison, were evident in an interview with a male student, in a private single-sex school, who answered the

question of the way he would judge his academic ability by stating *"my teacher always says I am one of the good students in the class"*. Another example was found in an interview with a male student, in a co-educational private school. When I asked this student about any other ways of judging his ability in the absence of school grades, he responded that *"hmm… then teacher would tell us"*.

Another method a student uses to judge their academic ability is an appraisal from parents. Parsons, Adler and Kaczala (1982), Felson (1981, 1989, 1993), Felson and Reed (1983), found that a parent's appraisal of their child's academic abilities had a positive effect on the child's own self-appraisal, as well as on their performance at school. A parent's comments on their child's school performance, either directly to the child or indirectly through conversation with others such as teachers and relatives, might have influence on the academic self-concept of the child. A child who is told by his parents that s/he is good at school might perceive his academic performance as a good student and the child may take this appraisal to satisfy themselves even if the appraisal is not realistic. This is evident in an interview with male student, in a single-sex private school, who stated that, *"(his) parents praised me in front of people and they said (he) will be a doctor"*. Being a doctor is a high career aspiration and will require a very good academic achievement. By associating the student to being a doctor in the future, could be deemed as appraisal of his substantial performance at school. This may reflect, to some extent, on his academic self-concept. Another example for this claim found in an interview with a male student, at a public co-educational school, has him stating that *"hmm … (his) parents told all people (he is) good at school and they want (him) to be a doctor".* In this example parents set a career road-map for their child as they want him to be a doctor which requires a very good school achievement. This would influence the child's academic self-concept since it has motivational properties that enhance the academic self-concept.

5.4 Summary

This chapter discusses the findings from the data analysis in relation to the purpose, research questions and hypothesis. An embedded mixed method research design was used. The findings from the quantitative data analysis, shows that the BFLPE can be applied to the Jordanian context. Students in Jordanian schools benefited from the positive effect of individual ability on academic self-concept, but experienced negative effect of school-average ability. The higher a student's ability is; the higher academic self-concept he shows. However, an increase in the average ability of the class, decreases students' academic self-concept. These findings provided further evidence of the universality of the BFLPE.

The BFLPE was also evident in four core subjects in the Jordanian schools: Arabic, English, Mathematics, and Science. The individual ability had a positive effect on the four subjects' self-concepts, but the school-average ability had a negative effect on them. These findings provided evidence of the generalizability of the BFLPE across subjects.

This study also aimed to investigate the relationship between gender and the BFLPE. Assuming that in a gender segregated environment, such as in the single-sex schooling, and the male-predominance culture would be affect girls' academic self-concepts and as result increase the BFLPE. However, the findings from the data analysis shows no strong association of gender with the BFLPE. Male and female students experienced almost the same size of the BFLPE, although females were abler and had higher academic self-concepts than males. These findings provided new evidence of the generalizability of the BFLPE across gender.

This study also investigated the relationship between schooling types; single-sex and co-educational schooling, on the BFLPE. The findings from the analysis showed that schooling types had an influence on the BFLPE. A Student at a co-educational school experienced a larger BFLPE than students at a single-sex school. This is because the average ability of co-

educational schools is higher than the average ability of single-sex schools. As explained earlier, this could be because most co-educational schools in Jordan came from high socio-economic backgrounds since they are private. Or it could be because some of the co-educational schools in this study were privilege schools. However, these findings provided new evidence of the generalizability of the BFLPE across schooling types.

The findings from the qualitative data analysis were also discussed in relation to the types of comparison and standards of comparison. The two types of social comparison proposed by Festinger (1954), downward and upward comparisons, were identified. Students used both types of comparison to establish their academic self-concepts. As proposed by Festinger (1954), the downward comparison had positive effect on a student's academic self-concept; whereas, upward comparison had negative effects on student's academic self-concept.

The standards of social comparisons were also discussed as proposed by Blanton, Buunk, Gibbson, and Kuyber (1999), Rosenberg (1979), and Skaalvik and Skaalvik (2002), where students used different standards to judge their academic abilities and establish their academic self-concepts. A student's exam grades, participation in the class, homework, a teacher's comments, and a parent's appraisal were identified by students as standards of social comparisons. These findings suggested that school grades are not the only standard used in forming academic self-concept.

Chapter 6: Conclusion

6.1 Summary of the thesis

This thesis discussed the question of whether the Big Fish Little Pond Effect (BFLPE) applied to Jordanian schools. It examined the associations of gender and school type; single-sex and co-educational schools with the BFLPE. It also investigated the social comparison types and standards that establish students' academic self-concept. Consistent with the BFLPE model, the study proves that a student's own abilities positively affect their own academic self-concept, whilst the average ability of the class negatively affects their academic self-concept. A high ability student would have a higher academic self-concept at a school where the average ability is low, than at a school where the average ability is high.

The BFLPE is concerned with a student's academic self-concept. This thesis provides a detailed review of the self-concept argument, including the definition, its importance and its dimensionality. This thesis evaluated the debate around the dimensionality of self-concept. Because academic self-concept emerged from a multidimensionality view which divided self-concept into domains such as academic, social, and physical, this thesis focused on the multidimensionality view.

