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## Big-Fish-Little-Pond Effect: The impact on academic self-concept

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**BIG-FISH-LITTLE-POND EFFECT:  
THE IMPACT ON ACADEMIC SELF-CONCEPT**

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**A Dissertation**

**Presented to**

**The Faculty of the School of Education**

**The College of William and Mary in Virginia**

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**In Partial Fulfillment  
Of the Requirements for the Degree  
Doctor of Education**

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**by  
Peter O. Kwiterovich, III  
May 2011**

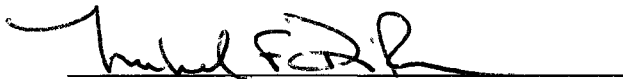
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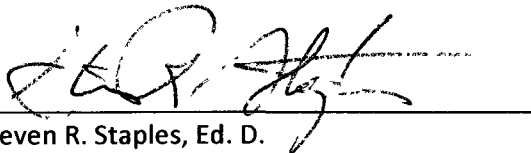
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## BIG-FISH-LITTLE-POND EFFECT: THE IMPACT ON ACADEMIC SELF-CONCEPT

### ABSTRACT

The purpose of this study was to investigate the impact on the self-concept of students when they transitioned into an academically selective independent middle school. The sample consisted of 107 middle school students in an all-boys independent school in the northeast United States. Data on students' general self-concept, academic self-concept and domain specific academic self-concepts were collected using the Academic Self-Description Questionnaire I and II.

Four hypotheses were tested: 1) Newly enrolled students to the all-boys middle school will initially experience significantly more negative domain specific academic self-concepts than students who are returning or have been promoted from within the school; 2) New students to the all-boys middle school will initially experience a significant negative difference in general academic self-concept than students who are returning or have been promoted from within the school; 3) New students to the all-boys middle school will have a general self-concept that does not differ substantially from the students who are returning or have been promoted from within the school; 4) New students to the all-boys middle school will initially experience lower academic achievement than students who are returning or have been promoted from within the school.

The findings of the study do not support the Big-Fish-Little-Pond Effect; whereas, the students transitioning into the independent middle school were found to have self-concept scores equal to or more positive than current students. Consequently, the findings support the concept of reflected glory and expansion of the Internal/External Frame of Reference Theory.

**BIG-FISH-LITTLE-POND EFFECT:  
THE IMPACT ON ACADEMIC SELF-CONCEPT**

## Chapter 1

### *Introduction*

Many administrators of school districts understand the importance of a positive academic self-concept, especially in light of its impact on student achievement (Marsh, 1990b). This could have significant implications for schools that lack resources, are overcrowded, or have limited parental support because these factors may already be causing students to have a low self-concept, a result of their circumstances (Marsh & Hau, 2004). In addition, as students move from a less rigorous academic environment to a more competitive one, it can negatively impact their academic self-concept (Dai & Rinn, 2008; Marsh, 1987; Marsh, Kong, & Hau, 2000). Even as schools are striving to meet federal government and state mandates on performance standards, there should be more emphasis placed on the development of a positive academic self-concept (Kornolova, Kornolov, & Chumakova, 2009; Shavelson, Hubner, & Stanton, 1976).

Self-concept is an important part of the learning process and an integral aspect of a person reaching their potential (McInerney, Marsh, & Craven, 2008). A positive self-concept is something that every individual pursues regardless of his or her race or ethnicity (Marsh, Köller, & Baümert, 2001). Shavelson, Hubner, and Stanton (1976) define self-concept as "...a person's perception of himself..." which can "...influence the ways in which he acts, and his acts in turn influence the ways in which he perceives himself" (p. 411). In addition, an individual's self-concept is multidimensional (Hattie,

2008; Marsh & Hau, 2004). Consequently, they will establish and nurture self-concepts specific to different aspects of their life, such as their physical appearance, athleticism, and academic achievement (Shavelson et al.). The process of developing a positive self-concept is something that is continuous and ongoing as the individual matures and develops (Bandura, 2008). This is pertinent to a student's progression through school from elementary school to middle school levels.

Making friends and being part of a group are important aspects of new-to-the-middle-school students. In many cases, they are entering into an environment that consists of a conglomeration of students from varying backgrounds with many students that are unfamiliar to them. As a result, they must become acquainted with new social norms and survive ever changing social groups (Cauley & Jovanovich, 2006). In some cases, when the student is predisposed or susceptible to the stress caused by this new environment, it can have negative psychological impacts (Rudolph, Lambert, Clark, & Kurlakowsky, 2001).

This effect can be most conspicuous when there is a great disparity between the psychological needs of the students and the middle school environment meeting these needs (Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, & Iver, 1993). For some students the transition will provide an environment that more closely resembles the comfort of the elementary school than the anonymity of the high school (Eccles et al.). However, if the new middle school environment is more unforgiving than the student can acclimate to, the impact will be most detrimental.

This study used the Academic Self-Description Questionnaire I (ASDQI) and the Academic Self-Description Questionnaire II (ASDQII) to assess the self-concept of

middle school aged boys with the purpose of determining if and how their academic self-concept is affected by entering into an academically selective program.

### *Problem Statement*

Even though there are a multitude of academic self-concepts to be examined, achievement in the areas of mathematics and English classes have been the primary focus of research. The relationship between the academic concepts in these subject areas supports the idea of academic self-concept being domain specific. Specifically, mathematics self-concept has a positive effect on mathematics achievement and English self-concept has a positive effect on English achievement. Moreover, academic specific self-concepts actually have a moderately negative effect on other academic specific self-concepts. Even though an English self-concept will have a positive effect on English achievement, it will have a negative effect on mathematics self-concept, ultimately impacting mathematics achievement (Brunner, Keller, Hornung, Reichert, & Martin, 2009; Marsh & O'Mara, 2008; Marsh, Shavelson, & Byrne, 1988; Marsh & Yeung, 1997).

In a school setting, students must navigate not only as individuals through the day from class to class, but also must align themselves within the school community and smaller group settings, such as classes. An extension of Social Cognitive Theory is applicable in both of these scenarios as students develop their academic self-concept through an internal process of self-evaluation and the external process of group comparison (Bandura, 2008; Ireson & Hallam, 2009; Marsh & Hau, 2004).

### *Significance of the Problem*

*Social cognitive theory.*

According to Bandura's (2008) Social Cognitive Theory, individuals possess "an agentic perspective to their self" (p.16), meaning they seek to control their lives and the environment in which they exist. He continues by proposing that there are four properties of human potential: intentionality, forethought, self-reactiveness, and self-reflectiveness. These actions can only be effectively performed if the individual is able to prevent a disparate view between the actual results of his actions and his perception of their impact on his environment. Bandura proposed four modes of thought verification through which the reconciliation of the aforementioned viewpoints are tested for congruency: enactive, vicarious, persuasory, and logical. The properties of human potential and modes of thought verification interplay to create a continuous feedback system, which depending upon the circumstances will be used by an individual in any appropriate combination.

A person will be self-reflective by "reflect[ing] upon oneself" and can be defined as "the most distinctly human core property of agency" (Bandura, 2008, pp. 16-17). For instance, an athlete may watch a game film for the purposes of evaluating her performance—resulting in a critique of her accomplishments and decision-making—potentially improving her performance the next game. Or, a student may review their study methods for an examination, which they performed poorly on, with the intent of determining a better way to study for the next test. In either case, the individual reviews their behavior and actions to gain a better understanding of their abilities. By performing self-reflection in a logical manner, such as using the objectivity of athletic statistics or achievement for comparison, they will "check for fallacies in their thinking" (Bandura, p. 17), so that their evaluation is accurate rather than blurred by their own bias.

This continual process of self-reflectiveness and logical perspective can be either



an empowering event or one, which can potentially negatively impact an individual's self-concept. An individual with a positive self-concept will display behaviors, which will reinforce this self-image, causing a positive feedback loop. In contrast, and a much more damaging cycle, is that of an individual with a low self-concept because they will display behaviors which maintain this perspective, creating a negative downward trend (Hattie, 2008). The simplicity of this explanation doesn't elucidate the complexity of the development of a positive self-concept. As Hattie states:

In very broad terms, self-concept is a person's perception of himself...One's perception 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. The exact nature and direction of the influence of perceptions and behavior are important parts of the definition, but as yet are unclear and consequently are an important focus of current self-concept studies. (p. 411)

*Individual.*

An individual's self-concept impacts more than just the process of self-awareness and self-evaluation; it also influences their behaviors, which ultimately prescribe a path of action for the purpose of achieving a future goal (Bandura, 2008; Festinger, 1954; Hattie, 2008). However, before they are able to pursue these goals, there must be congruency between their actions or behaviors and the possibility of achieving the goal (Festinger).

As the interplay between thought verification and human potential continues, an individual may use the potentiality of self-reactiveness in conjunction with enactive and

persuatory verification methods (Bandura, 2008). Self-reactiveness is when an individual will analyze his own behaviors to determine if they are in concert with his long-term prospects. Bandura states, “Self-investment in the activity serves as a strong motivator” (p. 16). This basically means that an individual is not inclined to continue behaving a certain way if it is not going to get the result he is looking for. As discussed previously, human potential properties use thought verification modes to ascertain if they are correct. The enactive mode of thought verification is the process of an individual ensuring that his actions and thoughts are aligned. At times, he may enlist the opinions or insight from an expert to facilitate this decision-making process. Bandura refers to this as persuatory mode. Even though this interplay seems rather straight forward, in reality it is characterized by a survival instinct to maintain an intact and positive self-concept by utilizing behaviors and abilities to strive for future accomplishments (Festinger, 1954; Hattie, 2008). Ultimately, this short-term cycle plays into the more significant property of human potential- forethought. In actuality, this potential guides the more discreet and shortsighted actions by a person toward long-lasting and more permanent decisions (Bandura).

#### *Group.*

Even though there is a perception that an individual’s formation of self-concept is the result of a more intimate and primarily introspective process (Hattie, 2008), social groups and the interactions with these constituents are important aspects of self-concept formation as well (Bandura, 2008). Continuing with Bandura’s ideas concerning human potential and thought verification, an individual’s group interactions are exemplified through his intentionality of seeking group contact and vicarious manner of social

comparison.

Intentionality refers to the interaction and performance an individual has with a group (Bandura, 2008). This social interaction is very important because it provides the individual with an immediate and reciprocating evaluation of his performance, which is geared toward the success of the entire group (Festinger, 1954). This interaction can be especially effective at influencing an individual's behavior within a group because an individual's performance or behaviors that deviate from the group will draw attention to themselves and perhaps be ostracized (Festinger). Groups can also play a corrective role concerning an individual's behavior because the main purpose of the group is a constant reminder of the reason the group exists (Festinger). In a school setting, members of a club will exhibit group behaviors and pressure on members of the group to maintain its standards.

The opinions of others can be influential even if an individual is not part of a formal group (Festinger, 1954). For example, an athlete may look to the comments of spectators or the media for input on his performance and prowess in a certain sport. This impact of this feedback will be heightened if the critique is coming from someone deemed an expert by the individual (Festinger). This same athlete may also use the feedback that other athletes get for their performance to gauge where their level of performance should be. Bandura (2008) referred to this mode of thought verification as *vicarious comparison*. He contends that it is an important aspect of self-concept development because it allows an individual to broaden the sources of evaluative information beyond their own experiences. This can be especially effective when students see the types of behaviors that elicit a positive response from the teacher. A caveat to this

process of using others to evaluate one's ability is if the ability level of the external source of evaluation is greatly disparate from one's own level (Festinger). It would not make sense for a high school violinist to compare their ability to a virtuoso because the enormity of the differences in levels offers no motivation.

The combination of a student's desire to evaluate their own behaviors through an internal and external comparison process can have a detrimental effect on their academic self-concept (Marsh, 1987; Marsh, 1990a).

#### *Big-Fish-Little-Pond Effect (BFLPE)*

As a student transitions from one academic environment, which is less competitive than the school setting they move into, this will cause stress on the student as they adjust to the new, likely more homogenous setting (Marsh, 1987). The importance of studying this phenomenon is pertinent because the initial negative impact caused by BFLPE may have a lasting effect on the student's academic self-concept, which may negatively impact their academic performance (Marsh).

The stress of a student navigating the individual and group dynamics inherent in a school setting is magnified when a student transitions from an elementary or lower school to a junior high school or middle school. This effect can be significant during the transition from fifth to sixth grade (Barber & Olsen, 2004; Cauley & Jovanovich, 2006; Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, & Iver, 1993; Parker, 2010). This is a result of the significant developmental changes that occur during puberty (Eccles et al.) as well as the inherent differences between the social environment and academic expectations (Barber & Olsen; Cauley & Jovanovich) of lower school and middle school.

Social Cognitive Theory (Bandura, 2008) indicates that a student will continually make self-assessments and self-evaluations of themselves as they move in and out of peer groups. This process can be even more heightened when a student is going through puberty (Rice & Dolgin, as cited in Cauley & Jovanovich, 2006). Consequently, this stressful experience will adversely impact the student's academic interest level (Cauley & Jovanovich) by causing the student to either alienate himself or enter into a continuous cycle of mounting stress levels (Rudolph, Lambert, Clark, & Kurlakowsky, 2001). As he is less motivated to perform academically because of the aforementioned psychological disposition, he will be less sure of his academic abilities (Rudolph et al.); ultimately, negatively impacting his academic self-concept (Cauley & Jovanovich).

As students enroll in schools with a selective admissions process, they may be leaving a previous learning environment where they are recognized as the top-performing student. Upon entering the more competitive and selective school setting of an independent school, they may suffer from BFLPE because "...potentially outstanding students can be demoralized by no longer being a "big fish" within a new, highly selective setting, in comparison with others of equal ability" (Marsh, Köller and Baumert, 2001, p. 323).

### *Hypotheses*

This research study used the Academic Self-Description Questionnaire I (ASDQI), the Academic Self-Description Questionnaire II (ASDQII), and students' grade point average (GPA) to determine if newly enrolled students moving to a selective academic setting has a negative impact on their academic self-concept.

1. Newly enrolled students to the all-boys middle school will initially experience

significantly more negative domain specific academic self-concepts than students who are returning or have been promoted from within the school.

a. Specific Domains

i. Art

ii. Computer studies

iii. Language Arts

iv. Mathematics

v. Music

vi. Athletics

vii. Science

viii. Geography/History

2. New students to the all-boys middle school will initially experience a significant negative difference in general academic self-concept than students who are returning or have been promoted from within the school.
3. New students to the all-boys middle school will have a general self-concept that does not differ substantially from the students who are returning or have been promoted from within the school.
4. New students to the all-boys middle school will initially experience lower academic achievement than students who are returning or have been promoted from within the school.

*Limitations and Delimitations*

*Limitations.*

Since the students took the ASDQI/II to determine their general self-concept,

academic self-concept, and domain specific self-concepts, the data collected from this self-reporting instrument could have been biased because the students and their parents/guardians volunteered to participate in the study.

Even though the GPA was not self-reported, the students completing the ASDQI/II answered from their perspective, which may have been influenced not by their actual perceptions of themselves but by external stimuli.

For a middle school aged boy to participate in a survey which asks them to rate their self-concept, he must already feel more confident about his abilities, given they are already experiencing uncertainty as pre-adolescent and adolescent children.

