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The Effects of grouping and curriculum on the self-concept of gifted children

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The Effects of Grouping and Curriculum on the Self-Concept of Gifted Children

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Abstract

The Big-Fish-Little-Pond Effect predicts gifted students educated in heterogeneous settings develop higher academic self-concept than those educated in homogeneous settings. Academic self-concept of students in multi-age classroom using the Primary Years International Baccalaureate Program (Primary IB) was compared to academic self-concept of students in single-aged classroom learning traditional curriculum. Data were collected (N=65) on third and fourth-graders using the Self-Description Questionaire (Marsh, 1992). It was hypothesized that gifted and non-gifted students educated in multi-age classrooms taught with Primary IB have higher academic self-concept than children in single age classrooms. Results of 2x2 ANOVA indicated no significant differences between gifted and non-gifted students in these settings. In this study, academic grouping and curriculum have no significant effect on student's academic self-concept.

CHAPTER 1

Introduction

Student Self-Concept

Despite research expansion in the last few years, still relatively little is known about the characteristics of gifted children. Because giftedness is such a fluid or relative concept and can manifest itself differently in diverse contexts or environments, there is not a single definition. This makes it very difficult to identify a set of characteristics that are unique to gifted children. One characteristic that has been extensively studied by researchers is self-concept in gifted children.

Research indicates that self-concept seems to have universal importance and is one of the most essential constructs in the social sciences (Obiakor & Stile, 1993). *Self- concept* is defined as a repertoire of behaviors that indicate how one perceives him or herself. These perceptions are formed through environmental experiences and are influenced by the evaluation of others, and rewards that act as reinforcers (Shavelson et al, 1976). Positive and negative self-concept can best be described as being on a continuum. One specific type of self-concept, *academic self-concept*, can be defined as the belief that a person has about their ability related to school performance (Williams & Montgomery, 1995). The need to feel and think positively about oneself is a valued outcome in and of itself but also has positive effects on choice, planning, and accomplishments (Bandura, 1986; Marsh & Craven, 1997). Improving student academic self-concept has been a major goal for schools to foster (Shavelson & Bolus, 1982). In recent years, research suggests that positive academic self-concept demonstrates a causal effect on academic achievement (Marsh, 1987; Shavelson & Bolus, 1982; Marsh, Byrne & Yeung, 1999).

Since the early 1900's psychologists have realized that accomplishments and self-concept are evaluated according to a frame of reference (Marsh & Hau, 2003). Social Comparison Theory is one theory used for analyzing frame of reference effects. *Social Comparison Theory*

states that in the absence of an objective physical basis for evaluation, assessment of one's ability or self-worth takes place by comparing oneself to others (Festinger, 1954; Coleman & Fults, 1982). One such frame of reference is *The Big-Fish Little-Pond Effect* (BFLPE) (Marsh & Parker, 1984), which states that higher achieving or gifted students will have higher self-concepts when educated in a setting consisting of students possessing a wide range of academic ability levels. However, if these same students were placed in an environment where their ability becomes average relative to similarly high achieving students, these gifted students will develop lower self-concepts.

Factors Related to Student Self-Concept

This theory seems to be very relevant when trying to identify the educational environment for gifted students that will maximize their self-concept, which in turn, is related to improving academic achievement (Marsh & Hau, 2003). When students learn at the highest academic level they are capable, which is thought to increase their academic achievement and self-concept, they are more likely to graduate and make the decision to attend college (Marsh, 1991)

A great debate has surfaced on the best educational placement setting or grouping for gifted students (Kulik & Kulik, 1992). Educational grouping of gifted students can be divided into two general categories: homogenous grouping and heterogeneous grouping. These are relative terms that can also be thought of as being on a continuum and in past studies have been defined in different ways. As studies of the Big Fish Little Pond Effect and educational placements for gifted students have progressed, the definitions of heterogeneous and homogeneous have evolved. With respect to academic ability, *homogenous groupings* are made up of students with similarities while *heterogeneous groupings* are made up of students displaying greater differences than the group they are being compared to.

In previous studies, examples of homogeneous groupings of academic ability included grouping practices such as accelerated classes, non-graded groupings, and selective schools. Heterogeneous groupings included multi-age and multi-grade groupings, cluster groupings, or with-in class groupings, and pull-out enrichment programs (Renzulli, Gentry & Reis, 2003).