The BFLPE was based on different social and psychological theories such as, social comparison theory and relative deprivation theory. This thesis presents, in detail, those theories in relation to purpose of the current investigation. Social comparison theory hypothesised that individuals perceive their abilities by their knowledge of themselves or by comparing themselves to others. It hypothesised that individuals choose to compare themselves to others who are similar, or slightly better than them. The social comparison theory identified two types

of comparison: downward and upward comparisons. Downward comparisons are the comparisons with others who are worse off than oneself; whereas, upward comparison is the comparison with others who are better off than oneself. Downward comparisons have a positive effect on an individuals' self-perceptions; whereas, an upward comparison has a negative effect on their self-perceptions. The current study sought to find the two types of comparisons used by students in Jordanian schools, alongside comparison standards they use to make a downward or upward comparison such as exams' grades, teachers' comments, participation, homework etc. This thesis also suggests that students would have lower academic self-concept when they compare themselves with others who are better off than them. The abler other students are; the lower a student's academic self-concept would be.

Relative Deprivation Theory predicted that an individual would compare their abilities with others who are most relative to them. For example, a student would compare himself with other students in his school, but it would unlikely he would compare himself with other students from other schools. Relative deprivation theory also predicted that individuals have a lower self-concept when they compared themselves with better off others. The current study found that equally able students in Jordanian schools would have lower academic self-concept in high ability schools, than their peers in low ability schools.

However, in order to achieve the study's aims, this thesis employed a mixed method research design. The study relied on quantitative and qualitative data to answer any outstanding enquiries. An embedded mixed method design was chosen, which required using quantitative data for the primary purpose of the thesis and qualitative data for the secondary purpose. In this study, the primary purpose aimed to examine the BFLPE in the context of Jordan. It also aims to examine the influence of gender on the BFLPE. Also, it aimed to investigate the effect of schooling types; single-sex versus co-educational schooling, on the BFLPE. The secondary purpose aimed to investigate the social comparison standards students used when they establish

their academic self-concept. However, the embedded mixed method design required that each type of data needed a data collection instrument that suited it. Also, each type of data required it to be collected and analysed separately.

The quantitative data was collected using two instruments: the academic self-description questionnaire (ASDQII) and an ability test. Full details about the research instruments were provided in the methodology chapter. The reliability and validity of the two instruments were tested. Both instruments were highly reliable and internally valid. The qualitative data was collected using semi-structured interviews. Semi-structured interviews required a pre-list of questions to be asked in the interviews, but it allowed for the emergence of new (sub)questions. The trustworthiness of the interviews was examined. The interviews were piloted on students who did not take part in the main study. The final pre-list interview questions were confirmed for the main study.

The instruments were administered on a multi-stage cluster random sample. This type of sampling required dividing a large population into different groups, or clusters, and randomly choosing a sample that would represent each cluster, before finally selecting a random sample from the sample of each group. In this study, students from 12 single-sex and co-educational schools were randomly chosen to take part in the study. A total number of 269 male and female students completed the ASDQII questionnaire and the ability test. In addition, six students were randomly chosen to take part in the face-to-face interviews.

The processing of the research instruments was arranged in two stages: pre-administration and post-administration. In the pre-administration, an ethical approval from Durham University, where this study is presented, was sought. An ethical approval for school access from the Ministry of Education in Jordan was obtained. The researcher also obtained a consent letter for participating in the interviews from the students' parents. The pre-administration stage also

agreed to the date/place for administering the questionnaires/tests together with conducting the interviews. The questionnaires, ability tests and interviews took place at different times in each school. The pre-administration process also included meeting with teachers, who distributed the research instruments, and training them on the best practice of dispensing/collecting the questionnaire/test sheets. The interviews with female students were conducted by female teachers; therefore, the pre-administration process ensured teachers were trained on how to conduct the interviews. The post-administration process, however, involved collecting the data back from schools and preparing the data for analysis.

The quantitative data was analysed using an Analysis of Variance (ANOVA). The ANOVA analysis started by presenting a descriptive result from the ability test and the ASDQII questionnaire. The descriptive results showed the means and standard deviations of students' scores on the two instruments. The ANOVA analysis reported any significant effect of an individual student's ability, and school-average ability, on academic self-concept. It also reported any significant effect of gender, and school type, on the effect of school-average ability on academic self-concept. The interaction between gender and school type was also reported. The ANOVA analysis was repeated on the four school subjects of: Arabic, English, Mathematics and Science.

The qualitative data were analysed using the Constant Comparative Analysis (CCA) method. This analysis requires the researcher to reread the interview transcripts in order to familiarise himself with the data. It also required the coding of statements from the interviews and categorizing them into themes. Thereafter, statements in each thematic category were compared and contrasted with each other. Based on the information provided, four categories were created and labelled as *social comparison types, social comparison standards, effect of social comparison types,* and *gender effect.* The statements in each category were used as a quotation in the findings and discussion chapter.

The findings from the data analysis shows that the BFLPE applied to the Jordanian context. The students' own abilities had a positive effect on their academic self-concept; whereas, the average abilities of schools always had a negative effect on students' academic self-concept. This finding was consistent in the four school subjects: Arabic, English, Mathematics and Science. The data analysis also shows that the gender did not any relationship with the BFLPE. Both males and females experienced the same results of the BFLPE. This finding was consistent across three school subjects: English, Mathematics and Science. However, the gender had an effect on the BFLPE on Arabic self-concept. Girls experienced the larger BFLPE on Arabic self-concept than boys, although girls had a higher ability than boys.

Furthermore, the data analysis showed that the school type is associated with the BFLPE in Jordan. Students at co-educational schools experienced the larger BFLPE than their peers in single-sex schools. The school type effect on the BFLPE was consistent on the four school subjects.