The participants were asked to place their name and age on the cover page to the survey for the purpose of data collection. The lack of anonymity in completing the survey may affect the disposition of the students as they complete the survey. In addition, there was inherent bias in my perspective because of my position as principal of the middle school.

The student sample is from one independent middle school in a major metropolitan area. These factors significantly limit the type of student participating in the study.

#### *Delimitations.*

The sample group was a specific group of middle school aged boys so the generalizability of the findings will be limited to other groups which similar characteristics. The findings may be applicable to independent school, all boys' school and to middle school aged students. Because the researcher was involved in the daily academic lives of the participants, they may have felt pressure to answer the

questionnaire to please me.

### *Definition of Terms*

#### *Self-concept.*

Self-concept is an opinion an individual develops of him or herself as a result of comparing their abilities, achievements and attitudes to others (Festinger, 1954; Shavleson, Marsh, & Byrne, 1998).

#### *Academic self-concept.*

Academic self-concept is an opinion an individual develops about his or her academic abilities based upon their level of academic achievement as compared to others (Festinger, 1954; Marsh, 1990).

#### *Domain specific self-concept.*

Domain specific self-concept is an opinion an individual develops about his or her academic abilities in particular disciplines, such as English, mathematics, and science, as compared to others (Festinger, 1954; Marsh & Shavelson, 1985).

#### *Middle school.*

In the context of this study, middle school is a self-contained educational environment that consists of grades six through eight. It is also a unique developmental time period for students when significant academic, social, and emotional growth occurs.

#### *Academically selective.*

A school is academically selective when it requires an application for admission based upon a high level of previous academic success, standardized test scores, and teacher recommendations. In addition, the curriculum is focused on preparing students for entrance into some of the most competitive colleges and universities in the United



States. Whether the students are newly enrolled or have matriculated from a previous grade, all the students experienced the same admission process.

*Big-fish-little-pond effect.*

Big-Fish-Little-Pond Effect is the negative effect on the academic self-concept of a student resulting from transitioning to a more academically rigorous setting (Marsh, 1987).

## Chapter 2

When a student transitions from an elementary to middle school, how well his academic and social needs are met will determine whether it is a positive or negative experience (Cauley & Jovanovich, 2006). It can be negative if the student is not able to accurately assess his ability to be successful, something that came more easily to him while in the lower school (Rudolph, Lambert, Clark, & Kurlakowsky, 2001). In addition, if he struggles socially, there is a possibility that he could become depressed and withdrawn, negatively impacting his confidence to perform well academically; consequently, having a negative impact on his academic self-concept (Rudolph et al.).

This chapter first discusses the impact on a student's self-concept as he transitions into a middle school. A brief history of research on self-concept is provided to preface current theories on self-concept, such as the Internal/External Frame of Reference (Marsh, 1990a) and Big-Fish-Little-Pond Effect (Marsh, Köller, & Baumert, 2001; Marsh 1987). Research on grades and achievement tests are explored as part of the assessment process for studying the self-concept of boys transitioning to a middle school.

### *Transition to Middle School*

Barber and Olsen (2004) followed students from fifth through tenth grades using self-report measures, which focused on the specific areas of school environment, school performance, extracurricular activities, psychological functioning, interpersonal competence, and behavioral problems. During the transition from fifth to sixth grade,

there was a significant change in only eight of the 24 variables with five of them being positive. Specifically, the students felt that they were better supported by the teachers, stated that they had more homework, had higher self-esteem, were not as lonely, and had lower levels of depression. Consequently, the changes were significantly more negative during the transition from sixth to seventh grade as indicated by students experiencing 17 changes in behaviors and/or perceptions with 16 of them being negative (Barber & Olsen).

Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, and Iver (1993) support this idea that the transition from sixth to seventh grade may have a more significant impact on students. Using data from the Michigan Study of Adolescent Life Transitions, they found that the sample of 1500 students were less confident of their teachers as they entered into seventh grade. This perspective negatively affected the relationship with their teachers. The comparisons between teacher experiences in the elementary school to teacher experiences in the middle school teachers is best exemplified by the statement:

There is evidence that junior high school teachers use stricter and more social comparison-based standards than do elementary school teachers to assess student competency and to evaluate student performance, leading to a drop in grades for many adolescents as they make the junior high transformation (Eccles et al., p. 94).

Ultimately, the environment of the seventh grade year was marked by the continued struggle of the students desire to be more independent juxtaposed with them feeling restricted (Eccles et al.).

Using a sample size of 329 students, the University of Illinois Transition to Adolescence Project (Rudolph, Lambert, Clark, & Kurlakowsky, 2001) examined the transition from fifth to sixth grade for two groups of students: a group with a transition from within the same school to a group with a between school transition, which necessitated students switching schools. The results of this two wave longitudinal study indicate that the transition impacted the two groups of students in significantly different ways. The students who transitioned between schools experienced a decline in academic effort ( $t = 2.22, p < .05$ ) and performance ( $t = 4.74, p < .001$ ) from their fifth grade year to their sixth grade as compared to the within school transition group who experienced a significant improvement in these areas ( $t = 3.79, p < .001$ ;  $t = 4.13, p < .001$ ). With similar findings to the other studies, highlighting the social difficulties that students experienced when transitioning from an elementary school to a middle school, the between-school transition group displayed a significant increase ( $t = 3.47, p < .01$ ) in “school hassles” while the within school transition students experienced a significant decrease ( $t = 4.75, p < .001$ ) in this same category. “School hassles” refers to eighteen items on the Chronic Strain Questionnaire for Children (Rudolph, Kurlalowsky, & Conley, 2001, as cited in Rudolph et al.). These items probed students’ opinions on topics from teachers’ academic expectations to the structure of the daily schedule. The disparity of the two different transition groups is summarized by the statement:

Hence, adolescents who believe that academic success is not under their control and who attribute low importance to academic success may feel ill-equipped to deal with the novel demands of middle school and may become overwhelmed by this new setting. In contrast, adolescents who

remain in a stable elementary school environment are likely to encounter fewer school-related challenges and to receive ongoing guidance from parents and teachers (Rudolph et al., p. 941).

In a study using a sample of 78 fifth graders with 32 male and 46 female students, researchers examined student self-perceptions using the Piers-Harris Self-Concept Scales (Cauley & Jovanovich, 2006). Students were given the questionnaire at four different points: late in the spring of fifth grade, fall and late spring of sixth grade and in the fall of seventh grade. The students “experienced increase in their self-perceptions of their intellectual status, physical attributes, popularity, and behavior...” (Cauley & Jovanovich, p.13) upon entering the sixth grade. However, by the fall of their seventh grade year, these constructs returned to initial levels. Interestingly, domain specific academic self-concept dropped with the transition from sixth to seventh grade. Because researchers used convenience sampling and students were homogenously grouped at Windsor Middle School, it could have caused the results to be contrary to most recent research findings that indicate a more negative effect during the transition (Cauley & Jovanovich). In addition to the negative impact a transition can have on a student, there are enough significant differences in the learning styles and social interactions between boys and girls (Pollack, 1998; Sax, 2005), that educators can lessen the possible negative impact of the transition by understanding these differences. Because this study examined the transition at an all-boys independent school, an understanding of how boys learn is pertinent to understanding the type of student in the study sample.

### *Boys as Learners*

With increasing demands of work schedules on parents, they are unable to spend

as much time with their sons during the important developmental years of pre-adolescence and adolescence. As a result, young boys spend a significant amount of time in school, thus placing a greater burden on schools to address their developmental needs (Pollack, 1998; Wormeli, 2011). Because coeducational schools must balance the pedagogy and methodology of teaching to the disparate learning styles of boys and girls, single-sex education, especially for boys, can concentrate on the unique learning needs of a middle schooler (Pollack, 1998; Sax, 2005; Stephens, 2011).

*The boy's brain.*

A physiological difference between boys and girls is the varying rates at which certain areas of their brains grow. As a result, boys are more advanced in spatial memory than girls but show a deficit in language development and fine motor skills (Sax, 2005). Consequently, single sex schools that are able to solely target the academic and social needs of middle school aged boys may be more effective at preparing students for accomplishment later in life by ensuring success during the middle school years (Stephens, 2011).

*Boys and academics.*

Middle schools that offer a curriculum directed at meeting the different needs of male students will engage them in a manner that resonates with their learning styles. As important are the methodology and pedagogy used to deliver this content because without a teaching delivery and style that is appreciated by the male student, they will not effectively retain the information and process it for long-term use (Pollack, 1998; Sax, 2005).

A recent study conducted by the International Boys' School Coalition (IBSC)

(Reichert & Hawley, 2009) collected information about effective teaching practices by asking teachers and students from across the world to submit anecdotal vignettes of successful teaching and learning moments (lesson plans, lectures, activities, labs, etc.). This qualitative study analyzed responses from over 800 teachers and 1000 students from IBSC member schools. The researchers (Reichert & Hawley) were able to categorize this information into six areas of effective teaching strategies for boys: Product, Gaming, Motor Activity Role Play/Performance, Open Inquiry, and Team Work/Competition.

*Product.*

This teaching technique facilitates learning by involving the student in the making of a tangible representation of the curricular content. This process could be as involved as the making of table or stool in industrial art class or a simpler task such as having the students standing at the whiteboard solving problems assigned by the teacher.

*Gaming.*

This teaching technique facilitates learning by delivering pertinent curriculum content and skills into an activity that fosters the excitement of competition and makes the learning process fun. Reichert and Hawley (2009) point out that the process of gaming is not carried out for the sole purpose of being entertaining for the boys, but rather delivers information in a way that reflects a learning style characteristically found in boys. This method is frequently seen in math classes, since number manipulation is a natural fit for gaming.

*Motor activity.*

Pre-adolescent and adolescent boys enjoy movement and being active. Many all-boys school will nurture this trait by providing opportunities for boys to exercise and be

physical during teacher supervised free period commonly referred to as recess. It is during this time that the brain as well as the body is being stimulated. In addition, recess provides an outlet for the boys to interact socially with each other, thereby learning important social interaction skills such as problem-solving and conflict resolution (Sax, 2005). Many teachers will enhance their teaching of boys by incorporating movement in their lesson plans so that the motor activity associated with such things as sentence diagramming will facilitate the retention of information (Reichert & Hawley, 2009).

*Role play/performance.*

By having students act as a character from a play or book they are reading, provides an opportunity for them to learn the material from a different perspective not achievable through the more traditional means of reading a passage and the responding to it (Pollack, 1998). In addition, this role-play enables them to express themselves in a way that may not be appropriate in another context (Stephens, 2011). Finally, a performance based lesson plan enables boys to easily redo flubbed lines and allows for multiple times to practice until success is achieved (Reichert & Hawley, 2009). Both of which are important to the learning process of a middle school aged boy (Stephens; Wormeli, 2011).

*Open inquiry.*

This teaching strategy permits boys to make discoveries or learn a concept that is not restricted to one conclusion (Reichert & Hawley, 2009). Consequently, it is the process of learning via this technique, which is the point of the methodology rather than the end result. Boys appreciate this approach because it allows them learn at their own pace (Pollack, 1998) and it permits them to be more creative in their problem-solving



techniques because it offers more than one correct solution, which encourages risk taking during the learning process (Pollack).

*Team work/competition.*

Many boys participate in activities, which involve competition in some manner—participating on a sports team, playing an instrument in an orchestra, and constructing robots. This propensity for competing can be utilized by teachers in the classroom to facilitate learning as well. However, the motivation to win may be replaced by the camaraderie of working together as a team in the classroom (Reichert & Hawley, 2009).

Most of these teaching techniques overlap in their application and access many of the same learning styles that male students utilize. The successful implementation of these approaches is as dependent upon the relationship the boys have with their teacher as is proper pedagogy and methodology (Pollack, 1998; Sax, 2005; Stephens, 2011; Wormeli, 2011).

*The Social Life of Boys in School*

In addition to meeting the academic needs of middle school boys, middle schools must hire and train teachers to meet the “social and emotional need” (Pollack, 1998, page 232) of their students. Additionally, because of the differences in the ways that girls and boys interact with their same-gender counterparts in a school setting, an all-boy school is better able to focus on the emotional needs of their students.

*Teachers.*

Both boys and girls require healthy relationships with teachers in order not only to perform well academically but also to gain self-confidence and trust in their teachers

(Stephens, 2011). However, the interactions between students and their teachers can be differentiated by gender. For instance, girls are more likely to seek approval from their teachers by accomplishing tasks assigned by the teacher in a timely and complete manner. Contrarily, boys find motivation in being independent and are comfortable with completing the assigned tasks in their own manner and time. Approval of a job well done is the fact that they accomplished it on their own rather than seeking external approval from the teacher (Sax, 2005). By being independent and intrinsically motivated, a boy runs the risk of having his behavior misunderstood by the teacher, resulting in misdirected well-intentions of the teacher applied discipline (Pollack, 1998). This interaction can be further compounded by the fact that boys will react directly to a teacher's reprimand rather than avoiding the confrontation, an action most likely taken by a girl (Sax).

*Peer relationships.*

Peer interactions differ between boy and girl students as well. Girls will seek out social interactions with other girls so they can engage in conversations. This action is contrary to boys who seek out same-sex interactions when they are engaging them in a common activity (Sax, 2005). This differentiation can be seen most readily during recess where boys are not standing around talking but engaged in either a sport or play that is physical. Another example of this behavior is at dances or parties where the girls are gathered in groups talking while the boys, if given the opportunity, are engaging in physical activities as a means to interact with girls and other boys. The different learning styles of boys and their approach to interacting socially with their peers and teachers will require teachers to have an understanding of these dynamics and how they impact boy's

self-concepts.

### *Research on Self-Concept Models*

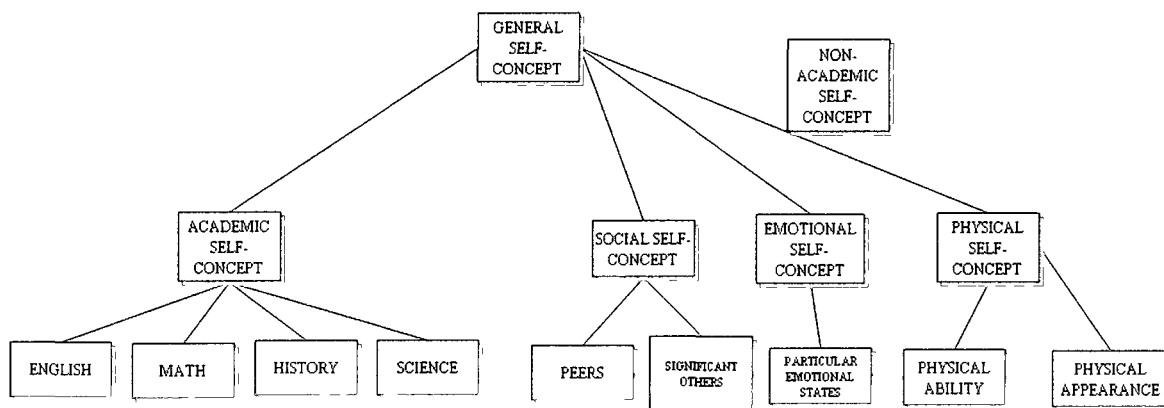
#### *Shavelson model of self-concept.*

Shavelson, Hubner, and Stanton (1976) were the first researchers to closely examine self-concept and develop a model that described the interaction between different facets of this construct. It was a result of their findings and suggestions for further research that directed self-concept researchers in a specific direction. Their first significant contributions were defining self-concept and then proceeding to explain its impact on an individual using a hierarchical description.