In the past, when examining educational placements for gifted students, many parents, and educators assumed that placing gifted children in highly achieving, selected schools or what was considered a homogenous grouping, would have immense academic benefit because academic achievement is usually higher in these schools (Marsh, 1991; Craven & Marsh, 2000). Proponents of the BFLPE suggest that this conclusion does not control for the higher levels of academic achievement presented by these students initially (Zeidner & Schleyer, 1999) or take into account the negative impact of the BFLPE on self-esteem or self-concept (Marsh).

In more recent years, there has been an increase of research that supports a trend to educate children in mixed-ability settings, which when looking at the continuum of educational settings would be considered more heterogeneous (Holloway, 2003). *Multi-age classrooms* assemble children together that span two or more grade levels (Lloyd, 1999). They are formed by choice, not economical need (Lloyd). Children educated in this type of classroom are taught cross grade material and stay with the same teacher for more than one year (Lloyd). Multi-age classrooms are thought to be, by definition, more heterogeneous when compared to a single-age classroom because the ability levels of the children in this type of classroom will be more diverse since there is a greater difference in the age and grade of the students educated in that setting.

A greater number of school districts are switching to utilizing the heterogeneous, multi-age classroom (Olaiya, 2001). Academic achievement tests given to children educated in these types of classrooms show the same or slight improvement when compared to the academic achievement of children educated in typical single aged classrooms (Slavin, 1992). There also

seems to be a positive effect on the social and emotional development of these children educated in multi-aged classrooms as well (Lloyd, 1999).

Because of previous research studies on grouping methods, New York State does not readily educate using homogeneous grouping such as accelerated classes, non-graded groupings, and selective schools anymore. Recalling that homogeneous and heterogeneous are relative terms, for purposes of this study, *homogenous grouping* is defined as a group of students that are taught using traditional grade-level curriculum, in a classroom consisting of only students in the same grade. *Heterogeneous grouping* is defined as a group of students taught using the International Baccalaureate Curriculum, in a classroom consisting of students spanning two grade-levels that are assumed to have a larger difference in academic ability compared to the homogenous group due to this grade and age difference.

Although the negative impact of BFLPE has been empirically established, it is also important to mention that not all gifted students experience this negative impact. This leads researchers to believe that maybe grouping is not the only component of a gifted child's education that affects their self-concept. Researchers have made the argument that social comparisons are made within the context of many classroom factors, which interact and determine student outcome and self-concept (Marshall and Weinstein, 1984).

One of these other classroom factors that also seem to be related to self-concept is the type of curriculum that is taught and the way it is presented by the teacher (Kulik & Kulik, 1992). Previous research has indicated that grouping practices with minor adjustments to course content have little or no effect, while grouping methods with larger curriculum adjustments, produce positive effects (Kulik & Kulik). Curriculum experts advocate for a balance in developing both cognitive and social abilities in gifted students (Elmore & Zenus, 1994). Many features have been identified as important when developing a curriculum that will turn out

productive gifted students. Some of these identified features are the need for appropriate challenges to sustain motivation, recognition that gives realistic feedback, the need for task-oriented situations, the need for a peer group that does not force them to choose between achievement and social growth, and the need for adequate adult models (Tookey, 1999). These features are very different from traditional curriculum that is usually fact oriented and is developmentally appropriate for a 12-month age range, not a multi-age classroom. Many researchers have proposed different learning models and have suggested different curriculum to use in classrooms across the country, but one particular type of curriculum that has recently been developed and seems to have potential is The International Baccalaureate Program (Singh, 2002; Tookey, 1999).

The International Baccalaureate Program was originally developed as a pre-university curriculum, by The International Baccalaureate Organization, a private organization founded in Geneva, Switzerland. It was later modified to be more appropriate for younger children and as a result, the Middle Years Program as well as the Primary Years Program were developed by teachers and administrators educating in international schools (Singh & Tookey). These programs are identified as beneficial for gifted and non-gifted students alike because instead of teaching the students content, it teaches them concepts and characteristics that will help them function in an international world as well as having many of the other characteristics known to promote students to reach their academic potential (Singh & Tookey).