The analysis of the interviews showed that students in Jordan compare their academic abilities with each other. The two types of social comparison, downward and upward comparisons proposed by Festinger (1954), were found among male and female students. The downward comparison was evident in the interviews as to having a positive effect on students' academic self-concept. The upward comparison was evident in the interviews as to having a negative effect on students' academic self-concepts. The opposite-gender comparison was evident in the interview as to having a positive effect on academic self-concept when it was downward comparison, but a negative effect when it was an upward comparison.

Alongside the downward and upward comparisons, students used comparison standards to judge their abilities and establish their academic self-concepts. The students primarily used their exam grades to judge their academic abilities. Their participation was another way that

students used to judge their abilities. The students who participated more, such as holding their hands up and answering teachers' questions, were viewed as brighter students. Homework, is evident in being a social comparison standard. Students who did their homework regularly were good students at school. Both, teachers' and parents' comments and appraisals helped students to judge their abilities and establish their academic self-concept.

The findings from the quantitative/qualitative data analysis have theoretical and practical implications which will be discussed in the next sections.

6.2 The Implications of the study

This study has theoretical implications for educational and psychological research. It provides new evidence of the generalizability and universality of the BFLPE since Jordan is a new context in BFLPE research. It is considered as further support for the generalizability of the BFLPE on Middle Eastern and Islamic countries as proposed by Marsh et al. (2015) and the Arab countries as proposed by Marsh et al. (2014). It is also considered as furtherance to supporting evidence for the universality of the BFLPE on collectivists' cultures as proposed by Seaton et al. (2009).

This study supports the evidence that a school-average ability has a negative effect on students' academic self-concept. It provides further support of the BFLPE prediction that equally able students have a lower academic self-concept in high ability schools than if they attended low ability schools.

Furthermore, this study provides new evidence of the relationship of schooling type; single-sex versus co-educational schooling on academic self-concept. It contradicts the evidence provided by Marsh et al. (2014), that schooling type does not affect the BFLPE. Students at co-

educational schools in Jordan, particularly in this study, seem to suffer a larger BFLPE than their peers in single-sex schools.

This study provides further evidence that gender does not influence the academic self-concept, even in gender segregation cultures. Since the academic self-concept mainly relies on academic ability, instead of gender. This study support the evidence provided by Marsh at al. (2007) and Preckel at al. (2008), which suggests that gender did not affect the BFLPE. This suggests that academic self-concept does not correlate with self-esteem (general self-concept) primarily because, it would be expected that males would have a higher self-esteem than girls in a male dominant culture regarding the Arab Jordanian culture.

This study provides a further test of the validity and reliability of the ASDQII in the new context of Jordan. The ASDQII was mainly tested in Western countries, which was evident in its robustness, as a measurement for a specific subject self-concept. In this study, the ASDQII was highly reliable and internally valid which indicates its robustness and generalizability on new contexts.

The BFLPE relies more heavily on social comparison theory than other theories. It proves that an upward comparison in a high ability setting has a negative effect on students' academic self-concept. This study provides further examination of the social comparison theory. It provides further evidence of the effect of the downward and upward comparison on academic self-concept. It supports the evidence that a downward comparison has a positive effect on a students' academic self-concept, whereas, an upward comparison has a negative effect on a students' academic self-concept. However, this study suggests that sometimes an upward comparison would act positively, as a motivator, affecting academic self-concept.

This study provides new evidence for different social comparison standards, or choices, used when establishing academic self-concept such as participation, homework, teachers and parents'

appraisals. This suggests that grades are not always the way students judge their academic abilities.

6.4 The limitations of the study

This study has certain limitations in relation to the design, sample size and measurements. The study employed an embedded mixed methods design which required two different datasets, quantitative and qualitative, to be collected and analysed separately. It did not allow a triangulation of the results from one dataset to another i.e. comparing and contrasting the findings from quantitative data with qualitative data. This is because the qualitative part of this study was added after the quantitative data was collected.

The sample size in this study is relatively small. If the sample size was larger, new evidence may have emerged. However, because the schooling system in Jordan is predominantly single-sex, it is difficult for the researcher to find more co-educational schools to increase the sample size. Therefore, the researcher worked with the most available and feasible sample size.

The students' scores on the ASDQII questionnaire were related to their scores on the ability test. The ASDQII tested different subjects' self-concept. The ability test questioned students' overall general knowledge. The test had different varieties of questions, from multiple choice to open-ended questions, and it tested a students' scientific knowledge, mathematical skills, reading and writing skills. It would have been more effective if each school subject ability was tested independently in a subject ability test. The students' scores in each of the subject ability test would have been related to their subjects' self-concepts.

There is also a limitation in the interviewing. The interviews with female students, in this study, were conducted by female teachers, since the researcher was not able to hold interviews with female students, in female schools, for cultural reasons. Possibly, if the researcher was able to conduct the interviews with female students by himself, more questions might have emerged. Hypothetically, more educational findings, in relation to the opposite-gender comparison and effect, could have been presented. However, any improvements could be recommended in further researches.

6.5 Recommendations for further research

Some worthwhile findings emerged from the data analysis, that were not explained enough in this study. The BFLPE relied mainly on the academic ability of the students and the average ability of the schools which were based on the students' grades. However, there are more ways students use to judge their abilities such as those emerging from the interviews (participation, homework, teachers and parents' appraisals). Much further research is needed to test the effect of those social comparison standards on the BFLPE.

Since the BFLPE assumes that the students compare their academic ability, or achievements, with each other to establish their academic self-concept, it is assumed that students know each other's achievement. However, the interviews show, in some cases, that school grades are anonymous. This suggests that students would not know each other's achievement scores and as result they would not be able to compare themselves with each other. Therefore, a further research would be needed to investigate whether the BFLPE would still exist in schools where the ability of the students is anonymous.