Seven distinct characteristics were suggested that define an individual's self-concept: organized, multifaceted, hierarchical, stable, developmental, evaluative, and differentiable (Shavelson, Hubner, & Stanton, 1976). An individual's self-concept is organized based upon different experiences in his life. Even though there will be great commonality between different people, this is an area of self-concept that will be culturally influenced (Shavelson et al.). Self-concept is multifaceted, meaning that different aspects of a person's life will present its own category of self-concept. A student will have different self-concepts for her social, academic, physical, and athletic components of her school experiences (Shavelson et al.). The hierarchical aspect of self-concept is one that has been the most debated and studied. Shavelson et al. proposed that self-concept consists of a hierarchy with general self-concept (GSC) at the apex, further differentiated by academic self-concept (ASC) and non-academic self-concept (NASC) subsets of self-concept. Furthermore, ASC is delineated into specific academic disciplines while NASC is differentiated by social and physical self-concepts (see Figure

1). In essence, the researchers were suggesting that self-concept is “situation specific” (Shavelson et al., p. 412). As important a characteristic of self-concept is the idea that it is stable, whereas any impact on the self-concept in the sub-categories at the base of the hierarchy will have very little or no impact on the GSC (Shavelson et al.).

Developmentally, as a child becomes older, his self-concept will be more differentiated so that he will start to become more aware of the different areas of self-concept. For instance, a child will start to recognize that his actions can control his environment not just his parents. This differentiation will also begin the evaluative process for the child, as



*Figure 1. The hierarchical structure of self-concept.*

(Adapted from Shavelson, Hubner, & Stanton, 1976)

he begins to evaluate his action determines the appropriate means with which to evaluate his successes and failures (Shavelson et al.).

The final step in the progression of the development of a self-concept is the child’s ability to separate his self-concept into the different areas identified by Shavelson et al. He will gain an understanding that his ASC is related to his achievement and his

NASC may be related to social or physical aspects of his life. The main focus of subsequent research has been to focus on the hierarchical and multidimensional aspect of self-concept.

Marsh, Shavelson, and Byrne (1988) conducted research to examine the hierarchical structure of self-concept with general self-concept (GSC) at the apex. They studied 516 boys and 475 girls in Canada from two coeducational high schools. The data that was collected consisted of teacher grades in English, mathematics, and other school subjects as well as answers from question concerning self-concept on the Student Description Questionnaire III (SDQ III), the Self- Esteem Scales (SES) and the Affective Perception Inventory (API). Using confirmatory factor analysis, they determined that the Marsh/Shavelson model, which replaces GSC as the apex of the hierarchy with verbal self-concept and mathematics self-concept, was supported.

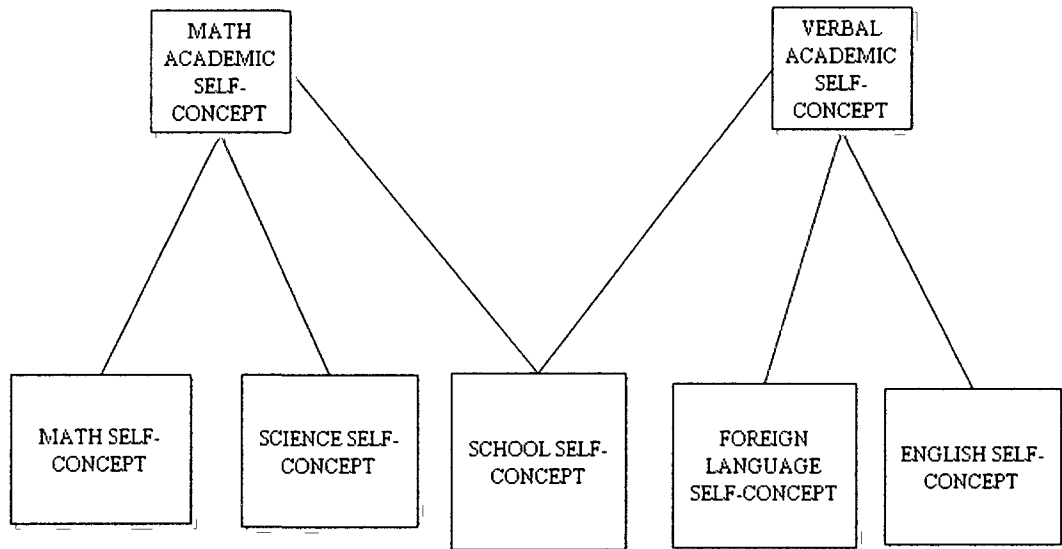
*Research supporting the Marsh/Shavelson model of self-concept.*

A study by Ireson and Hallam (2009) focused on the impact of ability grouping on general academic self-concept and domain specific self-concept. Their sample was 23 elementary schools in England, which had mixed groupings by ability. This longitudinal study used results from the national Key Stage 3 exam and the national GCSE examinations at ages 13-14 and 15-16, respectively. As with other studies, they administered the SDQII exam for data collection on self-concept. The results of their study supported the Marsh/Shavelson model that general self-concept is not at the top of the hierarchy but domain specific self-concepts, such as mathematics and English, are at the top of the self-concept hierarchy (see Figure 2). Even though they were studying stratification of the school based upon ability, they found that stratification had no impact

on general self-concept but negatively impacted domain specific academic self-concepts. A study conducted by Shavelson and Bolus (as cited in Marsh & Shavelson, 1985) challenged the hierarchical structure of the Shavelson Model. By administering the Piers-Harris "Way I Feel about Myself" measure, the Tennessee Self-Concept Scale, and the Michigan State Self-Concept of Ability Scale measure, they were able to compare the correlations between general self-concept (GSC), academic self-concept (ASC), and math self-concept (MSC), English Self-concept (ECS) and science self-concept (SSC). The fact that GSC and ASC were highly correlated at .48 but GSC was significantly less correlated with MSC (.34), ECS (.26), and SSC (.30) lead to the conclusion that "the academic facet of self-concept might be divided into subareas." (Marsh & Shavelson, p. 110). Additionally, the fact that SSC and MSC were more highly correlated (.58) than either SSC and ESC (.38) and MSC and ESC (.33) lead to the conclusion that ASC could be further delineated into sub-categories of mathematics and English.

A study using a sample of 300 undergraduate students at Moscow State University (Kornolova, Kornoliv, & Chumakova, 2009) focused on comparing academic achievement, self-concept, and student self-perceptions of intelligence. Using the Academic Self-Concept Scale, the Group Estimation of Intelligence measure, and the students' official GPA collected over three semesters, the researchers found that students' subjective evaluation of their ability and their self-concept were better predictors of academic achievement than latent intelligence measures. This finding supports the hierarchical model as proposed by Marsh and Shavelson but also suggests that the causal influence is one way with self-concept being an influence on academic achievement. However, this supposition would soon be challenged and the idea that academic self-

concept and academic achievement interact in a more reciprocal manner would soon become the focus of research.



**Figure 2** The domain specific hierarchical structure of self-concept.

(Adapted from Marsh, Byrne, and Shavelson, 1988)

*Support for reciprocal causality.*

Hattie (2008) examined the causal flow of self-concept and examined three models using a meta-analysis (Valentine, 2001, as cited in Hattie) that offers possible explanations for the relationship between different aspects of self-concept. First, that student achievement leads to a positive self-concept. This model explains that when a student performs well academically, it will impact his self-concept in a positive manner. This model has also been referred to as the skills development model. The second model,

the self-enhancement model, identifies the causal pathway as being the reverse of the skills enhancement model, whereas a positive self-concept will have a positive impact on student achievement. The last model, the reciprocal model, indicates that the causal pathway works in both directions with achievement and self-concept influencing one another. Valentines study, which included over 60,000 samples from 60 studies, led him to conclude that model three, the reciprocal model, received more convincing evidence than the other two.

Researchers continued to explore the direction of causality between academic self-concept and academic achievement as described by the Marsh/Shavelson Model. In another study by Marsh and O'Mara (2008), they examined data from the Youth in Transition Study, a longitudinal study with five different data points, which sample included 10<sup>th</sup> grade boys on the United States in 1966. They tested the reciprocal equations model using the Structural Equation Modeling in MPLUS. They found significant correlation that supports the reciprocal effects model. The results included correlations of .35, .30 and .36 during data collection points 1, 3, and 4, respectively, when GPA precluded ASC and correlations of .14 and .15, for data collection points 2 and 3, respectively, when ASC precluded GPA. The results support the conclusion that academic self-concept and academic achievement interact in a two directional manner, each influencing the other. In this particular study, the results support academic achievement having a more influential effect on academic self-concept.

Marsh and Yeung (1997) studied the interplay between self-concept and academic achievement (mathematics, science, and English) in a sample of 603 boys in grades 7-10 at enrolled in Catholic Schools in Sydney, Australia. They collected data in a longitudinal



manner by collecting achievement scores (student grades) six times and self-concept measures (SDQII) three times. By analyzing the causal pathways in 21 models—seven models for the three academic disciplines—they examined different variations of the causal pathways between academic achievement and self-concepts. The results support that the influence between these two constructs is reciprocal in nature. The results were so convincing that Marsh and Yeung stated, “Despite a wide variety of different designs, samples, and ages, the research reviewed here is reasonably consistent in providing support for the reciprocal effects model” (p. 43).

Marsh (1990b) studied the causal ordering of academic achievement and self-concept by using data collected through the Youth in Transition study in 1966, which collected self-reported grades and a self-concept measure at three different intervals. As with other studies, he used the LISREL statistical analysis package to create a structural equation model (SEM) using path coefficients. Based upon his results, which refuted the findings by Marsh and O’Mara (2008), it was determined that self-concept significantly impacted academic achievement, thus providing the most compelling evidence for what would later be identified as the self-concept enhancement model.

### *Academic Achievement*

#### *Knowledge and skills.*

Cliffordson (2008) stated that grades are used by teachers “to provide information about students’ knowledge and skills” (p. 57). Consequently, whether a teacher provides a numerical assessment based upon graded assignments, such as quizzes and tests, or an effort grade for variables, such as participation or overall attitude, the grade indicates a specific level of knowledge or effort. It also offers a convenient means to compare

achievement or effort on consecutive assignments because a grade of 90% or an “A” indicates a higher level of understanding of the material than an 85% or a “B.” However, an issue is the subjective nature of grading, making it difficult to ascertain if same grades from different teachers mean the same thing (Mertler, 2001, as cited in Brookhart, 2004).

*Motivation.*

Teachers assign grades for student work in order “to increase [their] motivation to learn” (Cliffordson, 2008, p. 57). If a student is not performing to his potential, then a teacher may use his grades to communicate this message to the student and/or parents. A failing grade, which may prevent a student from matriculating to the next grade level, would signal to a student that more effort was necessary.

*College acceptance.*

A culmination of grades as an indication of a student’s overall performance during the school year or entire high school career may be “used as a tool for selection to the next level in the school system” (Cliffordson, 2008, p. 57). One of the most frequent applications of a student’s grade point average (GPA) is during the college admissions process. In conjunction with GPA, most schools will use standardized tests scores as an additional criteria for acceptance. However, in recent years, admissions officers at colleges and universities have started to reevaluate the validity of both measurements in predicting future academic success.

*Supporting research.*

The University of California, Berkeley (Geiser & Santelices, 2007) studied a sample of almost 80,000 freshman from 1996-1999 to determine if high school GPA or standardized test scores were better predictors of future academic success at the

university. The results indicated that high school grade point average was a more accurate indication of cumulative four year GPA than standardized test scores. Conclusively, when analyzing high school GPA, it accounted for 20% variance in Model 1, which also included parents' education, family income, and school API Rank. Model 2, which replaced grades with SATI Verbal and Math scores, accounted for only 13.4% of the variance. Holding other potential influences on student achievement constant, grades were a better indicator of academic achievement than standardized test scores.

These findings were supported by a Swedish study (Cliffordson, 2008), which was very similar to the Berkeley study (Geiser & Santelices, 2007) in that it examined the predictive validity of grades versus the Swedish Scholastic Aptitude Test (SweSAT). However, as a result of a recent effort to standardize the grading process in Sweden, the researchers were able to examine the effects of norm-referenced grading (used for selection) in comparison to criterion referenced grading (used for measuring level of student knowledge) (Cliffordson, 2008). In a rather interesting measure of academic success, the study compared the Expected Obtained Credit Points (EOCP) instead of high school GPA or cumulative four year college GPA. When comparing the EOCP from students in the 10<sup>th</sup> percentile to students in the 90<sup>th</sup> percentile using a GPA with norm-referenced grades the regression coefficient was 5.174 and when comparing students in the 10<sup>th</sup> percentile to students in the 90<sup>th</sup> percentile using a criterion-referenced GPA, the regression coefficient was 7.866. These findings are even more convincing when comparing students in the 10<sup>th</sup> percentile to students in the 90<sup>th</sup> percentile using SweSAT, the regressions coefficients were only 1.288 and 1.669, for norm-referenced and criterion-referenced grading, respectively. Accordingly, not only does GPA have better

predictive validity than standardized tests for future achievement, criterion-referenced grading systems provide even better predictability. Even though these studies support the use of GPA as a valid measure of future academic achievement, there are concerns about the inconsistencies among teachers' practices that call into question their use as a measure of academic achievement in research studies (Brookhart, 2004; Cliffordson, 2008; Geiser & Santelices, 2007).

The calculation and assignment of grades is primarily the teacher's responsibility (Brookhart, 2004), and it is the subjectivity inherent in grading which categorizes the assessment process to be less reliable than standardized test scores (Geiser & Santelices, 2007). In a study by Campbell and Evans (2000, as cited in Brookhart), they discovered that only 25 out of 237 teacher lesson plans were designed with enough rigor to support reliability or validity measures. The grading of the assessments by teachers is also of concern as recent studies have determined that teachers inflate grades due to pressures of performance or promotion (Cliffordson, 2004a, as cited in Cliffordson, 2008). The variability within a school is pronounced but this issue can be of greater concern if a study is using a sample across different schools because differences in subjectivity between schools can be even greater than from within (Wikström, 2005, as cited in Cliffordson; Geiser & Santelices). Even with concerns about reliability of grades based upon teacher behavior and actions, there are several student-centered factors supporting the use of grades as a measure of achievement.

Cumulative GPAs are the result of many interactions and classroom experiences with varying teachers. In addition, during each of these learning opportunities there are usually many chances for the student to display his level of understanding or knowledge

through multiple assessments. It is this variety and collection of assessments over a longer period of time, more so than just the one-day snapshot of a standardized test, which may provide an even more accurate barometer of a student's academic achievement (Cliffordson, 2008; Geiser & Santelices, 2007).

As important, the student's personal experiences should be reflected in the assessment. Grades determined at the school level are more suited to assess what the student has learned at that school, whereas a standardized test may not evaluate what the student has learned because it is based on national standards (Brookhart, 2004). The income status of the student's family or even the community in which he school is located can have a negative impact on their standardized test score, such as the SAT, because this test have been shown to be bias toward students of low-socioeconomic status (Cliffordson, 2008; Geiser & Santelices, 2007). Grades were found unaffected in the same manner (Geiser & Santelices).