Significance of the Present Study

Using the theoretical foundation of the Big Fish Little Pond Effect, the current investigation continues previous research in the examination of self-concept in gifted education and compares the academic self-concept of gifted and non-gifted children educated in a homogeneous setting to gifted and non-gifted children educated in a heterogeneous setting.

Educational components such as grouping practices and classroom curriculum are scrutinized to determine their importance in forming a student's academic self-concept as well as their academic achievement. Information obtained from this study as well as future studies will optimistically influence states to create educational programs that maximize every students learning potential in an effort to generate academic success as well as higher academic self-concept.

CHAPTER 2

Literature Review

Giftedness

What does it mean to be a gifted child? Because giftedness and intelligence are fluid or

relative concepts and being gifted can manifest itself differently in diverse contexts or

environments, there is no single definition (National Association for Gifted Children, 2007)

New York State's (Chapter 740 of the Laws of 1982, Article 90) definition of gifted is:

> Gifted pupils are pupils who show evidence of high performance capability and
> exceptional potential in areas such as general intellectual ability, specific academic
> aptitude, and outstanding ability in visual and performing arts. Such definition shall
> include those pupils who require educational programs or services beyond those normally
> provided by the regular school program in order to realize their full potential (section
> 4451).

The Columbus Group is a group of educational leaders that met in July of 1991 and developed a

definition that differs from New York State's definition and defines giftedness through social

and emotional characteristics, including heightened intensities, which are discrepant from the

norm. This definition defines asynchronous development in gifted children as social, physical,

emotional, and cognitive traits developing at different rates (Silverman, 1997; National

Association for Gifted Children, 2007).

> Giftedness is asynchronous development in which advanced cognitive abilities and
> heightened intensity combine to create inner experiences and awareness that are
> qualitatively different from the norm. This asynchrony increases with higher intellectual
> capacity. The uniqueness of the gifted renders them particularly vulnerable and requires
> modifications in parenting, teaching, and counseling in order for them to develop
> optimally. (National Association for Gifted Children, 2007).

Both of these definitions, as well as a combination of these definitions, have been used in New

York State to understand and identify gifted children as well as influence gifted education (see

Fairport Central School District: Parent Handbook, 2007). The Columbus Group definition

seems relevant to this study also since self-concept can develop independently and at a different

pace compared to cognitive abilities. Researchers consider this asynchronous development a risk factor influencing educational outcomes for gifted students that may require modifications in classroom groupings and educational curriculum (Akin, 2005). Many others have developed their own definition of giftedness but there are too many and listing them would go beyond the scope of this paper.

Each school district in NYS has their own method of identifying gifted students. Usually it includes, an interview with the child and their parents, observations, aptitude testing and a review of their problem solving and writing performance (see Fairport Central School District: Parent Handbook, 2007). The assessors are seeking students that are creative, curious, self-critical, and have strong feelings and opinions. These are usually indicators that students have high critical and organizational thinking skills as well as good analytical reasoning abilities. (Fairport Central School District: Parent Handbook).

In the past, a great deal of effort has been put forth in researching methods to help improve the education of students with academic difficulties or deficits, while the area of gifted education has not received as much attention. Proponents of gifted education argue that because of asynchronous development, gifted children need to be taught in modified settings with modified curriculum and that this should be an area of research that is thought of as significant as well (Silverman, 1997).

Self-Concept

The literature suggests that, self-concept, defined as a repertoire of behaviors that indicate how one perceives him or herself, seems to have universal importance (Obiakor & Stile, 1993). Self-knowledge, self-esteem, and self-ideal are components of self-concept (Obiakor & Stile). It is formed by processing, storing, and organizing self-related information in a systematic way (Shavelson & Bolus, 1982; Obiakor & Stile, 1993; Zeidner, & Schleyer, 1998). These

perceptions are also formed through environmental experiences and are influenced by the evaluation of others and behaviors or rewards that act as reinforcers (Shavelson et al, 1976). Self-concept is also one of the most essential constructs in the social sciences in that it seems to influence many aspects of a person's life (Obiakor & Stile, 1993). The need to feel and think positively about oneself is a valued outcome in and of itself but it also seems to be positively related to planning, choices, and accomplishments in many different areas of a person's life (Bandura, 1986; Marsh & Craven, 1997).