One of the research findings suggested that when the subject was undesirable, a students' ability was lower, which also reflected on the school average ability being low. When the

school average ability is low, it would be expected that the size of the BFLPE is smaller. For example, in a subject such as English as a foreign language, students found it difficult and undesirable; thus, the size of the BFLPE was smaller compared to other subjects. This suggests that further research is needed to investigate the relationship between the attitudes towards school subjects and the BFLPE.

The BFLPE proves that an upward comparison has a negative effect on a students' academic self-concept. However, there is evidence from one of the interviews that upward comparison can sometimes act as a motivator to enhance a students' performance. When a students' academic performance is enhanced, their academic self-concept will enhance. Thus, further research is needed to examine the positive effects of upward comparison on students' academic ability and academic self-concept.

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APPENDICES

Appendix A: Academic self-description questionnaire II (ASDQII) (English Version)

Student's questionnaire

Student's name: .....

School: ..... Grade: .....

Age: ..... Gender: Male / Female

PLEASE READ THESE INSTRUCTIONS FIRST

This is not a test - there are no right or wrong answers.

All information supplied will be kept strictly confidential.Your answers are confidential and will only be used for research or program development. Your answers will not be used in any way to refer to you as an individual. This is a chance for you to look at how you think and feel about yourself. It is important that you are honest and that you give your own views about yourself, without talking to others.

On the following question consists of a series of statements that are more or less true (or more or less false) descriptions of you. Please use the following eight-point scale to indicate how true (like you) or how false (unlike you), each statement over the page is as a description of you. Please do not leave any statements blank.

1 Definitely False	2 Mostly False	3 False	4 More false than true	5 More true than false	6 Mostly true	7 True	8 Definitely

	Statement	**1 Definitely False**	**2 Mostly False**	**3 False**	**4 More false than true**	**5 More true than false**	**6 Mostly true**	**7 True**	**8 Definitely**
1	Compared to others my age, I am good at all school subjects	1	2	3	4	5	6	7	8
2	I am satisfied with how well I do in all school subjects	1	2	3	4	5	6	7	8
3	I learn things quickly in all school subjects	1	2	3	4	5	6	7	8
4	I have always done well in all school subjects	1	2	3	4	5	6	7	8

5	I learn things quickly in English language classes	1	2	3	4	5	6	7	8
6	Compared to others my age, I am good at English language classes	1	2	3	4	5	6	7	8
7	I am satisfied with how well I do English language classes	1	2	3	4	5	6	7	8
8	I have always done well in English language classes	1	2	3	4	5	6	7	8
9	I am satisfied with how well I do Arabic language classes	1	2	3	4	5	6	7	8
10	I learn things quickly in Arabic language classes	1	2	3	4	5	6	7	8
11	I have always done well in Arabic language classes	1	2	3	4	5	6	7	8
12	Compared to others my age, I am good at Arabic language classes	1	2	3	4	5	6	7	8
13	I have always done well in Sciences classes	1	2	3	4	5	6	7	8
14	I am satisfied with how well I do Sciences classes	1	2	3	4	5	6	7	8
15	Compared to others my age, I am good Sciences classes	1	2	3	4	5	6	7	8
16	I learn things quickly in Sciences classes	1	2	3	4	5	6	7	8
17	Compared to others my age, I am good at Maths classes	1	2	3	4	5	6	7	8
18	I have always done well in Maths classes	1	2	3	4	5	6	7	8
19	I am satisfied with how well I do Maths classes	1	2	3	4	5	6	7	8
20	I learn things quickly in Maths classes	1	2	3	4	5	6	7	8

Thank you for completing this questionnaire

Appendix B: Academic self-description questionnaire II (ASDQII) (Arabic Version)

إستبانة الطالب

إسم الطالب: .....

ألمدرسة: ..... الصف: .....

العمر: ..... الجنس: ذكر \ انثى

أرجو قراءة التعليمات اولا

هذا الاستبيان ليس امتحان مدرسي فلا يوجد اجابة صحيحة او خاطئه لكل سؤال

جميع المعلومات التي ستقوم بتذويدها من حلال هذا الاستبيان ستحفظ بسرية تامة. اجاباتك ستكون سرية وستستخدم لاغراض البجث فقط. اجاباتك لن تستخدم مطلقا لدلالة عليك شخصيا. هذه فرصة لك لنظر الى كيف تشعر او تفكر حول شخصك. من المهم ان تكون صادق وتعطي وجهة نظرك عن شخصك من غير التحدث الى الاخرين.

يتكون السؤال التالي من مجموعة من العبارات التي قد تكون اكثر او اقل صحه (اكثر او اقل خطأ) في وصف شخصك بحيث **1 تماما خظأ الى 8 تماما صحيح**. ارجو **وضع دائرة** حول الرقم الذي يمثل درجة الصحة او الخظأ في العبارات حسب رأيك الشخصي.