Because student achievement measured with GPA is more dependent upon the students' experiences with teachers, the school environment and their own personal learning experiences, which directly impacts their motivation (Marsh, Köller, Trautwein, Lüdtke, & Baümert, 2005), GPA should be used when studying the construct of academic self-concept (Wylie, 1979, as cited in Marsh, 1987). This conclusion regarding GPA as a measure of achievement when studying self-concept is supported by a study of sixth to twelfth grade boys at an independent boys' school (Reichert & Kuriloff, 2004). The researchers were examining the social aspects of the school environment by administering the General Self-Concept Sub-scale of SDQII as one of the student questionnaires. They found that general self-concept and GPA are correlated at .23 with p

< .01. The only other measure, which was more strongly correlated with GPA, was mother's educational level.

Student academic achievement involves more than just the numerical score on an assessment or the letter grade given for effort, but is a complex relationship between the teacher and student as well as the student and the school environment. The Rope Model of Self-Concept accounts for the intricacies of this student experience.

### *Current Self-Concept Models*

#### *The rope model.*

The Rope Model uses the metaphor of the fibers, yarns, and strands of a rope to represent the interlocking relationship between the behaviors that a person will display to maintain a positive self-concept (Hattie, 2008). Even though this model can be represented in a hierarchical figure, it represents a much more interactive and dynamic academic self-concept than either the Shavelson Model or the Marsh/Shavelson Model. The fibers in Hattie's Rope Model of self-concept represent the daily strategies that an individual will deploy while he or she is navigating their environment on a typical day. The individual's reaction to environmental stimuli provides an indication of their self-concept. There are six examples that Hattie provides to explain the components of the fibers in the "rope" of self-concept: self-handicapping, setting low expectations and goals, discounting and distorting, perfectionism, social comparison, and self-monitoring. The intertwining of the fibers creates the foundation for the next level in the construction of the self-concept "rope." The fibers are integrated together and may be grouped by behaviors to form the different yarns, as suggested by Hattie.

The implementation of these strategies is situation specific. The yarn consists of

self-efficacy, performance versus learning strategies, and uncertain personal control. A strand consists of yarns grouped together and provides the individual with overarching strategies to navigate environments and elicits individual behaviors, which enhance their self-concept. In addition, they provide stability for the individual by preventing potentially detrimental events from altering self-concept. As Hattie suggests:

Our aim as individuals with respect to self-concept is self-protection, self-presentation, self-preservation, and self-promotion, whereas the more intertwining aspects include the various strategies we can invoke to protect, present, preserve, and promote our self-concepts. (p. 5)

The strands consist of self-verification, self-enhancement, self-protection, and collectivism versus individualism.

Using behaviors to define an individual's academic self-concept is a deviation from the previous models discussed. However, by using Social Comparison Theory, the connections between the Rope Model and the Internal/External Frame of Reference Model, which is based upon the Marsh/Shavelson model, will be explored (see Figure 3).

*Internal/External frame of reference model*

The Internal/External Frame of Reference Model (I/E) further delineates the multidimensional aspect of self-concept (Marsh, 1990a). As individuals develop their academic self-concept they will make comparisons to their peers' achievement, the external comparison, and will compare their perceived math abilities with their perceived verbal abilities, the internal comparison (Marsh). The I/E Model is the first of the self-concept models to suggest that academic

self-concept is formed not only by self-evaluation but also by social comparison (Byrne, 2002). Festinger (1954) points out that when individuals begin to examine the opinions and abilities of others in comparison to themselves, they are beginning the uniformity process. By comparing their ability and

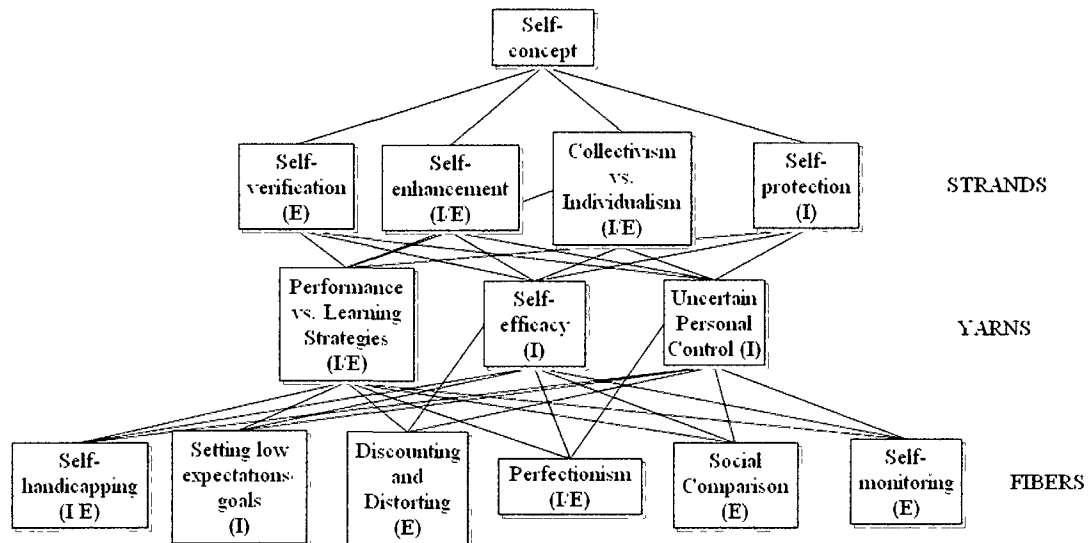


Figure 3. The rope model of self-concept with internal frame of reference (I) and external frame of reference (E) (Marsh, 1990a).  
(Adapted from Hattie, 2008)

opinions to others, they may change their behavior in order to meet the standards of their peer group.

In addition, they will begin the social process of finding groups that will match their ability if they are not initially successful at increasing their achievement (Festinger). In the Rope Model (Hattie, 2008), the strands of self-verification and self-protection refer to this same process. In self-verification a person will try to align with an environment or people that support his self-concept. Self-enhancement refers to the person being selective in feedback from others to enhance their self-concept.

An individual's attempt at uniformity parallels the I/E Model, which indicates that



math self-concept and math achievement will be highly correlated and the same relationship exists for English self-concept and English achievement. Furthermore, math achievement actually has a negative effect on English self-concept and English achievement has a negative effect on math self-concept (Marsh, Shavelson, & Byrne, 1988). Because an individual wants to be with people that have matching abilities and social status, it necessitates that their academic self-concept reflect what their talents are. A student who performs poorly in mathematics will first seek to improve his ability, and then if unsuccessful, look to another area where he may experience success- English. This action can be found in both a strand and a fiber in the Rope Model (Hattie). By joining a group where success is more likely, the student is practicing self-protection (strand). In addition, by seeking the English group, which will enhance his likelihood of success, he is self-monitoring (fiber).

The last step in the uniformity process (Festinger, 1954) is the desire to be in an environment, which maintains a positive self-concept. The result of this step can be seen as a last resort for a student who has a negative self-concept in a certain educational setting but flourishes in another. His natural abilities make it easier for him to fit in or successfully transcend the process of uniformity as suggested by Festinger. The Rope Model (Hattie) suggests that this behavior is similar to the strand, collectivism versus individualism. By moving to another school where his abilities and talents better match the other students, he is accomplishing two goals: he is maintaining his identity while blending in with the larger group.

The social comparison aspect of academic self-concept can be a difficult experience to go through as a student navigates the middle school. However, the process

that a new student must go through is even more difficult, especially if they are moving from a less academically challenging environment to one that is more challenging (Marsh, 1987).

*big-fish-little-pond effect (BFLPE).*

BFLPE has been studied as an extension of the previous models of self-concept. BFLPE refers to the process when a student enters into a more challenging academic environment from one, which was less rigorous. Students will then compare their accomplishments with these more competitive groups of peers, which results in a negative effect on their self-esteem (Marsh, 1987; Marsh, Köller, & Baumert, 2001).

When a student moves to a more academically challenging school, whether it is by choice or because of external conditions beyond their control, there is a significant negative impact on their academic self-concept (Brunner, Keller, Hornung, Reichert, & Martin, 2009; Marsh, Köller, & Baumert, 2001). It can have an impact on their academic performance as well (Marsh, 1987). According to Social Cognitive Theory (Bandura, 2008) these circumstances describe the first of three types of environments (Imposed, Selected, and Created) that a person may operate within. When a student moves into a new school, there is the possibility that this new environment was “imposed” upon them, resulting in a feeling of lack of control for the student (Bandura). As a result of this newly imposed situation, the student may “select” to act in either a negative or positive way to it. By reacting negatively, there is evidence to suggest that this transition into a new school will negatively impact his self-concept in both academic and sports related areas (Cole et. al, 2001, as cited in Marsh & O’Mara, 2008). This situation is evident in the fibers of the Rope Model (Hattie, 2008). A student may decide to self-handicap,

where he will lower his expectations of performance to maintain a positive self-concept; he may set lower goals so it is easier for them to be achieved; or he may try to be a perfectionist, where he may attempt goals that are out of his reach. Ultimately, the student will strive to “create” an environment that he has more control of his success and failures. This new student may look for other opportunities to establish a positive self-concept. This behavior is similar to the self-efficacy (a yarn) as explained by Hattie in the Rope Model, where the student believes that he can control his environment to protect his self-concept.

Even though the Rope Model has not been supported by empirical evidence, BFLPE has been the subject of several experiments with support the notion that a student will experience a negative self-concept when they move into a more rigorous and homogenous academic setting.

A longitudinal study conducted by Marsh, Köller and Baümert (2001) used three time periods to correlate mathematic achievement and academic self-concept. The data was obtained from the Educational Careers and Psychosocial Development in Adolescence in the East and West German School Systems, which resulted in 30 math achievement scores. Their sample consisted of 2778 seventh grade students. They used a 4-item self-concept measure that was administered at the beginning, middle, and end of their seventh grade year. Their findings supported the fact that individual math achievement has a positive effect on individual math self-concept but that math class achievement has a negative effect on individual math self-concept. Consequently, they found that the negative effects slowly dissipated as the year progressed.

Marsh (1987) used data from Youth in Transition Study, which consisted of 2213

boys in eighty-seven high schools during 1960. In this particular study, he collected self-reported grades at three different time intervals and self-concept measures at two different time intervals. Using a one-way analysis of variance he determined that academic ability and achievement substantial impact academic self-concept with academic self-concept having a less significant impact on school performance. Finally, he found that students who enter into a more rigorous academic environment, it negatively impacts their academic self-concept. Marsh elucidates by stating:

There is an important need for research on what actually happens when students move from one academic setting to a new academic setting where the average ability level is quite different, and on the individual characteristics that may determine how students will react to this stressful transition. (p. 292)

This study focused on examining the Big-Fish-Little-Pond Effect as it pertains to middle school boys. Even though there are many parallels between BFLPE, Social Cognitive Theory, and the Rope Model, this study only focused on examining BFLPE because there is currently no instrument designed to measure which behaviors students may be using to maintain a positive self-concept, as suggested by the interaction of the rope metaphor, specifically the three levels-strands, yarns, and fibers.

A follow-up study investigating the behaviors and actions of those students, who are new to the middle school and have a negative self-concept, would provide additional insight into the Rope Model of Self-Concept.

## Chapter 3

### *Methodology*

When students make a successful transition to a new school environment is important for their academic success. This is especially important when a student enters into a school setting that is more academically competitive than the one they are coming from (Marsh, 1987; Marsh, Köller, & Baumert, 2001). This study used the Academic Self-Description Questionnaire I (ASDQI) for grade six and the Self-Description Questionnaire II (ASDQII) for grades seven and eight to assess a sample consisting of middle school boys. In addition to the administration of the questionnaire, grade point averages were collected at three separate time periods and standardized tests scores were collected for the sixth and seventh grades (standardized tests were unavailable for the eighth grade). Hopefully, the results of the study will enable school administrators and teachers to identify any areas where the effects of the transition for new students can be addressed to ensure that their academic self-concepts remain positive.

### *Design*

This was a causal comparative study that collected data at sequential points during the 2010-2011 academic school year. The independent variable was student status (returning or new enrollment) in the middle school. In this study, participants are considered returning if they matriculated from the previous grade in the current school being studied. Participants are considered newly enrolled if they matriculated from

a different school last year than the current school being studied. The dependent variables are academic self-concept, grade point average (GPA) and standardized test scores using the Educational Records Bureau (ERB) tests. Within the construct of academic self-concept, sub-variables of art, computer studies, Language Arts, mathematics, music, athletics, science, geography/history, general academic self-concept, and general self-concept were collected. The data were used to test the hypotheses:

1. Newly enrolled students to the middle school will initially experience more negative domain specific academic self-concepts than students who are returning or have been promoted from within the school.
  - a. Specific Domains
    - i. Art
    - ii. Computer studies
    - iii. Language Arts
    - iv. Mathematics
    - v. Music
    - vi. Athletics
    - vii. Science
    - viii. Geography/History
2. New students to the middle school will initially experience a significant negative difference in general academic self-concept than students who are returning or have been promoted from within the school.
3. New students to the middle school will have a general self-concept that does not differ substantially from the students who are returning or have been promoted

from within the school.

4. New students to the middle school will initially experience lower academic achievement than students who are returning or have been promoted from within the school.

*Participants.*

The sample (N = 107) consisted of middle school (Grades 6-8) boys in an independent school located in a major metropolitan area in the eastern United States, with a majority of the students living in close proximity to the school. The population (n = 254) of this independent middle school consists of approximately 23% students of color. In addition, about 20% of the students receive at least partial financial aid. There were 36 students in the 6<sup>th</sup> grade, 36 students in the 7<sup>th</sup> grade, and 35 students in the 8<sup>th</sup> grade. There were 30 students considered newly enrolled with 20, 6, and 4, in grades six, seven, and eight, respectively. Their participation was voluntary with parental permission being necessary because they were minors. This study administered the Academic Self-Description Questionnaire I (ASDQI) and the Academic Self-Description Questionnaire II (ASDQII) at three different time periods, T1, T2, and T3, occurring on or about November 29, 2010, February 11, 2011, and March 25, 2011, respectively. Quarter grades were collected at the aforementioned dates as well, marking the end of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> quarter grades.

*Instrumentation.*

The Academic Self-Description Questionnaire I (ASDQI) was administered to the sixth grade students and the Academic Self-Description Questionnaire II (ASDQII) was administered to the seventh and eighth grades (Marsh, 1990c). The ASDQI consists of 79

questions, which use the Likert Scale responses from 1-8 with 1 being “Definitely False” to 8 being “Definitely True.” Because the instrument contained questions that pertained to subject areas not offered at the independent school, questions pertaining to “Spelling” (#3, 16, 31, 45, 59, and 86), “Reading” (#5, 19, 34, 48, 63, and 75), “Handwriting” (#11, 25, 40, 54, 68, and 81), and “Religious Studies” (#12, 26, 41, 55, 70, and 82) were removed from the ASDQI. The class identifier for “Physical Education” (#4, 18, 33, 47, 62, and 74) was changed to read “Athletics” and the variable for Language Arts was created using the exact same wording as other variable questions and inserting “Language Arts” where appropriate. The remaining 62 questions will be reformatted. The coefficient alpha estimate of reliability ranged from .88 to .94 (Marsh).