Hierarchical structure of self-concept.

Historically, research pertaining to self-concept assumed a model of general or total self-concept. However, research in recent years suggests that the construct of self-concept is a multifaceted, hierarchical structure (Shavelson, et al, 1976; Byrne, 1984; Marsh, 1990). Self-concept components begin with general self-concept, which is thought of as the most general and stable feature of the model. The model then moves into two broad constructs: non-academic and academic concept. Social, emotional, and physical domains fall under the non-academic component of self-concept, while particular subject areas like Mathematics and English falls under academic self- concept. Many studies completed by other researchers have supported this multifaceted and hierarchical model of self-concept (See e.g. Byrne, 1984; Felson, 1984; Marsh, 1993; Marsh & Rowe, 1996).

Academic Self-Concept

Academic self-concept can be defined as the belief that a person has about their ability related to school performance (Williams & Montgomery, 1995). Research studies indicate that academic self-concept is differentiated from the other domains of self-concept (Williams & Montgomery). Improving academic self-concept has been a major goal for schools to foster in their students (Craven & Marsh, 2000). Assessing academic self-concept is important when

examining educational practices such as classroom grouping and curriculum. Intuitively, there is an overall relationship of academic self-concept to academic achievement: a belief exists in the idea that you will perform better in school if you think you are capable of it. This leads to the assumption that positive self-concept is motivational and will lead to increases in academic performance (Marsh, 1993; Marsh & Hau, 2003).

In recent years, research suggests that positive self-concept affects academic behavior, educational aspirations, academic achievement, and other long-term improvements of skill in many different areas (Marsh). In fact, this research also suggests that short-term gains in skills and achievement will not necessarily be sustained and have long-term positive effects unless self-concept is also improved or remains at satisfactory levels that will help promote student's social or academic success (Marsh). Further research has identified a linear relationship between positive academic self-concept and persistence in academics as well as coursework selection (Marsh & Hau, 2003).

However, other researchers have questioned the direction of the causal relationship between positive academic self-concept and academic success. Does an increase in academic self-concept improve academic performance or does academic performance improve self-concept? Research in this area is not simple and seems to support the conclusion that academic achievement both affects and is affected by academic self-concept (Marsh & Hau, 2003). A study conducted by Marsh & Yeung in 1997 was completed to determine if changes in academic self-concept brought about changes in academic achievement. Six hundred and three boys that attended a Catholic school in Australia took part in a three-year longitudinal study. Teacher ratings of achievement as well as school grades were obtained after each school semester for three years. The students were given the Academic Self Description Questionnaire (ADSQ-II), an academic, subject specific, self-concept scale that was developed from the SDQ (Marsh &

Yeung, 1997; Marsh, 1990). This assessment instrument contained school-subject specific scales including: English, foreign language, history, geography, computer studies, commerce, science, mathematics, physical education, health, music, art, industrial art, and religion. Using the scores obtained on these scales, structural equation modeling (SEM) was used to statistically determine the effects of prior academic self-concept on academic achievement after controlling for effects of prior achievement. Statistical analyses were also completed to determine the effects of prior achievement on academic self-concept after controlling for prior academic self-concept. When comparing the two results, this study supported the idea that prior academic self-concept does affect academic achievement more than the amount that can be explained by prior achievement (Marsh & Yeung). This establishes the importance of studying self-concept for educational providers.

Gifted Students and Self Concept: Theoretical Formulations

As mentioned before, previous research studies of different theoretical formulations attempting to account for the general as well as academic self-concept of gifted children compared to non-gifted children, sometimes produce contradicting findings. Labeling Theory would imply that gifted children would have a higher general self-concept (Hoge & Renzulli, 1993). This theory states that labeling a child as gifted communicates that a child is exceptional, which is turn results in a positive self-image (Hoge & Renzulli). It also suggests that children with higher levels of ability will accomplish more, thus enhancing self-concept (Hoge & Renzulli).