ارجو الاجابة على جميع الاراء وعدم ترك اي سؤال فارغ

1 تماما خطأ	2 في الغالب خطأ	3 خطأ	4 اكثر خطأ من ان يكون صحيحا	5 اكثر صحيحا من ان يكون حطأ	6 صح	7 في الغالب صحيح	8 تماما صحيح

	العبارة	1 تماما خطأ	2 في الغالب خطأ	3 خطأ	4 اكثر خطأ من ان يكون صحيح	5 اكثر صحيحا من ان يكون حطأ	6 صح	7 في الغالب صحيح	8 ماما صحيح
1	بالمقارنة مع الاخرين من عمري, انا جيد في جميع المباحث الدراسية	1	2	3	4	5	6	7	8
2	انا راض عن مستواي في جميع المباحث المدرسية	1	2	3	4	5	6	7	8
3	اتعلم الامور بسرعة في جميع المباحث المدرسية	1	2	3	4	5	6	7	8
4	اقدم مستوى جيد في معظم المواد الدراسية	1	2	3	4	5	6	7	8
5	اتعلم الامور بسرعة في حصص اللغة الانجليزية	1	2	3	4	5	6	7	8
6	بالمقارنة مع الاخرين من عمري, انا جيد في اللغة الانجليزية	1	2	3	4	5	6	7	8
7	انا راض عن مستواي في اللغة الانجليزية	1	2	3	4	5	6	7	8
8	دائما ما اقدم مستوى جيد في دروس اللغة الانجليزية	1	2	3	4	5	6	7	8

9	انا راض عن مستواي في اللغة العربية	1	2	3	4	5	6	7	8
10	اتعلم الامور بسرعة في حصص اللغة العربية	1	2	3	4	5	6	7	8
11	دائما ما اقدم مستوى جيد في دروس اللغة العربية	1	2	3	4	5	6	7	8
12	بالمقارنة مع الاخرين من عمري, انا جيد في اللغة العربية	1	2	3	4	5	6	7	8
13	دائما ما اقدم مستوى جيد في دروس العلوم	1	2	3	4	5	6	7	8
14	انا راض عن مستواي في العلوم	1	2	3	4	5	6	7	8
15	بالمقارنة مع الاخرين من عمري, انا جيد في دروس العلوم	1	2	3	4	5	6	7	8
16	اتعلم الامور بسرعة في العلوم	1	2	3	4	5	6	7	8
17	بالمقارنة مع الاخرين من عمري, انا جيد في دروس الرياضيات	1	2	3	4	5	6	7	8
18	دائما ما اقدم مستوى جيد في دروس الرياضيات	1	2	3	4	5	6	7	8
19	انا راض عن مستواي في الرياضيات	1	2	3	4	5	6	7	8
20	اتعلم الامور بسرعة في الرياضيات	1	2	3	4	5	6	7	8

شكرا لوقتكم في تعبأة الاستبانة

Appendix C : Ability Test

اختبار قراءة واستيعاب

اسم الطالب \ الطالبة..... الصف والشعبة: .....

المدرسة: ..... الجنس: ذكر \ انثى (ضع دائرة)

عزيزي الطالب \ عزيزتي الطالبة

ادعوك للمشاركة في اختبار القراءة هذا المعد لأغراض البحث العلمي. هذا البحث بعنوان ***"فاعلية نموذج السمكة الكبيرة في البركة الصغيرة على رأي الطلاب الشخصي بمستواهم الاكاديمي في مدارس الذكور والاناث في الاردن"*** مقدم كمتطلب لإتمام درجة الدكتوراه في جامعة درهم البريطانية كلية التربية. المشاركة في هذا الاختبار اختياري تطوعي وان لم ترغب بالمشاركة, لك الحق بالانسحاب من الاختبار في اي وقت تشاء ودون اي اثر سلبي عليك. فهو ليس اختبار مدرسي وعلاماته لا تدخل في تحصيلك الدراسي الفصلي او السنوي. سيتم استخدام اجاباتك على اسئلة الاختبار لأغراض البحث العلمي والشخص الوحيد الذي سيطلع عليها هو الباحث فقط. جميع اوراق الاجابة سيتم حفظها بمكان امن من قبل الباحث الذي سيقوم بإتلافها بعد الانتهاء من الدراسة.

هذا الاختبار يحتوي على جزئيين. الجزء الاول عبارة عن نص بعنوان **"النحل"** يليه اربعة اسئلة تتطلب منك الاجابة عليها. السؤال الاول والثالث يتطلبان منك وضع دائرة حول الاجابة الصحيحة من أ – ث. اما السؤال الثاني والرابع فيتطلبان اجابة انشائية.

الجزء الثاني فهو عبارة عن جدول حول ايام وساعات الدوام في مكتبة المور لاند يليه سؤالان يتطلبان الاجابة. السؤال الاول يتطلب الاجابة بكلمات اما السؤال الثاني فيتطلب وضع دائرة على الاجابة الصحيحة.

إجاباتك ذو قيمة وستساعدنا في الوصول الى نتائج البحث المرجوة بالشكل الصحيح فأرجو الاجابة على الاسئلة بشكل كامل واعادة ورقة الاجابة الى المعلم المشرف شاكرا تعاونك.