The ASDQII consists of 136 questions, which use the Likert Scale responses from 1-8 with 1 being “Definitely False” to 8 being “Definitely True.” Because the instrument contained questions that pertained to subject areas not offered at the independent school, questions pertaining to “Commerce” (#9, 27, 44, 62, 79, 94, 113, and 129), “English Language” (#2, 19, 37, 54, 71, 104, 106, and 133), and “Geography” (#11, 29, 46, 64, 81, 97, 115, and 131), “Religious Studies” (#15, 32, 50, 67, 85, 100, 118, and 134), and “Health” (# 16, 33, 51, 68, 101, 119, and 135) were removed. The wording of questions pertaining to “English Literature (#23, 41, 58, 76, 91, and 110) was changed to “Language Arts” to more accurately reflect the course offerings at the school. Questions pertaining to “Industrial Arts” (#15, 30, 47, 65, 82, 98, 116, and 132) were changed to “Design and Woodworking” to more accurately reflect the course offerings at the school. Questions pertaining to “Physical Education” (# 5, 22, 40, 57, 75, 90, 109, and 125) were changed to “Athletics” to more accurately reflect the course offerings at the school. The



remaining 80 questions were reformatted. The coefficient alpha estimate of reliability ranged from .885 to .949 (Marsh, 1990c).

The original ASDQI and ASDQII were created with 13 scales and 16 scales, respectively. The wording for each scale is identical:

ASDQI/ASDQII

Compared to others my age I am good at ( ) classes.

I get good marks in ( ) classes.

Work in ( ) classes is easy for me.

I am hopeless when it comes to ( ) classes.

I have always done well in ( ) classes.

I learn things quickly in ( ) classes.

ASDQII (additional questions for each scale)

It is important to me to do well in ( ) classes

I am satisfied with how well I do in ( ) classes.

The reliability calculated for each scale by Marsh (1990c) is unaffected by changing one word or words identifying the academic class of a particular scale. If any questions were removed from the versions of the ASDQI/II administered in this study, the entire scale was removed.

*Sample items.*

Number 1

“Compared to others my age I am good at **COMPUTER STUDIES** classes”

Number 3

“I am hopeless when it comes to **MATHEMATICS**”

Number 7

I get good marks in **SCIENCE** classes”

Number 8

“I am hopeless when it comes to **MUSIC**”

Number 9

“Overall I have a lot to be proud of”

Number 10

“I have always done well is **SOCIAL STUDIES** classes”

Number 14

“I am hopeless when it comes to most **SCHOOL SUBJECTS**”

Number 21 “I get good marks in **ART** classes”

#### *Grade point average.*

The use of grade point average (GPA) as a measure of academic achievement is well documented. Hansford and Hattie (1982) found a correlation of .34 between self-measures and GPA while only finding a correlation of .18 between self-measures and IQ. In a study of 603 students, Marsh and Yeung (1997) used school generated exams and teacher ratings to establish academic specific measures with reliabilities of .86, .87, and .85 for English, mathematics and science, respectively. While studying academic self-concept, Marsh (1987) determined that at two different data collection points, GPA and academic self-concept were correlated (T1: .477, T2: .481) with standardized tests and academic self-concept were not correlated (T1: .477, T2: .481).

#### *Data Collection*

GPA's were recorded as the mean of individual class GPA's for each term. The

ASDQI/II were administered during a 40 minute study period by grade level. The survey was administered by the researcher with the assistance of other administrative team members and teachers.

### *Data Analysis*

The data was collected and input into IBM SPSS Statistics Standard Grad Pack v 19.0. The measures of central tendency were used to determine if the data fit a normal distribution pattern. Because it did follow a normal distribution, a two-tailed t-test was used to determine if there was a significant difference between the means for newly transitioned students and matriculated students in the areas of GPA and the hypothesized self-concept constructs. Because in at least one instance the two-tailed t-tests found significance, an analysis of variance (ANOVA) test was performed to determine any influence between the dependent variables that affected the results. The distribution pattern was not skewed so non-parametric tests were not conducted on the data.

<b>Hypotheses</b>	<b>Data Sources</b>	<b>Data Analysis</b>
1. New students to the middle school will initially experience a more negative academic self-concept than students who are returning or have been promoted from within the school.	Academic Self-Description Questionnaire I (ASDQI)  Academic Self-Description Questionnaire I (ASDQII)  Questions	
<i>a. Art</i>	(ASDQI) 6, 21, 35, 49, 64, 76  (ASDQII) 7, 25, 42, 59,	- Measures of Central Tendency  (Median, Mode,

	77, 92, 111, 127	Mean, and Standard Deviation) - Two-tailed t-test - Analysis of Variance (ANOVA)
<i>b. Computer Studies</i>	(ASDQI) 1,15, 29, 44, 58, 85  (ASDQII) 1, 18, 35, 54, 70, 103, 105, 121	- Measures of Central Tendency  (Median, Mode, Mean, and Standard Deviation)  - Two-tailed t-test - Analysis of Variance (ANOVA)
<i>c. Language Arts</i>	(ASDQI) 2, 16, 31, 45, 59,86  (ASDQII) 6, 23, 41, 58, 76, 91, 110, 126	- Measures of Central Tendency  (Median, Mode, Mean, and Standard Deviation)  - Two-tailed t-test - Analysis of Variance (ANOVA)
<i>d. Mathematics</i>	(ASDQI) 3, 17, 32, 46, 61, 73  (ASDQII) 4, 21, 39, 56, 74, 89, 108, 124	- Measures of Central Tendency  (Median, Mode, Mean, and Standard Deviation)  - Two-tailed t-test - Analysis of Variance (ANOVA)
<i>e. Music</i>	(ASDQI) 8, 23, 37, 52, 66, 78  (ASDQII) 10, 28, 45, 63, 80, 95, 114, 130	- Measures of Central Tendency  (Median, Mode, Mean, and Standard Deviation)  - Two-tailed t-test - Analysis of Variance (ANOVA)

<p><i>f. Athletics</i></p>	<p>(ASDQI) 4, 18, 33, 47, 63, 74</p> <p>(ASDQII) 5, 22, 40, 57, 75, 90, 109, 125</p>	<ul style="list-style-type: none"> <li>- Measures of Central Tendency</li> <li>(Median, Mode, Mean, and Standard Deviation)</li> <li>- Two-tailed t-test</li> <li>- Analysis of Variance (ANOVA)</li> </ul>
<p><i>g. Science</i></p>	<p>(ASDQII) 8, 26, 43, 61, 78, 93, 112, 128</p> <p>(ASDQI) 7, 22, 36, 51, 65</p>	<ul style="list-style-type: none"> <li>- Measures of Central Tendency</li> <li>(Median, Mode, Mean, and Standard Deviation)</li> <li>- Two-tailed t-test</li> <li>- Analysis of Variance (ANOVA)</li> </ul>
<p><i>h. Geography/History</i></p>	<p>(ASDQI) 10, 24, 38, 53, 67, 80</p> <p>(ASDQII) 3, 20, 38, 55, 73, 88, 107, 123</p>	<ul style="list-style-type: none"> <li>- Measures of Central Tendency</li> <li>(Median, Mode, Mean, and Standard Deviation)</li> <li>- Two-tailed t-test</li> <li>- Analysis of Variance (ANOVA)</li> </ul>
<p>2. New students to the middle school will initially experience a more negative academic self-concept than students who are returning or have been promoted from within the school.</p>	<p>(ASDQI) 14, 28, 43, 57, 72, 84</p> <p>(ASDQII) 17, 34, 52, 69, 87, 102, 120, 136</p>	<ul style="list-style-type: none"> <li>- Measures of Central Tendency</li> <li>(Median, Mode, Mean, and Standard Deviation)</li> <li>- Two-tailed t-test</li> <li>- Analysis of Variance (ANOVA)</li> </ul>
<p>3. New students to the middle school will have a general self-concept that does not differ substantially from the students who are returning</p>	<p>(ASDQI) 9, 20, 30, 39, 50, 60, 69, 79</p> <p>(ASDQII) 12, 24, 36, 48, 60, 72, 84, 96</p>	<ul style="list-style-type: none"> <li>- Measures of Central Tendency</li> <li>(Median, Mode, Mean, and Standard Deviation)</li> </ul>

or have been promoted from within the school.		<ul style="list-style-type: none"> <li>- Two-tailed t-test</li> <li>- Analysis of Variance (ANOVA)</li> </ul>
4. New students to the middle school will initially experience lower academic achievement than students who are returning or have been promoted from within the school.	Quarter Grades at T1, T2, and T3	<ul style="list-style-type: none"> <li>- Measures of Central Tendency  (Median, Mode, Mean, and Standard Deviation)</li> <li>- Two-tailed t-test</li> <li>- Analysis of Variance (ANOVA)</li> </ul>

*Missing data.*

Missing values as a result of participants not answering a question on either the ASDQI or ASDQII were treated within the construct of each variable. Since each variable in the ASDQI had six questions, one missing value represented approximately 16.7% of the data. As a result, the missing value was replaced using the mean score of the other questions within that variable. For the ASDQ II, one missing value represented approximately 12.5% of the data. As a result, the missing value was replaced using the mean of the score of the other questions within that variable. If any set of questions for any variable on either the ASDQI or the ASDQII were missing more than one answer, the variable for that participant was not included in the analysis.

For T1, the number of unanswered questions the entire sample of 36 sixth graders (ASDQI) was 11/2232 or .49% For T1, the number of questions left unanswered for the entire sample of 71 seventh and eighth graders (ASDQII) was 34/2880 or 1.2% For T2, the number of questions unanswered for the entire sample of 36 sixth graders (ASDQI) was 13/2232 or .58% For T2, the number of questions left unanswered for the entire

sample of 71 seventh and eighth graders (ASDQII) was 15/2880 or .52% For T3, the number of questions unanswered for the entire sample of 36 sixth graders (ASDQI) was 5/2232 or .08% For T3, the number of questions left unanswered for the entire sample of 71 seventh and eighth graders (ASDQII) was 11/2880 or .38% One participant in T1 was missing more than one response for the music variable, and at T2 was missing more than one response for the variables of art and music. Accordingly, these variables were designated as missing data during the data analysis.

*Negative scoring.*

On the ASDQ I and ASDQII, there were fifteen and sixteen questions, respectively, that were negatively scored. The participants' answers on these questions were changed accordingly. On negative scoring questions, a Likert response of "1" was changed to "8," a response of "2" was change to "7," etc.

*Equivalent scores.*

In order to complete the data analysis, data from the ASDQI and the ASDQII needed to be equivalent. For each variable studied using the ASDQI, there were only six questions pertaining to that variable as opposed to eight questions for the same variable in the ASDQII. The exception to this was the general self-concept variable because it was composed of eight questions for both types of questionnaires. Therefore, the highest possible score for each variable on the ASDQI was 48 while the highest possible score of each variable in the ASDQII was 64. Accordingly, each total variable score in the ASDQI was multiplied by (64/48) in order to create an equivalent score comparable to the ASDQII for the same variable.

*Process*

The participants of this study were volunteers. Since they were minors, parent written permission (See Appendix) was obtained by explaining that their son will be asked to complete either the ASDQI or ASDQII questionnaire at three points during the school. In addition, their son's GPA was computed and collected at the end of the first, second, and third quarters. The questionnaires were completed the end of each quarter, after students received their quarter grades. Any data collected as well as any results were kept confidential. However, the results of this study may impact the School's policies and procedures for assisting new students with their acclimation to school. Prior to initiating this study, the Human Subjects' Research Committee (HSRC) at the College of William and Mary provided written approval to complete this study in accordance with the rules and regulations of the HSRC.



## Chapter 4

This chapter begins with a description of the sample studied. It is then organized by presenting the data and the corresponding data analysis for each of the research hypotheses. The final section of this chapter will address any additional questions that arose as a result of testing the four hypotheses.

### *Description of the Sample*

The sample (N =107) of middle school aged boys in grades six - eight was self-selected from a population of n = 254. There were 36 participants in sixth grade, 36 participants in seventh grade and 35 participants in eighth grade. Of the 107 participants, 30 were newly enrolled and 77 matriculated from last year. Twenty students from the sixth grade, six students from the seventh grade, and four students from the eighth grade were newly enrolled.

### *Examination of the Research Questions*

#### *Domain specific academic self-concept.*

The first of four hypotheses proposed that new students to the middle school would initially experience more negative domain specific academic self-concepts than students who are returning or have been promoted from within the school. In order to determine if this hypothesis is correct or if the null-hypothesis is correct, the Academic Self-Description Questionnaire I and II was administered to the sixth, and seventh and eighth grades, respectively, at three time periods, T1, T2, and T3. (See Table 1)

By using an Independent Samples two-tailed t-test, statistical significance was found between the two groups, newly enrolled and matriculated students, for Science (T1,  $t(105) = -2.15$ ,  $p = .034$ ; T2,  $t(105) = -2.46$ ,  $p = .016$ ; T3,  $t(105) = -2.13$ ,  $p = .036$ ). When comparing the newly enrolled students (T1,  $M = 53.9$ ,  $SD = 6.9$ ; T2,  $M = 54.3$ ,  $SD = 8.3$ ; T3,  $M = 54.3$ ,  $SD = 7.4$ ) and the matriculating students (T1,  $M = 50.00$ ,  $SD = 9.0$ ; T2,  $M = 49.9$ ,  $SD = 8.5$ ).

Table I

*Independent Sample t Test Results and Means of Survey Results for Specific Academic Domain for T1, T2, AND T3*

	<i>ASC</i>	<i>N</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>p*</i>
AR						
	T1	106	47.0	45.44	12.85	.365
	T2	105	49.0	44.89	14.11	.869
	T3	107	48.0	45.85	13.32	.837
CP						
	T1	106	53.0	50.55	10.58	.982
	T2	107	52.0	50.21	10.98	.762
	T3	107	52.0	56.27	58.35	.676
LA						
	T1	107	50.0	49.48	9.85	.145
	T2	107	52.0	49.5	10.91	.226
	T3	107	52.0	50.45	9.44	.093
MA						
	T1	107	55.0	54.29	6.98	.175
	T2	107	56.0	54.77	7.10	.091
	T3	107	56.0	55.28	6.08	.266
MU						
	T1	105	49.0	47.34	13.08	.751
	<i>ASC</i>	<i>N</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>p*</i>
	T2	105	50.0	46.78	13.92	.751
	T3	107	51.0	47.85	13.07	.372
AH						
	T1	107	57.0	54.45	9.48	.769
	T2	107	56.0	54.00	10.27	.324
	T3	107	56.0	54.63	9.40	.929
SC						
	T1	107	53.0	51.07	8.63	.034

	T2	107	53.0	51.11	8.67	.016
	T3	107	54.0	51.65	8.05	.036
HI	T1	107	55.0	53.87	7.06	.839
	T2	107	55.0	54.59	6.55	.394
	T3	107	56.0	54.22	6.91	.274

Note: ASC= Academic Self-Concept; AR =Art ASC; CP = Computer ASC; LA

=Language Arts ASC; MA = Mathematics ASC; MU = Music ASC; AH = Athletic SC;

SC = Science ASC; HI = History ASC. \*  $p < .05$ .

T3,  $M = 50.6$ ,  $SD = 8.1$ ), these findings support the null hypothesis, with newly enrolled students have a higher science specific academic-self-concept than matriculating students.