Other researchers hypothesize and provide data for the idea that gifted children have lower self-concepts when compared to non-gifted students (Stropper, 1978). Cognitively advanced children may be more sensitive to social and other environmental cues causing them to have a more critical attitude when perceiving or judging themselves (Freeman, 1985). This

enhanced sensitivity to social cues allows for a heightened awareness of the high expectations and judgments sometimes placed on them, which may also increase their anxiety level. Anxiety by definition is going to increase the child's uneasiness and fear as well as one's self doubt in their ability to cope with the situation, thus decreasing their general self-concept. In addition, gifted children often express feelings of being different and feeling lonely or isolated (Neihart, Reis & Moon, 2002). These feelings can have a negative effect on a gifted child's general self-concept as well.

Social Comparison Theory holds that gifted children have lower self-concepts compared to non-gifted children, but only in certain settings. This theory has been well researched over the years. Many different research studies that have progressively built off the foundational results of the previous studies, have allowed researchers to gather a plethora of information to support and enhance this theory. The current study employs this theory to further understand the self-concept of gifted children.

Social Comparison Theory

Since the early 1900's psychologists have realized that accomplishments and self-concept are evaluated according to a frame of reference or standards used for comparison to evaluate oneself (Marsh, 1984b; Marsh & Hau, 2003). Social Comparison Theory is one theory that postulates frame of reference effects and states that in the absence of an objective physical basis for evaluation, assessment of one's ability or self-worth takes place by comparing oneself to others (Festinger, 1954; Coleman & Fults, 1982). This theory further states that when an individual compares his or her ability to another, the person chosen as a comparison will be close to that individual's own aptitude and ability. Therefore, it would hold that academic self-concept is affected by evaluating oneself to peers (Mumford, 1983).

A concept within the Social Comparison Theory, The Big Fish Little Pond Effect (BFLPE), can be used to explain the development of academic self-concept. BFLPE was identified by Marsh and Parker (1984) and is said to occur when:

> equally able students have lower self-perceived academic skills and lower academic self-concepts when they compare themselves with more able students and higher self-perceived academic skills and academic self-concepts when they compare themselves with less able students (Marsh, 1987, p. 281).

Many empirical studies using a variety of research methods provide support for this theory (Marsh & Craven, 2001 as in Marsh & Hau, 2003). Marsh (1984) conducted research in reply to a meta-analysis done by Kulik & Kulik in 1982. Kulik & Kulik compared students taught in groups combined according to ability level (where students are forced to compare themselves to equal or more able students) to control groups of students that were not grouped by ability level and therefore could compare themselves to other to peers with a larger variety of ability levels. They concluded from their study that when the self-concept scores of student's educated by ability level were averaged across all of the different ability groupings, no differences in self-concept scores were evident between these two groups of students (Marsh, 1984a).

Marsh set out to demonstrate that ability grouping does have substantial effects on self-concept of students but that this effect is lost when the self-concept of the groups are averaged and then compared. In Marsh's study (N= 305) sixth grade students attending one of three high ability, high SES schools or one of two low ability, low SES schools in Australia participated in this study. Self-concept scores were obtained by administering the Self-Description Questionnaire (SDQ). Subtotals of academic and non-academic scores obtained from this questionnaire were used as a measure of a participant's self-concept. Ability and achievement levels of each participant were assessed using IQ scores and reading achievement scores, respectively. The results of a path analysis described the relationship between four variables:

family SES, school ability/SES, academic ability/achievement, and separate measures of academic and nonacademic self-concept. Marsh concluded that the results of his study did not contradict Kulik and Kulik (1982) but are interpreted in a different way. He concluded that when comparing the average self-concept scores across all ability groupings as done by Kulik and Kulik, it might appear that ability grouping does not have an effect on self-concept across all levels. However, a statistical difference in self-concept scores was found by Marsh when individual self-concept scores were compared to each other using a path model which controlled for other variables that are thought to have a confounding effect on academic and achievement ability such as: family SES and ability grouping levels (Marsh, 1984a). This suggests that academic self-concept may have an effect within ability groupings. Students in more heterogeneous settings had higher academic self-concept than those students learning in settings that are developed according to the ability level of the students. It was also concluded from Marsh's study that BFLPE is thought to be very specific to academic self-concept and has little or no effect on non-academic areas of self-concept (Marsh; Marsh, & Hau, 2003).