الباحث

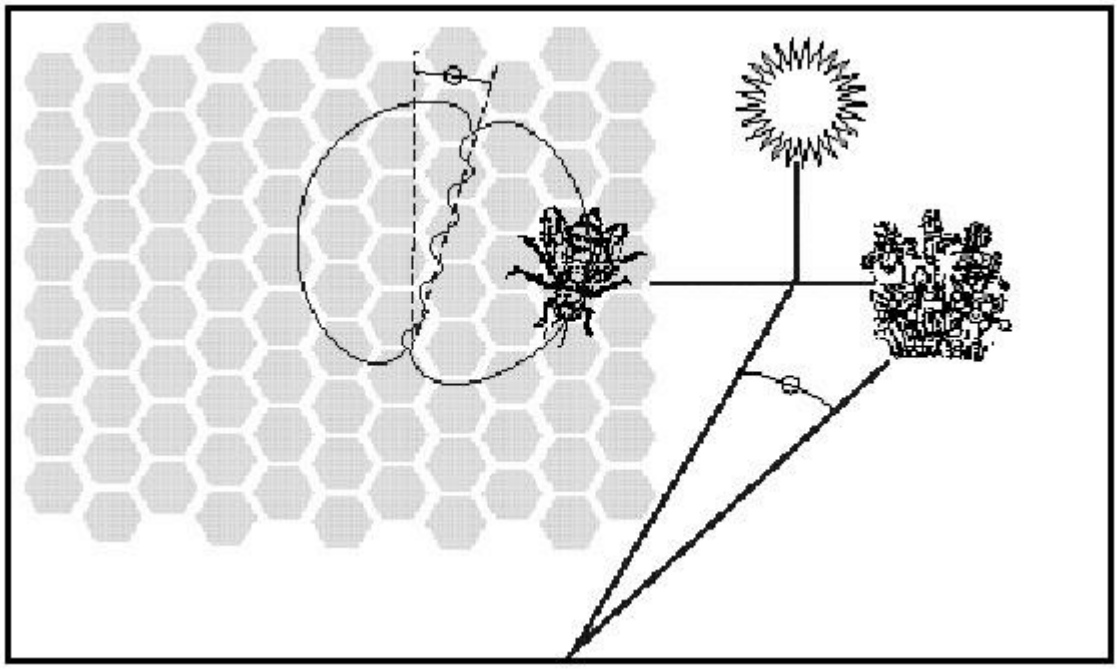
الجزء الاول:

النحل

جمع الرحيق

يقوم النحل بصنع العسل للبقاء على قيد الحياة. فهو طعامها الاساسي الوحيد. فإذا كان هنالك 60000 نحلة في الخلية, فإن ما يقارب الثلث منهن يقوم بجمع الرحيق واحضاره الى شغالات النحل التي بدورها تقوم بتصنيعه الى عسل. يقوم عدد قليل من النحل بدور الباحثات او الكاشفات حيث تقوم الكاشفات بإيجاد مصدر الرحيق والعودة الى الخلية لإخبار النحل الاخريات عن مكانه.

تقوم الكاشفات بإخبار النحل الاخريات عن مكان الرحيق من خلال القيام برقصة التي تعطي معلومات عن الاتجاه والمسافة المراد الطياران اليها. خلال هذا الرقصة تقوم النحلة بهز جسمها من جهة الى اخرى بانتظام مع باقي النحل على شكل دوائر كما هو مبين بالشكل (1). الرقصة تتبع النموذج المبين بالرسم التالي:



يبين الشكل (1) رقصة النحلة داخل الخلية بشكل عمودي مواجه لزهره الرحيق. اذا تم توجيه وسط الشكل (1) بشكل مستقيم الى اعلى, فهذا يعني ان بإمكان النحل ايجاد الطعام اذا طار باتجاه الشمس. وإذا تم توجيه الشكل(1) الى اليمين فإنه يدل على ان الطعام موجود على يمين الشمس.

يتم الدلالة على مسافة بعد الطعام عن الخلية من خلال طول المدة التي تقضيها النحلة في تحريك او هز جسمها. فإذا كان الطعام على مسافة قريبة, فإن النحلة تهز جسمها لفترة قصيرة. وإذا كان الطعام موجود على مسافة بعيدة, فإن النحلة تهز جسمها لمدة اطول.

صنع العسل

عند وصول النحل حاملا الرحيق وإعطائه للشغالات, تقوم الشغالات تدوير الرحيق باستخدام السنته وتعريضه لهواء حار وجاف داخل الخلية. عندما يجمع الرحيق في البداية, فإنه يحتوي على سكر ومعادن مخلوطة بما نسبته 80% من الماء. بعد عشرة الى عشرين دقيقة, عندما تتبخر النسبة الزائدة من الماء, فإن الشغالات تضع الرحيق في حجرة داخل خلية العسل في الوقت التي تستمر فيه عملية التبخر. بعد ثلاث ايام تصبح نسبة المياه في العسل 20%. في هذه المرحلة يقوم النحل بتغطية الخلايا باستخدام اغطية مصنوعة من شمع النحل. عادتا ما يقوم النحل الموجود في الخلية بجمع الرحيق من نفس المصدر او نفس المنطقة في اي وقت ما. من المصادر الرئيسية للرحيق: اشجار الفاكهة, البقوليات او الاشجار المزهرة.

السؤال الاول: ما هو الهدف من رقصة النحل؟ (ضع دائرة حول الاجابة الصحيحة)

أ- الاحتفال بصنع العسل
ب- للدلالة على نوع النبات التي وجدتها الكاشفات
ت- الاحتفال بميلاد ملكة نحل جديدة
ث- للدلالة على اين وجدت الكاشفات الطعام

السؤال الثاني: اذكر ثلاث مصادر رئيسية للرحيق؟

أ. .....

ب. .....

ت. .....

السؤال الثالث: ما هو الفرق الرئيسي بين مادتي الرحيق والعسل؟ (ضع دائرة حول الاجابة الصحيحة)

أ. نسبة الماء في المادة
ب. نسبة السكر في المعادن المكونة للمادة
ت. نوع النبات التي تم جمع المادة منها
ث. نوع النحلة التي قامت بعملية صنع المادة

السؤال الرابع: في رقصة النحلة, ماذا يجب على النحلة العمل لدلالة على بعد مسافة مكان الطعام من الخلية؟

.....