It is interesting to note that the mathematics self-concept scores were not found to be significant (T1,  $t(105) = -1.37$ ,  $p = .175$ ; T2,  $t(105) = -1.71$ ,  $p = .091$ ; T3,  $t(105) = -1.12$ ,  $p = .266$ ) but the change in t-test values suggest that a greater disparity between the two groups evolved from T1 to T2 but then became more equivalent T3. The reverse of this pattern can be found in the Language Arts t-test values (T1,  $t(105) = 1.47$ ,  $p = .145$ ; T2,  $t(105) = .122$ ,  $p = .226$ ; T3  $t(105) = 1.70$ ,  $p = .093$ . Table 2 further delineates the change in the mean as the two groups progressed through the school year.

It is apparent that the significant difference evident at T1 between the two groups in science had only increased at T2. This pattern of the newly matriculated students improving their self-concept scores in continued in the realm of mathematics, though not significantly. (See Table 2)

In Language Arts, the matriculating students' self-concept decreased while the newly enrolled students increased. In order to examine if there is a difference between the experiences concerning newly enrolled students and matriculated students in

mathematics and science for each grade level (i.e. 6, 7, 8), an analysis of variance was performed, followed by a Tukey HSD post-hoc test.

Data analysis revealed significant differences in mathematics academic self-concept variable (T1,  $F(2,103) = 6.16$ ,  $MSE = 273.48$ ,  $p = .003$ ; T2,  $F(2, 103) = 5.51$ ,  $MSE = 255.74$ ,  $p = .005$ ). Further investigation using the Tukey HSD post-hoc test determined that there were significant differences between grades six and eight (T1,  $p = .004$ ; T2,  $p = .005$ ) and between grades seven and eight (T1,  $p = .023$ ; T2, n.s.)

The difference was not significant for the science academic self-concept variable ( $F(2, 103) = 2.891$ ,  $MSE = 208.22$ ,  $p = .060$ ) at T1 but were significant at T2 ( $F(2, 103) = 4.673$ ,  $MSE 328.509$ ,  $p = .011$ ). Further investigation using the Tukey HSD post-hoc test determined that there was a significant difference between grades six and eight (T2,  $p = .016$ ).

*General academic self-concept.*

Table II

*Changes in Survey Results for Specific Academic Self-Concepts and Corresponding Independent Sample t Test Results*

		Newly Enrolled Students	Matriculating Students	$\Delta$	$p^*$
	<i>ASC</i>		<i>M</i>		
SC	T1	53.90	49.97	3.93	.034
	T2	54.33	49.86	4.47	.016
	$\Delta$	+ .43	- .11	+ .54	
	T2	54.33	49.86	4.47	
	T3	54.67	50.63	4.01	.036
	$\Delta$	+ .34	+ .77	- .46	
MA	T1	55.76	53.72	2.04	.175
	T2	56.63	54.05	2.58	.091
	$\Delta$	+ .87	+ .33	+ .54	

	T2	56.63	54.05	2.58	
	T3	56.33	54.87	1.36	.266
	Δ	-.30	+.82	+1.22	
LA	T1	47.22	50.36	3.14	.145
	T2	47.43	50.29	2.86	.226
	Δ	+.21	-.07	+.28	
	T2	47.43	50.29	2.86	
	T3	48.00	51.42	3.42	.093
	Δ	+.57	+1.23	+.58	

Note. ASC = Academic Self-Concept; C = Science ASC; MA = Mathematics Academic Self-Concept; LA = Language Arts ASC.

\*  $p < .05$

The second hypothesis tested was that new students to the middle school would initially experience a significantly more negative general academic self-concept than students who are returning or have been promoted from within the school. Based upon an independent samples two-tailed t-test, there was not a significant difference between the means for newly enrolled students and matriculated students concerning the variable of general academic self-concept (T1,  $t(105) = -.340$ ,  $p = .735$ ; T2,  $t(105) = .289$ ,  $p = .773$ ; T3,  $t(105) = -.025$ ,  $p = .980$ ).

The mean for this variable, general academic self-concept was 54.8 for both T1 and T2, with a similar standard deviation of 6.3 and 7.7, respectively. It is interesting to note in Table 3,

Table III

*Changes in Survey Results for General Academic Self-Concept and Corresponding Independent Sample t Test Results*

	Newly Enrolled Students	Matriculated Students		
	<i>M</i>		Δ	<i>p</i> *
GASC				
T1	55.51	55.05	.44	.735

T2	54.47	54.95	.48	.773
Δ	- 1.04	- .10		
T2	54.47	54.95	.48	
T3	55.53	55.49	.04	.980
Δ	+1.06	+ .64		

Note. GASC = General Academic Self-Concept

\*  $p < .05$

however, that for both groups, newly enrolled and matriculate students, there was a decrease in general academic self-concept from T1 to T2.

#### *General self-concept.*

The third hypothesis posited that new students to the middle school would have a general self-concept that does not differ substantially from the students who are returning or have been promoted from within the school. The mean of this variable, general self-concept had a mean of

56.3 and 56.1 for T1 and T2, respectively. The standard deviation change from T1 to T2 was

not significant as well. The slight changes of newly enrolled students and matriculated students are outlined in Table 4.

The results of the independent samples two tailed t-test indicated that there was not a significant difference between the means of the newly enrolled and matriculated students general self-concepts (T1,  $t(105) = .322$ ,  $p < .05$ ; T2,  $t(105) = .608$ ,  $p < .05$ ).

These results support the third hypothesis.

#### *Academic achievement.*

The fourth hypothesis examined if new students to the middle school will initially experience lower academic achievement than students who are returning or have been promoted from within the school. The mean for the first grading period, T1, and the second grading period, T2, remained consistent at 90.6, with the standard deviation only

fluctuating slightly from one grading period to the next with 4.58 and 4.16, respectively. The changes within each group are minimal, as outlined in Table 5. The results of the independent samples two tailed t-test supports the null hypothesis, indicating that there is no difference between the two groups in either the first marking period GPA or the second marking period GPA (T1,  $t(105) = -.320$ ,  $p = .750$ ; T2,  $t(105) = -.817$ ,  $p = .416$ ; T3,  $t(105) = -.182$ ,  $p = .853$ ).

Table IV

*Changes in Survey Results for General Self-Concept and Corresponding Independent*

*Sample t Test Results*

GSC	Newly Enrolled Students	Matriculated Students	$\Delta$	$t^*$
	<i>M</i>			
T1	55.20	56.69	1.49	.322
T2	55.40	56.36	.96	.608
$\Delta$	+.20	-.33	.53	
T2	55.40	56.36	.96	
T3	57.43	57.84		.804
$\Delta$	+2.03	+1.48		

Note. GSC = General Self-Concept.

\*  $p < .05$ .

*Additional Questions*

The standardized test score for the students participating in this study were compared for the students in grades six and seven because these scores were unavailable for the eighth grade.

Table V

*Changes in Grade Point Average (GPA) and Corresponding Independent Sample t Test*

*Results*

	Newly Enrolled Students	Matriculated Students
--	----------------------------	--------------------------

GPA		<i>M</i>	$\Delta$	<i>p</i> *
Q1	91.08	90.80	.28	.750
Q2	91.19	90.46	.73	.416
$\Delta$	+. 1	+. 1		
Q2	91.19	90.46	.73	
Q3	90.79	90.62	.17	.856
$\Delta$	-.38	+.16		

Note. GPA = Grade Point Average

\**p* < .05

Out of seven standardized test sub-sets, significant differences were found only in vocabulary and writing mechanics were significant differences found between newly enrolled students and matriculated students. In this case, the newly enrolled students scored significantly lower on the vocabulary and writing mechanics sub-sections of the ERB standardized tests. For the vocabulary section the significance was indicated by a  $t(70) = 2.21$ ,  $p = .030$ , for the writing mechanics section the significance was indicated by  $t(70) = 2.04$ ,  $p = .045$ .

Upon further analysis of the standardized tests scores, significant differences exist between the scores of sixth and seventh grade participants. (See Table 6)

Table VI

*Standardized test sub-test score differences by grade and Corresponding Independent*

*Sample t Test Results*

	Newly Enrolled Students	Matriculated Students	$\Delta$	<i>p</i> *
	<i>M</i>			
Vocabulary	353.19	363.19	10.44	.030
Reading	352.69	357.00	4.31	.237
Comprehension				
Writing	342.85	350.33	7.48	.045
Mechanics				
Writing	353.42	354.50	1.08	.803



### Concepts

Note. \*Significant at  $p < .0$

### *Conclusion*

The findings of this study supported the hypothesis that there would not be a significant difference in the general self-concept between the newly enrolled students and the matriculating students. However, the findings of this study did not support the hypotheses concerning significant differences in the domain specific academic self-concepts, general academic self-concept, and academic achievement between the newly enrolled students and matriculating students.

Two unexpected results pertained to science academic self-concept and the standardized test scores. The newly enrolled students had a significantly higher science academic self-concept for all three time periods, a finding which refutes the premise of the Big-Fish-Little-Pond Effect. Additionally, the newly enrolled students scored significantly lower on two sections of the ERB tests. This data is interesting considering there was no significant difference in GPA between the two groups of participants.

## Chapter 5

The results of this study do not confirm the premise of the Big-Fish-Little-Pond-Effect (BFLPE) theory (Marsh, 1987) that students entering into a more academically selective environment will initially experience a negative effect on their self-concept. However, the results do offer support for several of the theories from which the BFLPE was theorized. Therefore, it is appropriate to discuss the results in the context of the evolution of the construct of self-concept with an emphasis on its multidimensionality and its foundation in Social Comparison Theory (Bandura, 2008; Festinger, 1954). After discussing the results in the context of the four hypotheses, recommendations for future research and implications of this study for educational practices will be discussed.

### *Domain Specific Academic Self-Concept*

The Shavelson Model of Self-Concept (Shavelson, Hubner, & Stanton, 1976) provides a hierarchical model of self-concept with each level pertaining to different facets of an individual's life. At the top of this hierarchy is general self-concept (GSC) with two subcategories, academic self-concept (ASC) and non-academic self-concept (NASC), in the next level. Accordingly, each of these subcategories is further delineated into school subjects, such as mathematics and English for ASC, and social, emotional, and physical self-concepts for NASC. Marsh, Shavelson, and Byrne (1988) refined this model as they found support for removing GSC from the top of the hierarchy and replacing it with domain specific academic self-concepts for math (MASC) and English (EASC). In

essence, their findings, which were supported by other researchers (Ireson & Hallam, 2000), suggested that GSC had no impact on ASC or NASC.

In line with social comparison theory (Festinger, 1954) and social cognitive theory (Bandura, 2008) that posit individuals will use their environment and the individuals in that environment to make assessments about their own abilities, The Internal/External (I/E) Frame of Reference Model (Marsh, 1990a) outlines the process of academic self-concept formation whereby a student makes an external comparison with another student to assess their perceived academic ability in a particular subject, and then makes an internal comparison of their perceived ability in that subject to create their perceived ability in another subject. This process is closely aligned with Marsh, Shavelson, and Byrne's (1988) model of academic self-concept because the external/internal comparison is usually performed between the subjects of mathematics and English.

The negative impact on a student's academic self-concept when they move into a more rigorous academic setting is the Big-Fish-Little-Pond Effect (BFLPE) (Marsh, Koller, & Baumert, 2001; Marsh, 1987). It is an extension of the I/E Model, which incorporates Bandura's (2008) Social Cognitive Theory that an individual must operate within one of three types of environments; imposed, selected, or created. This is applicable to BFLPE because in many academic settings, a student's movement between schools or from a regular sectioned class to an advanced class may be within his locus of control or out of his control.

*Hypothesis #1: Testing the Big-Fish-Little-Pond Effect*

Domain specific academic self-concepts of students who were newly enrolled in

the middle school were not significantly lower than students who matriculated from within the school. The only significant finding was in the science academic self-concept variable where the newly enrolled students had significantly higher scores than the matriculated students for each time period: T1, T2, and T3.

*Explanation of findings based on current research.*

In support of these findings, research has shown that students who transition from fifth to sixth grade experience only a net positive impact on both academic and non-academic areas. Additionally, the most negative impact on student transitions occurs from sixth to seventh grade (Barber & Olsen, 2004; Cauley & Jovanovich, 2006; Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanigan, & Iver, 1993). In the current study, the number of transitioning (newly enrolled) sixth graders (N=20) was double the number of transitioning (newly enrolled) seventh and eighth graders (N=10). The fact that the transition into sixth grade is perceived as more positive than the transition into seventh and eighth grade, in conjunction with the imbalanced sample of sixth grade students, could have masked any negative Big-Fish-Little-Pond Effect to the seventh and eighth grades.

A study by Rudolph, Lambert, Clark & Kurlakowsky (2001) examined the transition experience for 329 students that transitioned to the sixth grade in two distinct groups—one group transitioned from fifth to the sixth grade from within the same school and the second group of students transitioned from fifth to sixth grade from different schools. They determined that the transition for students from within the same school experienced a much more positive transition than students who were newly enrolled. The current study's design closely resembles the design of this study. Consequently, if the

participants in the current study reacted to their transition in the same manner as the students in the Rudolph et al. study, one could assume that the matriculating students would have a more positive experience; ultimately, boosting their academic self-concepts. The current study did not address the transition experience, and since the newly enrolled students had equal or higher academic self-concepts than the matriculating students, several possible explanations exist: the more positive transition experience for the matriculating students in the current study did not affect their academic self-concept; the newly enrolled students' transition was more positive, boosting their academic self-concepts; or both groups' transition experience was the same, with little or no impact on academic self-concept. Because the results of this study determined that the academic self-concepts of the newly enrolled students were equal or higher in all variables, taking a closer look at their transition experience is warranted.

Two additional studies support this hypothesis concerning the negative impact on academic self-concept by students entering into a more academically challenging environment. First, in a study of 2213 high school aged boys, it was determined that students who moved into a more rigorous academic environment, their academic self-concept was affected in a negative way as predicted by BFLPE (Marsh, 1987). Second, Marsh, Koller and Baumert (2001) discovered that math students' self-concepts were negatively affected if they were in a high performing math class.

Even though these studies support the Big-Fish-Little-Pond Effect, there is some concern about using the Social Comparison Theory (Festinger, 1954) and Social Cognitive Theory (Bandura, 2008) as bases for its premise (Dai & Rinn, 2008).