After analyzing this study as well as many others examining general as well as academic self-concept, it was concluded that Social Comparison Theory as well as BFLPE, does not explain every component of the multidimensional nature of academic self-concept. Further research was needed to support other areas of the theoretical hierarchical model of self-concept as well as explain confusing results of the current research studies examining student's ability in specific school subjects (Math and English) and its relation to their academic self-concept. When studying the multidimensional model of self-concept, repeated research findings suggested that the verbal and mathematics facets of academic self-concept as previously described, are negatively correlated and cannot be combined to form the higher-order level of academic self-concept (Marsh, 1986; Marsh, Byrne & Shavelson, 1988). To provide an explanation for results

of studies examining academic self-concept, Marsh (1986) proposed the Internal/External Frame of Reference Model as an addition to the existing BFLPE model. This addition to the BFLPE states that individuals, particularly students, use an internal as well as external frame of reference to form their self-concept. Individuals tend to compare themselves with other students first (external comparison) but then also compare their performance in one subject area to their performance in another subject area being studied (internal comparison). To illustrate this model: A student compares his lower mathematics and verbal academic abilities to his peer group and develops a low math and verbal self-concept using an external comparison. The student then compares his math performance to his verbal performance and may develop a relatively higher math self-concept than verbal self-concept because his verbal performance was lower. One can conclude from this frame of reference research that children's academic self-concept is influenced by internal as well as external comparisons. The available external comparisons of course will differ according to which educational environment a child is included in (Coleman & Fults, 1982) and if the BFLPE theory is valid, students able to compare themselves to other student's with a variety of academic abilities will have high academic self-concepts in both the academic areas of English and Math than students only able to compare themselves to students of equal or higher ability levels.

To expand on this research of ability grouping and discover other factors besides academic self-concept that may be positively or negatively associated with school-average ability, Marsh (1991) conducted a longitudinal study. This was completed to examine the academic benefits for children attending a school where every student has higher than average ability (gifted, selective schools) when compared to other students attending other schools in the area where the student's ability levels were varied, over four different time periods (sophomore year, senior year, and two different times after graduation of high school). In this longitudinal

study, 10,613 sophomore participants were obtained from the 14,825 respondents selected from the commercially available data file created for the "High School and Beyond" study previously completed by the National Center for Educational Statistics (National Center for Educational Statistics, 1986). Twenty-three independent variables including academic self-concept scores that separated math academic self-concept and verbal academic self-concept were compared to test relations among these variables as well as to discover other educational factors that may be positively or negatively correlated with school-average ability. *School average ability* is defined as the average achievement level obtained by a student body. Path models were used to make these comparisons as well as to control for scores recorded from previous time periods, in order to assess which time period may have the most effect on the 23 variables assessed (Marsh, 1991). Specific explanation of path models goes beyond the scope of this paper but measurements of different academic outcomes such as: standard test scores, grade point averages, academic effort, school grades and college attendance, just to name a few of the 23 variables, were assessed in relation to participants at four different times: during their sophomore year, during their senior year and two different times after they graduated high school. In this study, schools with high average ability students only (gifted, selective schools) were found to have no academic benefits on any of the academic outcomes measured (Marsh). This provides evidence that even though many academic benefits of gifted schools were previously assumed, gifted schools do not seem to have any benefit on a gifted child's academic self-concept or on many of the other academic factors thought to be improved when attending this type of school.

Cross-Cultural Research

Cross-cultural research done on the BFLPE provides more support for the BFLPE theory as well as external validity or generalizability of this theory across many different cultures (Marsh, Kong, & Hau, 2000). A study by Marsh and Hau in 2003 tested the generalizability of

the theoretical prediction of BFLPE across different cultures. Gifted and non-gifted, 15-year-olds from 26 different countries (*N*=4,000), attending 3,851 high schools were participants in this research. The Program of Student Assessment (PIAS) database that was developed by the Organization for Economic Cooperation and Development, contained participants responses to the Self Description Questionnaire II (SDQII) developed by Herbert Marsh, which assesses self-concept according to the multi-hierarchical model (cited in Marsh & Hau, 2003). This database was created in 2000 as a response for the need for internationally comparable information on students. Students in this database that had completed the three academic self-concept items selected from the SDQII to be on the Cross Curriculum Competencies questionnaire as well as a standardized academic achievement test, were chosen as participants in this study. Nine different versions of achievement tests were administered. Due to the information contained in the database, school-average achievement instead of school-average ability was compared to self-concept and found to have negative effects. Students attending schools in which the school-average achievement was one standard deviation above the mean, had academic self-concept scores that were .206 standard deviations below the mean (Marsh & Hau, 2003). This study demonstrated again that attending gifted, selective schools may have negative effects on students' academic self-concept despite what was previously believed and that this is true in many different countries. It was concluded that the BFLPE is close to being considered 'universal psychology' and is cross-culturally generalizable (Marsh & Hau).