الجزء الثاني:

مكتبات المور لاند

نظام مكتبات المور لاند	ساعات الدوام						
		مكتبة برنزيك	مكتبة كامبل تتيرن بول	مكتبة كبيرغ	مكتبة فوكنر	مكتبة غلن روي	
	الاحد	1ص-5م	مغلق	2م-5م	مغلق	2م-5م	
	الاثنين	11ص-8م	11ص-5:30م	1م-8م	11ص-530م	10ص-5:30م	

	الثلاثاء	11ص-8م	11ص-8م	11ص-8م	11ص-8م	10ص-8م	**ص=صباحا م=مساءا**
	الاربعاء	11ص-8م	11ص-5م	10ص-8م	11ص-5م	10ص-8م	
	الخميس	11ص-8م	11ص-5:30م	10ص-8م	11ص-5:30م	10ص-8م	
	الجمعة	11ص-5م	11ص-5م	10ص-8م	11ص-5م	10ص-5:30م	
	السبت	10ص-1م	10ص-1م	1ص-9م	10ص-1م	1ص-9م	

السؤال الاول: عند اي ساعة تغلق مكتبة فوكنر ابوابها يوم الاربعاء؟

.....

السؤال الثاني: ماهي المكتبة التي تبقى مفتوحة عند الساعة السادسة مساءا (6م) في كل يوم جمعة؟ (ضع دائرة حول الاجابة الصحيحة)

أ. مكتبة برونز ويك
ب. مكتبة كامبل تتيرن بول
ت. مكتبة كبيرغ
ث. مكتبة فوكنر
ج. مكتبة غلن روي

Appendix D: Agreement to access (English Version)

Agreement to Access

In the Name of Allah the Beneficent the Merciful

Dear The Minster of Education

I am currently a postgraduate student at Durham University, UK, doing a Doctorate of Education. As a doctorate degree requirement, I have to conduct a research project entitled *The Big-Fish-Little-Pond-Effect on Academic Self-concept in Boys and Girls in Single-Sex and co-educational schools in Jordan*. A part of my research, I have to conduct students' questionnaires and to do an ability test.

Therefore, I am looking forward to seeking your permission to access 10th grade girls and boys at schools in Irbid to administer the questionnaire and the reading test enclosed with this letter.

Kind Regards

Presented by:
Marwan Odat
Durham University

Appendix E: Agreement to access (Arabic Version)

طلب الموافقة على جمع بيانات للبحث العلمي

بسم الله الرحمن الرحيم

معالي وزير التربية والتعليم

انا طالب في جامعة درهام في المملكة المتحدة ادرس درجة الدكتوراة في التربية. كمتطلب لاتمام درجة الدكتوراة, يجب علي القيام بمشروع بحث علمي بعنوان:

The Big-Fish-Little-Pond-Effect on Academic Self-concept in Boys and Girls in Single-Sex and co-educational schools in Jordan

كجزء من البحث العلمي المراد اتمامه, يجب على الطلاب تعبئة استمارات والاجابة على امتحان قراءة. الاستبانة وامتحان القراءة مرفق مع هذا الطلب, لذلك ارجو من معاليكم ان تتفضلوا علي بالسماح لي بالدخول الى قاعات الصف العاشر للذكور والاناث في مدارس اربد للحصول على البيانات المطلوبة لاغراض البحث العلمي.

ولكم جزيل الشكر

مروان قاسم محمد عودات
كلية التربية للدراسات العليا
جامعة درهام
الملكة المتحدة

Appendix F: Consent letter (English Version)

Consent Letter

Dear Parents

I am a Doctorate student at Durham University. As part of my degree, I am looking for understanding the types of social comparisons that students use to judge their abilities at schools. This requires me to conduct face-to-face interviews with students. Therefore, I would like to invite your child to take part in a face-to-face interview at his/her school on (date to be confirm upon your approval). The interviews will last for up to 15 minutes and it will ask your child about how he/she perceives his/her performance at school and how he/she would judge his/her performance in comparison to other students in his/her class. Interviews will be tape-recorded. However, please assure that the interviews will be used for the purpose of this research only and will be used by myself the researcher only.

Participation in this activity is voluntary. Your child is free to refuse to be interviewed. Your child may change his/her mind about participation in this activity at any time. Your Child will not be influenced by agreeing or refusing to participate in any portion of this project. If you have any questions about my plans, please contact me, Mr Marwan Odat by e-mail marwanodat@hotmail.com or by phone 00962777154320.

If you agree that your child is able to take part in my project, please return a signed copy of this form to me as soon as possible. You may keep the other copy for future reference. Thank you in advance for your cooperation.

I give my permission for my child ………………... to participate in the interview

Date:_ _

Parent/Guardian Signature:_ _

Please print your name on this line:_ _

Appendix G: Consent Letter (Arabic Version)

طلب موافقة

الى ولي امر الطالب\الطالبة

السلام عليكم ورحمة الله وبركاته

انا طالب الدكتوراة مروان عودات ادرس في جامعة درهم البريطانية. جزء من رسالة الدكتوراة يتطلب البحث عن الطرف التي يتبعها الطالب عندما يقارن نفسه مع الاخرين. هذا يتطلب مني ان أقوم بعمل مقابلات مباشرة مع الطلاب. المقابلات ستكون في نفس المدرسة التي يدرس فيها ابنكم وفي موعد سيحدد عند موافقتكم. المقابلة ستكون لمدة 15 دقيقة وسيتم تسجيلها صوتيا. اود ان اطمأنكم بان المقابلات سيتم استخدامها لاغراض هذا البحث فقط ومن قبلي انا الباحث.