In 2000, Marsh, Kong and Hau explored further support for the social comparison

basis for Big-Fish-Little-Pond (BFLPE) Effect. They performed longitudinal research on 10,366 students in Hong Kong from 7-10 grades by using placement scores, achievement tests, and academic self-concept surveys. In addition to examining BFLPE, they also collected data on student assimilation, the process of students using their environment rather than achievement to shape their academic self-concept. Assimilation would involve the students using either an upward comparison or downward comparison of their peer group to enhance their academic self-concept. For instance, if the comparison downward enhanced a student's academic self-concept, then s/he would choose that direction of comparison than an upward comparison that would have a negative impact on their self-concept (Cheng & Lam, 2007; Dai & Rinn, 2008; Marsh et al.). However, if students were to enter into a highly competitive academic environment, they could choose an upward comparison, aligning themselves with students who possess a more positive academic self-concept. By making a comparison in this direction, they are in essence artificially inflating their academic self-concept, a process called a reflected-glory affect (Marsh, 2004, as cited in Marsh et al). It was suggested that both processes, social comparison, which causes a negative effect on ASC (BFLPE) and assimilation, which has a counter effect to the negative influence of BFLPE, occur simultaneously for students as they determine their ASC. However, in the Hong Kong study, the findings supported this supposition but also found that the positive effects of assimilation do not completely negate the negative effects on ASC caused by BFLPE. The researchers further elucidates the findings by stating:

More specifically, because academic self-concept is more strongly anchored to an external, objective standard (academic achievement), we

argue that a well-defined academic self-concept responses are not so easily self-manipulated by impression management, flexible downward and upward comparison, discounting, defensive pessimisms, self-handicapping, and other cognitive strategies designed to protect self-worth so that social comparison based on the immediate environment are more influential than for more easily self-manipulated measures of subjective well-being. (Marsh et. al)

In the current study, because the students were enrolled in a highly selective academic environment, the process of assimilation could explain the non-significant differences between the domain specific academic self-concepts for the two groups of participants. However, according to Marsh et al., any reflected-glory affect would not be positive enough to mask the negative aspects of BFLPE.

Dai and Rinn (2008) proposed that the Big-Fish-Little-Pond Effect discounts the importance of assimilation in the formation of academic self-concept. They contend that the theory does not take into consideration the ability of an individual to decide which aspects of a social environment are viable as comparisons for self-concept enhancement. A similar contention is made by Cheng and Lam (2007) that; “Self-evaluation is usually done in a relative rather than absolute manner because judgment is context dependent and social comparison sets the standards or frames of reference (p. 197).” In essence, BFLPE removes any decision-making from the process. Bandura (2008) suggests that an individual possesses “an agentic perspective to their self” (p.16), which enables them to control their lives through situational and motivational choices and coping mechanisms (Dai & Rinn), as summarized:

A major issue involving the assumption underlying the BFLPE is whether social comparison is imposed by an impinging environment, which carries information too compelling to ignore, as is presumably the case in many academic contexts; or whether social comparison is self-engendered by individuals who are motivated to make social comparison for specific self-evaluative or other adaptive purposes, and as a result wittingly or unwittingly pick specific comparison targets or particular comparison information. (Dai & Rinn, p. 301)

Cheng and Lam's (2007) performed a study, which examined the effects of Big-Fish-Little-Pond Effect (BFLPE) and assimilation on self-concept by using the precept of self-construal (Markus & Kitayama, 1991, as cited in Cheng & Lam). Self-construal is the social process whereby an individual will either act independently of others or in an interdependent manner, resulting in them seeking group membership. In order to study this process, 96 Chinese students in grade seven were asked to take an Abstract Reasoning Test. At the conclusion of the test, participants were asked questions to determine if they participated in the process of self-evaluation as an interdependent person or an independent person. The results indicated that students who were independent oriented experienced a more negative self-evaluation when using an upward comparison and more positive self-evaluation when using a downward comparison than the interdependent oriented students, whose self-evaluation either upward or downward in comparison was more closely aligned. Cheng and Lam concluded that:

The results of the current study demonstrated how self-construal moderated social comparison effects. As expected, contrast effect was confirmed in the independent self-construal condition. If schoolmates performed very well, students in the



independent self-construal condition perceive themselves as “little fish in a big pond” and would therefore experience a negative evaluation. On the other hand, if schoolmates performed poorly, students would perceive themselves as ‘big fish in a little pond’ and would therefore experience positive self-evaluation. Yet, such a contrast effect was attenuated if students were in the interdependent self-construal condition. Students reported positive self-evaluation no matter how their schoolmates performed. (p. 207)

In the context of testing the first hypothesis, it is plausible that newly enrolled students could have equal (or significantly higher) self-concepts than matriculating students because of reflected glory or being interdependently oriented in the self-evaluation process. The Big-Fish-Little-Pond Effect doesn’t necessarily account for the ability of an individual to make choices in Social Comparison Theory (Dai & Rinn, 2008) and the concept of self-construal can play a part in the social comparison process (Cheng & Lam, 2007), the results of this study in the context of testing the first hypothesis, makes it plausible that newly enrolled students could have an equal (or significantly higher) self-concepts than matriculating students because of reflected glory or being interdependently oriented in the self-evaluation process.

#### *Hypotheses #2 General Academic Self-Concept and #3 General Self-Concept*

There was not a significant difference between the general academic self-concept (GASC) variable for newly enrolled students and students that matriculated. The null hypothesis was confirmed in this study. There also was not a significant difference between the general self-concept (GSC) variable for newly enrolled students and matriculating students. The study confirmed this hypothesis.

These two hypotheses are grouped together in the discussion because the research concerning them usually pertains to both of them.

*Explanation of findings based on current research.*

Shavelson, Hubner, and Stanton (1976) introduced general academic self-concept as part of their hierarchical model of self-concept. Self-concept was thought to be multi-faceted such that each individual's self-concept could be further delineated into the two sub-categories of academic self-concept and non-academic self-concept. Furthermore, these sub-categories consisted of additional facets of an individual's self-concept. General academic self-concept (GASC) contained English, mathematics, history, and science domain specific self-concepts. Even though an individual's general self-concept (GSC) was unaffected by the lower self-concepts, GASC could be affected by its sub-categories.

In support of the null hypothesis for GASC, a study examining the effect of ability grouping in elementary schools in England on student academic self-concept determined that ability grouping did not impact general academic self-concept but did negatively affect domain specific self-concepts (Ireson & Hallam 2009). This finding lends support to the Marsh/Shavelson Model of Self-Concept, which places the academic domain specific self-concepts of mathematics and English at the top of the hierarchy. An earlier study by Shavelson and Bolus (as cited in Marsh & Shavlson, 1985) supports the null hypothesis as well by finding that general academic self-concept is highly correlated with general self-concept but not with the math, English, or science self-concepts.

*Hypothesis #4 Student Achievement*

There was not a significant difference between the academic achievement of

newly enrolled students and matriculating students. The null hypothesis is true.

*Explanation of findings based on current research.*

In the current study, quarterly grades were used instead of the Educational Records Bureau (ERB) standardized test to measure academic achievement because of the established relationship between grades and self-concept formation (Brookhart, 2004; Marsh, Koller, Trautwein, Lodtke, & Baumert, 2005). With the basis of the Big-Fish-Little-Pond Effect being grounded in social cognitive theory (Bandura, 2008) and social comparison theory (Festinger, 1954), grades provide the reference point for students to assess their academic self-concept because students are aware of not only their grades but other students' grades as well. Achievement tests do not offer this same reference point because, in most cases, the students are unaware of their scores and of other students' scores. However, there is support for the use of both grades and achievement scores in self-concept studies.

A study examining the hierarchical structure of self-concept with a sample of Canadian children used teacher grades in conjunction with self-concept questionnaires to support their findings (Marsh, Shavelson, & Byrne, 1988). Kornolva, Kornoliv and Chumakova (2009) collected grade point averages and self-concept responses to study the causal pathway for self-concept and achievement. In another study examining the causal pathway conducted by Marsh and O'Mara (2008), grades were used from the data collected in the national Youth in Transition Study. In most cases, grades were collected from official transcripts, but high reliability has been found in using self-reported grades to correlate with self-concept measures (Dickhauser, 2005; Moller, Streblov, Pohlmann, & Koller, 2006). Conversely, national standardized exam scores and self-concept

questionnaires were used in a study to differentiate the domain specific academic self-concepts from the hierarchical model (Ireson & Hallam, 2009).

This study administered the ASDQ I/II after each of the first marking periods, which enabled the students to know their grades before taking the questionnaire. Previous studies have examined the causal relationship between grades and self-concept in an attempt to determine the direction of influence in this relationship (Hattie, 2008; Marsh, 1990b; Marsh & O'Mara, 2008; Marsh & Yeung, 1997). Calsyn and Kenny (1997, as cited in Marsh & Yeung; Marsh) used two models to describe the duality of this interaction between grades and self-concept. The skills enhancement model, suggests that student achievement has a significant impact on his or her self-concept. Conversely, the self-enhancement model, identifies self-concept as having a more significant impact on achievement. However, recent studies indicate that the relationship between achievement and self-concept is reciprocal in nature each significantly impacting the other (Hattie; Marsh; Marsh & O'Mara; Marsh & Yeung). It is the reciprocity between these constructs that offer insight into the data collected in the current study.

Without doing further research that changes the order of the administration of the ASDQs to before the grades were collected, one can only surmise that a possibility for both groups having only slight differences in first quarter GPA is that both groups had similar self-concepts to begin with. This is a reasonable assumption considering the support for the reciprocal nature between achievement and self-concept. Additionally, the order of data collection in the current study indicates that because both groups had similar GPA at the each time period, T1, T2, and T3, similar self-concept scores resulted. Because of the reciprocal nature of this interaction, the positive impact would continue

through all three times periods. For instance, the high GPAs at T1 caused high scores on the self-concept measures at T1. These scores then influenced the GPA at T2, which had a positive effect on the T2 self-concept scores. This pattern would then continue in T3.

Standardized test scores for the current study were collected for the sixth and seventh grade students. Interestingly, there was a significant difference in the areas of Vocabulary and Writing Mechanics with the newly enrolled students scoring lower than the matriculating students. These areas could be categorized in the verbal academic self-concepts domain (Ireson & Hallam, 2009; Marsh, Shavelson, & Byrne, 1988; Moller, Streblow, Pohlmann, & Koller, 2006). The Internal/External (I/E) Frame of Reference Model (Marsh, 1990a) outlines the relationship between academic achievement and academic self-concept. Specifically, high mathematics achievement correlates with a high mathematics academic self-concept and high English achievement correlates with high English self-concept. There is some interaction between these two domains such that high achievement in one area results in a depressed self-concept in the other (Marsh, Shavelson, & Byrne). Recently, researchers have studied the possibility that (I/E) could be extended to cover other domains in addition to mathematics and English.

Chanal, Sarrazin, Guay, and Boiche (2009) examined the relationship between verbal, mathematics, and physical education self-concepts. Using a sample of high school students (N=451), they used five questions adapted from the Self-Description Questionnaire and administered it at the end of the academic year. They found no correlation between mathematics and verbal self-concept, no correlation between verbal self-concept and physical education self-concept, and a slight correlation ( $r = .12, p < .05$ ) between mathematics academic self-concept and physical education self-concept. Chanal

et al. summarize their interpretation of these results by stating, “Therefore, we can speculate that physical education could increase students’ spatial abilities, leading to better achievement in mathematics, which would lead in turn to the development of a better mathematics self-concept (p. 65). A study looking to expand on the same concept as Chanal et al. looked for correlations between mathematics and physics self-concepts and German and English self-concepts (Moller, Streblow, Pihlmann, & Koller, 2006). The results indicate that physics achievement correlates with mathematics self-concept (and vice versa) while not correlating with English or German self-concepts. The same was found for English achievement correlation with German self-concept (and vice versa) while also not correlating with mathematics or physics. Moller et al. suggested that, “The underlying psychological process may be that students who are good in math or physics attribute good grades in both subjects to similar competencies...” (p. 479). The results of these two studies can be used to possibly explain results in the current study.

The newly enrolled students having scored significantly lower in the areas of Writing Mechanics and Vocabulary tests would correlate to lower Language Arts self-concept than the matriculating students while at the same time correlate to higher mathematics self-concept (Marsh, 1990a) The results from the study indicate that there is no significant difference with the matriculating students having a higher Language Arts average self-concept score. The newly enrolled students, because they performed poorly on an “English” test have a higher mathematics self-concept than the matriculating students (Marsh). During T2, the difference is significant. Because of the broader relationship between academic self-concepts as suggested by Chanal, Sarrazin Guay, and Boiche (2009) and Moller, Streblow, Pihlmann, and Koller, (2006), the significantly

higher science academic self-concepts for the newly enrolled students could be due to the correlation between mathematics self-concept and science self-concept.

### *Implications for theory*

The population of middle school boys for this study was very specific to the type of school where they are enrolled. Even though the student body is diverse (23%), the uniqueness of their experiences limits the generalizability of the study beyond other all-boy independent middle schools. Because the sample consisted of student volunteers, this further decreased the studies applicability to other educational settings.

According to Sullivan (2009), the level of parent education also has a positive effect on student self-concept. This fact could have a two-fold effect on the sample: First, parents who value education most likely seek out a high quality and academically rigorous school for their son. Second, parents who appreciate the value of a doctorate degree or place an elevated status to it may be more likely to have their son participate in this study. Some additional unique characteristics, which make the school distinct, are its application process and the cost of tuition.

### *Application process.*

Each student is required to fill out an application that consists of a written writing sample, recommendations from two current teachers, student and parent interviews, grades, and standardized test scores from the Independent School Entrance Exam. The main entry point for the middle school is the sixth grade with almost one-third of the class being newly enrolled. The seventh and eighth grades are not significant entry points with perhaps five to eight students being enrolled for each class. Students with low grades and low ISSE exam percentages will not be admitted. The attrition for the middle

school is less than 2%

*Cost of tuition.*

The cost of tuition for the middle school is approximately \$23,000.00 per year. Even though financial aid is available, attending this school is cost prohibitive for some families. Ultimately, students who qualify academically may be unable to attend as a result of insufficient funds.

The application and the cost of tuition limit the accessibility of independent schools for students, which ultimately decreased the variability in the student sample for the current study. The artificial inflation of boys' self-concept when they are in a single-sex environment is further enhanced by the selectivity of this school and the cost associated with attending (Sullivan, 2009).

*Contributions to Current Theory*

Even though the sample in this study limits the generalizability of the results, there are findings that contribute to aspects of self-concept research. The data collected from the administration of the ASDQI and ASQDII, contributes to the ongoing research of the SELF Research Centre. The academic self-concepts, general self-concept, and general academic self-concept scores will be added to the growing database of information collected from these measurement instruments. Findings in this study support theories that general academic self-concept and general self-concept are not influenced by the domain specific academic self-constructs.

These findings supported the theory of reflected glory, in which the possible explanation for the negative effect of Big-Fish-Little Pond Effect was masked by the newly enrolled students choosing not to compare themselves with other students'



achievement but to assimilate with the school-wide academic achievement, thus inflating their self-concepts.

The Internal/External Frame of Reference (I/E) theory was supported by the newly enrolled students having lower ERB scores in two sub-categories of the English section than the matriculating students while having higher means in the mathematic domain of self-concept. Studies that support expanding the I/E theory to group mathematics-based subjects together and English-based subjects together were supported by the finding that newly enrolled students had a significantly higher science self-concept than the matriculating students, thus matching the higher mean in math self-concept with the higher science self-concept.

#### *Implications for Practice*

The impact on a student's academic self-concept while transitioning into a more academically selective middle school can be ameliorated by the efforts of administrators and teachers. With careful planning during the transition period and by focusing on the students' experiences in the classroom, their academic self-concept may be unaffected (Marsh, Chessor, Craven & Roche, 1995).

Establishing an effective transition program is the responsibility of the middle school administration. They must address several aspects of the middle school program, admission, curriculum and assessment, and teacher effectiveness, in order for the program to be a success (Parker, 2010; Wormelli, 2011). A student's perspective during their first middle school year is exemplified by the following statement:

Given the fact that a year in a middle school student's life is much larger percentage of his or her overall life than it is for an adult; and given all the

growth taking place-the mistakes, conflicts, insights, joy, tension, wisdom, and risk taking; and given that students lack the perspective that comes from life experience, it's no wonder that students experience their first year of middle school as intense and tumultuous. (Wormelli, p. 56)

*Admission process.*

The transition process should start before the students have started their new school year. By establishing a relationship with feeder schools, events that facilitate the transition for the students can start before enrollment in their new school. There are a wide variety of activities or events, which could take place. For instance, by offering newly enrolled students an opportunity to visit their new school by spending the day with current students, it would alleviate any potential anxiety associated with the unknowns of the new school. Conversely, current students could also spend time with newly enrolled students at their school to further assuage any trepidation about meeting new students (Wormeli, 2011).

In addition to providing exposure for the students, a healthy relationship between the schools would facilitate effective communication (Cauley & Jovanovich, 2006). Especially when entering into a more competitive academic environment, information concerning students during the application process and information about the curriculum and program that the independent school has to offer facilitates a good match for the student and school (Wormelli, 2011).

*Teacher effectiveness.*

Teaching middle school boys in an academically rigorous setting requires teachers that understand the learning styles of this age group as well as the impact this

environment may have on their academic self-concept. By having teachers that are well trained (Marsh, Chessor, Craven, & Roche, 1995; Wormeli, 2011) it will enhance the transition process as well as their experience in the classroom.

#### *Transition.*

Advisory groups can offer newly enrolled students support by teachers (Parker, 2010). Usually consisting of approximately half a dozen students with one teacher, these groupings provide an opportunity for students to get more individual attention, especially when they are struggling with either social or academic issues (Wormeli, 2011). Additional support for these students can be given through teams of teachers working in unison to monitor student concerns across several academic settings (Parker, 2010).

#### *Classroom.*

Because establishing an academic self-concept is a social comparison process, teachers should provide opportunities for students in rigorous academic settings to be successful in a variety of situations (Marsh, Chessor, Craven, & Roche, 1995). Having opportunities for the students to excel in athletics and the arts is as important to developing a positive self-concept as excelling in the classroom. This is especially pertinent with recent studies suggesting that success in athletics may enhance self-concept in disciplines such as mathematics.

#### *Assessments.*

Grades in any academic environment but especially in an academically rigorous environment can be seen as competition amongst the students, which may be detrimental to their self-concepts (Marsh, Kong, & Hau, 2000). By offering students the opportunity to demonstrate their mastery of the material in different ways will help moderate this

antagonism (Marsh, Chessor, Craven, & Roche, 1995). By taking the focus off their individual assessments and providing opportunities for team projects or portfolios, students will learn to celebrate their group's accomplishments (Wormelli, 2010).

### *Future Research*

#### *Sequential aspect of current study.*

The current study offers only a glimpse into the formation of self-concepts for middle school boys at this particular independent school. Even though this was a sequential study, the three time periods, T1, T2, and T3, occurred over a six-month time period. Most longitudinal studies examined self-concepts over several years with the administration of self-concept questionnaires at longer intervals of time. Continuing to collect data about this sample and perhaps recruiting more participants may reveal additional significant findings. For instance, collecting self-concept data before enrolling in the middle school may provide a better baseline for comparison of changes in means at different time periods. There is some evidence for academic self-concept scores decreasing during the transition from the six to seventh grade. By continuing to study this sample, support or refutation of these findings may be evident.

#### *Science self-concept scores.*

The significant difference in science self-concept scores is an interesting phenomenon, which deserves further scrutiny. Additional data collection could include identifying the teachers of these students and testing for significance; retrieving previous grades in science from previously attended schools; and determining if there is a connection between success in mathematics class and science self-concept.

Further use of the current data could be used to take a closer look at academic

self-concepts in terms of different participant demographics such as ethnicity, single parent households, and socio-economic status. By using the results of the ASDQI/II to work with individual students, some nuances or inconsistencies that could have been masked by the larger data set may be uncovered.

### *Summary*

The results of this study were surprising because the literature concerning Big-Fish-Little-Pond Effect (BFLPE) supports a negative impact on the academic self-concept of students moving into an academically selective program. Even more unexpected was the higher scores by the newly enrolled students in the science domain of academic self-concept. Most of the literature indicates that the magnitude of the reflected glory effect cannot mask the BFLPE. However, this study offers evidence of the possibility that reflected glory could mask the negative effects of BFLPE, which warrants further study. In order to build upon the findings of this study, researchers will need to use a larger sample size and wider population from which to recruit participants. Would the same results be found at another all boys' independent middle school? Would the same results be found at a coed independent middle school?

As researchers continue to examine the Internal/External Frame of Reference Theory (I/E) and expand the relationship of the verbal and mathematics self-concepts to other disciplines that share core content, such as foreign language with English and science with math, the data collected in this study could be used to study the expansion of I/E theory. The data for each participant was collected across the academic self-concept domains. A correlational study with these variables could provide important information to school personnel.

Administrators and teachers should use the information provided by academic self-concept studies to prepare their students to enter into rigorous academic settings. By investigating appropriate assessment and pedagogical methods for academically talented students, researchers will be able to provide additional insight into the social processes that form students' self-concepts.

## References

- Bandura, A. (2008). Toward an agentic theory of the self. In D. M. McInerney, H. M. Marsh, & R. Craven (Eds.), *Self-processes, learning and enabling human potential* (pp. 15-49). Charlotte, NC: Information Age Publishing Inc.
- Barber, B. K., & Olsen, J. A. (2004). Assessing the transitions to the middle and high schools. *Journal of Adolescent Research, 19*(3), 3-30.
- Brookhart, S. M. (2004). Classroom assessment: Tensions and intersections in theory and practice. *Teachers College Record, 106*(3), 429-458.
- Brunner, M., Keller, U., Hornung, C., Reichert, M., & Martin, R. (2009). The cross-cultural generalizability of a new structural model of academic self-concepts. *Learning and Individual Differences, 19*, 387-403.
- Byrne, B. M. (2002, August). *Validating the measurement and structure of self-concepts: Snapshots of past, present, and future research*. Paper presented at the meeting of 110<sup>th</sup> Annual Meeting of Psychologists, Chicago, ILL.
- Cauley, K. M., & Jovanovich, D. (September/October, 2006). Developing an effective transition program for students entering middle school or high school. *The Clearing House, 80*(3), 15-25.
- Chanal J. P., Sarrazin, P. G., Guay, F., & Boiché, J. (2009). Verbal, mathematics, and physical education self-concepts and achievements: An extension and test of the internal/external frame of reference model. *Psychology of Sport and Exercise, 10*, 61-66.
- Cheng, R. W., & Lam, S. (2007). Self-construal and social comparison effects. *British*

*Journal of Educational Psychology*, 77, 197-211.

- Cliffordson, C. (2008). Differential prediction of study success across programs in Swedish context: The validity of grades and tests as selection instruments for higher education. *Educational Assessment*, 13, 56-75.
- Dai, D. Y., & Rinn, A. N. (2008). The big-fish-little-pond effect: What do we know and where do we go from here? *Educational Psychology Review*, 20, 283-317.
- Dickhauser, O. (2005). A fresh look: testing the internal/external frame of reference model with frame-specific academic self-concepts. *Educational Research*, 47(3), 279-290.
- Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Iver, D. M. (1993). The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, 48(2), 90-101.
- Festinger, L. (1954). A theory of social comparison process. *Human Relations*, 7, 117-140.
- Geiser, S., & Santelices, M. V. (2007). *Validity of high-school grades in predicting student success beyond the freshman year: High-school record vs. standardized tests as indicators of four-year college outcomes* (Research & Occasional Paper Series: CSHE.6.07), Berkeley, California: University of California, Berkeley, Center for Studies in Higher Education.
- Hattie, J. (2008). Process of integrating, developing, and processing self- concept. In D. M. McInerney, H. M. Marsh, & R. Craven (Eds.), *Self-processes, learning and enabling human potential* (pp. 51-85). Charlotte, NC: Information Age Publishing Inc.



- Ireson, J., & Hallam, S. (2009). Academic self-concepts in adolescence: Relations with achievement and ability grouping in schools. *Learning and Instruction*, 201-213.
- Kornolova, T. V., Kornoliv, S. A., & Chumakova, M. A. (2009). Subjective evaluations of intelligence and academic self-concept predict academic achievement: Evidence from a selective student population. *Learning and Individual Differences (19)*, 596-608.
- Marsh, H. W. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of Educational Psychology*, 79(3), 280-295.
- Marsh, H. W. (1990a). Influences of internal and external frames of reference on the formation of math and English self-concepts. *Journal of Educational Psychology*, 82(1), 107-116.
- Marsh, H. W. (1990b). Causal ordering of academic self-concept and academic achievement: A multiwave, longitudinal panel analysis. *Journal of Educational Psychology*, 82(4), 646-656.
- Marsh, H. W. (1990c). The Structure of Academic Self-Concept: The Marsh/Shavelson Model. *Journal of Educational Psychology*, 82(4), 623-636.
- Marsh, H. W., Chessor, D., Craven, R., & Roche, L. (1995). The effects of gifted and talented programs on academic self-concept: The big fish strikes again. *Educational Research Journal*, 32(2), 285-319.
- Marsh, H. W., & Hau, K. (2004). Explaining paradoxical relations between academic self-concepts and achievements: Cross-cultural generalizability on the internal/external frame of reference predications across 26 countries. *Journal of Educational Psychology*, 96(1), 56-67.

- Marsh, H. W., Köller, O., & Baumert, J. (2001). Reunification of East and West German school systems: longitudinal multilevel modeling study of the big-fish-little-pond-effect on academic self-concept. *American Educational Research Journal*, 38(2), 321-350.
- Marsh, H. W., Köller, O., Trautwein, U., Lüdtke, O., & Baumert, J. (2005). Academic self-concept, interest, grades, and standardized test scores: Reciprocal effects models of causal ordering. *Child Development*, 76(2), 397-416.
- Marsh, H. W., Kong, C., & Hau, K. (2000). Longitudinal multilevel models of the big-fish-little-pond effect on academic self-concept: Counteracting contrast and reflected-glory effects in Hong Kong school. *Journal of Personality and Social Psychology*, 78(2), 337 – 349.
- Marsh, H. W. & O'Mara, A. (2008) Reciprocal effects between academic self-concept, self-esteem, achievement, attainment over seven adolescent years: Unidimensional and multidimensional perspectives of self-concept. *Perspectives on Social Psychology Bulletin*, 34, 542- 552.
- Marsh, H. W., & Shavelson, R. (1985). Self-concept: Its multifaceted hierarchical structure. *Educational Psychologist*, 20(3), 107-123.
- Marsh, H. W., Shavelson, R. J., & Byrne, B. M. (1988). A multifaceted academic self-concept: Its hierarchical structure and its relation to academic achievement. *Journal of Educational Psychology*, 80(3), 366-380.
- Marsh, H. W., & Yeung, A. S. (1997). Causal effects of academic self-concept on academic achievement: Structural equation models of longitudinal data. *Journal of Educational Psychology*, 89(1), 41 – 54.

- McInerney, D. M., Marsh, H. M., & Craven, R. (2008). Self-processes, learning, and enabling human potential: Dynamic new approaches. In D. M. McInerney, H. M. Marsh, & R. Craven (Eds.), *Self-processes, learning and enabling human potential* (pp.3-11). Charlotte, NC: Information Age Publishing Inc.
- Möller, J., Streblow, L., Pohlmann, B., & Köller, O. (2006). An extension to the internal/external frame of reference model to two verbal and numerical domains. *European Journal of Psychology of Education*, 21(4), 467- 487.
- Parker, A. (2010). A longitudinal investigation of young adolescents' self-concept in the middle grades. *Research in Middle Level Education Online*, 33(10), 1-13.
- Pollack, W. (1998). *Real Boys: Rescuing our sons from the myths of boyhood*. New York: Random House, Chapter 10 (230- 271).
- Reichert, M. C., & Hawley, R. (2009). Teaching boys: A global study of effective practices. Retrieved March 1, 2011, from <http://www.theibsc.org>
- Reichert, M. C., & Kuriloff, P. (2004). Boys's selves: Identity and anxiety in the looking glass of school life. *Teachers College Record*, 106(3), pp. 544-573.
- Rudolph, K. D., Lambert, S. F., Clark, A. G., & Kurlakowsky, K. D. (2001). Negotiating the transition to the middle school: The role of self-regulatory processes. *Child Development*, 72 (3), 929-946.
- Sax, L. (2005). *Why gender matters: what parents and teachers need to know about the emerging science of sex differences*. New York: Broadway Books, Chapter 5 (77-115).
- Shavelson, R. J., Hubner, J. T., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research*, 46(3), 407-441

Stephens, J. W. (2011, Spring). Where are the wild things? In middle school, where they are supposed to be. *Independent School*, 70(3), 98-103.

Wormeli, R. (2011). *Movin' up to the middle*. *Educational Leadership*, 68(7), 48- 53.

## Appendix

### Consent Form

#### *A Causal Comparative Study of Academic Self-Concept*

Dear Parent(s):

As part of the requirements for the doctoral degree program at the College of William and Mary, I am conducting a study to examine the academic self-concept of new to School X students with students who matriculated from within School X. The results of this investigation may provide information that will improve the transition experience for newly enrolled students.

Your son's participation in this study is voluntary. He will be asked to complete the Academic Self-Description Questionnaire I/II (ASDQII), a survey measuring self-concept through questions eliciting his opinion about his academic experiences. Your son's responses will be confidential, meaning that his responses will be known to the researcher but will not be divulged. In addition, his grade point average (GPA) and standardized test scores will be collected as part of this study. Every effort will be made to guarantee confidentiality of your son's identity in the study's report of results and to keep his personal information confidential. To this end, access to the collected data and analysis will be limited to the researcher.

The ASDQI will be administered at three different times during the year (end of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> quarters). The survey will be administered during a study hall and will be proctored by the researcher. GPA will be collected at the same time intervals. The Educational Records Bureau (ERB) standardized test scores (or an equivalent standardized test score) will be collected as well.

Because of the potential sensitivity of the focus for this study, there may be some minimal psychological discomfort directly involved with this research and that you are free to withdraw your permission for your son's participation and have him discontinue participation in this study at any time by notifying me by e-mail or telephone

If I have any questions that arise in connection with my participation in this study, you should contact Dr. Michael DiPaola, Dissertation Committee Chair and professor of EDUC 800 at 757-221-2234 or mdipaola@wm.edu. I understand that I may report any problems or dissatisfaction to Dr. Thomas Ward, chair of the School of Education Internal Review Committee at 757-221-2358 or tjward@wm.edu or Dr. Michael

Deschenes, chair of the Protection of Human Subjects Committee at the College of William and Mary at 757-221-2778 or [mrdesc@wm.edu](mailto:mrdesc@wm.edu).

Parent Consent:

Your decision or your son's decision whether to participate or not in this study will no way affect his standing at School X. Your signature below signifies that you are the legal guardian of

\_\_\_\_\_ and give permission for him to participate in this study.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant Parent Signature

It is important that your son understand what will be expected of him if he chooses to participate in this study. Please discuss his involvement as stated previously. I will also speak with the participants about their participation in this study at the time the survey is administered.

Son's Assent:

Please have your son sign this document if he is willing to participate in this study.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant (Student) Signature

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Vita

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