المشاركة في المقابلات اختياري وبإمكان ابنكم الانسحاب من المقابلة في أي وقت يشاء وهذا لن ياثر عليه باي شكل من الاشكال في وضعه الدراسي في مدرسته. اذا اردت أي استفسار عن هذا البحث والمقابلات الرجاء التواصل معي على البريد الالكتروني او التلفون الشخصي ادناه.

ارجو توقيع هذا النموذج واعادته الى الباحث اذا اردتم لابنكم المشاركة.

مع فائق الاحترام

مروان عودات

marwanodat@hotmail.com 00962777154320

انا ولي امر الطالب ..... المدعو ..... أوافق على مشاركة ابني\ابنتي بالمقابلة لأغراض البحث العلمي

التوقيع ..... التاريخ .....

Appendix H: Correlation Matrix

Correlation matrix for the ASDQII

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
Correlation	Q1	1.0	.50	.62	.64	.48	.41	.50	.46	.55	.57	.57	.49	.53	.57	.52	.60	.55	.45	.43	.45
	Q2	.50	1.0	.38	.49	.27	.21	.27	.32	.38	.37	.38	.32	.38	.49	.34	.36	.36	.38	.48	.32
	Q3	.62	.38	1.0	.59	.35	.38	.45	.43	.42	.55	.47	.42	.58	.58	.59	.57	.58	.54	.42	.49
	Q4	.64	.49	.59	1.0	.45	.46	.48	.49	.60	.59	.58	.54	.49	.60	.53	.52	.50	.48	.40	.47
	Q5	.48	.27	.35	.45	1.0	.64	.63	.69	.26	.31	.32	.31	.34	.37	.33	.40	.39	.34	.28	.36
	Q6	.41	.21	.38	.46	.64	1.0	.68	.73	.26	.26	.25	.24	.23	.31	.29	.32	.39	.31	.29	.29
	Q7	.50	.27	.45	.48	.63	.68	1.0	.73	.33	.26	.31	.24	.34	.40	.32	.41	.42	.35	.31	.30
	Q8	.46	.32	.43	.49	.69	.73	.73	1.0	.32	.36	.31	.33	.36	.34	.33	.41	.45	.35	.32	.32
	Q9	.55	.38	.42	.60	.26	.26	.33	.32	1.0	.72	.73	.67	.38	.46	.43	.49	.44	.45	.33	.42
	Q10	.57	.37	.55	.59	.31	.26	.26	.36	.72	1.0	.75	.69	.45	.48	.53	.59	.53	.44	.36	.46
	Q11	.57	.38	.47	.58	.32	.25	.31	.31	.73	.75	1.0	.64	.47	.42	.51	.56	.49	.47	.39	.48
	Q12	.49	.32	.42	.54	.31	.24	.24	.33	.67	.69	.64	1.0	.45	.47	.49	.52	.49	.47	.41	.44
	Q13	.53	.38	.58	.49	.34	.23	.34	.36	.38	.45	.47	.45	1.0	.66	.68	.70	.55	.46	.44	.47
	Q14	.57	.49	.58	.60	.37	.31	.40	.34	.46	.48	.42	.47	.66	1.0	.65	.69	.54	.54	.49	.54
	Q15	.52	.34	.59	.53	.33	.29	.32	.33	.43	.53	.51	.49	.68	.65	1.0	.68	.51	.46	.40	.43
	Q16	.60	.36	.57	.55	.40	.32	.41	.41	.49	.59	.56	.52	.70	.69	.68	1.0	.65	.51	.52	.56
	Q17	.55	.36	.58	.50	.39	.39	.42	.45	.44	.53	.49	.49	.55	.54	.51	.65	1.0	.77	.74	.69
	Q18	.45	.38	.54	.48	.34	.31	.35	.35	.45	.44	.47	.47	.46	.54	.46	.51	.77	1.0	.77	.68
	Q19	.43	.48	.42	.40	.28	.29	.31	.32	.33	.36	.39	.41	.44	.49	.40	.52	.74	.77	1.0	.70

	Q20		.45	.32	.49	.47	.36	.29	.30	.32	.42	.46	.48	.44	.47	.54	.43	.56	.69	.68	.70	1.0
Sig. (1-tailed)	Q1		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q2	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q3	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q4	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q5	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q6	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q7	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q8	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q9	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q10	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00
	Q13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00
	Q14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00
	Q15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00
	Q16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00
	Q17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00
	Q18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00
	Q19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00

Q20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

a. Determinant = 1.560E-7

Correlation Matrix for the ability test

		Reading text a Q1	Reading text a Q2	Reading text a Q3	Reading text a Q4	Reading text b Q1	Reading text b Q2
Correlation	Reading text a Q1	1.000	.659	.251	.410	.433	.438
	Reading text a Q2	.659	1.000	.350	.467	.410	.519
	Reading text a Q3	.251	.350	1.000	.134	.223	.293
	Reading text a Q4	.410	.467	.134	1.000	.232	.286
	Reading text b Q1	.433	.410	.223	.232	1.000	.301
	Reading text b Q2	.438	.519	.293	.286	.301	1.000
Sig. (1-tailed)	Reading text a Q1		.000	.000	.000	.000	.000
	Reading text a Q2	.000		.000	.000	.000	.000
	Reading text a Q3	.000	.000		.014	.000	.000
	Reading text a Q4	.000	.000	.014		.000	.000
	Reading text b Q1	.000	.000	.000	.000		.000
	Reading text b Q2	.000	.000	.000	.000	.000	

a. Determinant = .205