Opponents of the Big Fish Little Pond Effect

After describing these theories and the research to support it, it is important to mention that even though there is a great deal of research to support BFLPE as well as the Internal/External Frame of Reference Model and their negative effects on academic self-concept, not all researchers agree that these effects even exist. Demographic features or characteristics of

the gifted population are not always agreed upon either. Because of the variety of definitions used to identify gifted students as well as their defining characteristics, contradicting results often arise when specific characteristics such as self-concept are extensively researched and compared across different studies.

Some researchers say that the BFLPE as well as the Internal/External Frame of Reference Model oversimplify the Social Comparison Model (Yun Dai, 2004). Others conclude that individuals are known to protect their self-concept by using a self-protection bias and ignoring or dismissing unfavorable comparisons as invalid. As a result, the negative impact of BFLPE would not take place (Brown & Dutton, 1995).

Alternative theories have also been proposed, stating that upward comparison does not always effect self-concept negatively, especially when the individual sees himself or herself as similar to the person used for comparison (Collins, 1996). This idea is referred to as assimilation or Reflected Glory Effect, which predicts that higher school-average achievement will lead to higher self-concept in students. Proponents of the negative effect of BFLPE on gifted children recognize that a Reflected Glory Effect as described above can take place. They acknowledge that academic self-concept can relatively increase when individuals recognize the success of others in their group and then associate themselves with this success because they are members of this highly valued group.

Marsh, Kong, and Hau (2000) examined different types of secondary schools in Hong Kong to study the Reflected Glory Effect. In Hong Kong, at the end of sixth grade, a student's placement in seventh grade is assigned according to parental choice and student exam scores. This study's sample consists of 10,366 seventh grade students attending one of fifty schools in Hong Kong. They found a negative effect from increased school-average ability on academic self-concept, similar to the results of the cross-cultural study previously mentioned. In response,

they concluded that the negative impact of BFLPE is the resulting effect of these two counterbalancing processes. They conclude that a Reflected Glory Effect may be taking place but research demonstrates that its effects are not large enough to eliminate the negative impact of BFLPE (Marsh, Kong & Hau, 2000). So even though there is a reflected glory effect when children are educated with other high ability students, the positive effects are negated by the stronger negative effects of the BFLPE and as a result, student's academic self-concept still ends up being lower when compared to students educated with other students of a variety of ability levels (Marsh, Knong & Hau).

Still other researchers recognize that the negative impact of BFLPE does exist but conclude that although highly selective programs for the gifted are not likely to have a positive impact on self-concept; self-concept does remain at a reasonable level (Plucker, et al, 2004). Further empirical research has presumed that academic self-concept is reduced as a consequence of segregated classes but not enough to warrant interventions (Coleman & Fults, 1985). Proponents of the BFLPE recognize that many of the effects that they have studied are small. While some researchers would dismiss the small size of these contextual effects, Marsh concludes that many findings on school effects of any kind are typically small. In comparison to other school effects, the effects of school placement on academic self-concept are relatively large and worth studying (Marsh, 1991).

Summary

Many valid arguments have been made against the existence of a negative impact on academic self-concept from BFLPE but results of other research seem to conclude that this negative impact seems to be very strong. This establishes the importance of studying the negative impact of BFLPE on gifted children's academic self-concept according to The Social

Comparison Theory as well as different grouping methods that may have positive or negative effects on a student's academic self-concept as well.

Grouping Gifted Children

This Social Comparison model seems relevant when discussing the education of gifted students. It has been identified as crucial for gifted children to have a healthy but realistic sense of their abilities that they possess in order to develop to their potential (Whitmore, 1980). Previously discussed research has established that educating students in selective, gifted schools is not academically beneficial. Since these studies were conducted, other educational programming methods have been developed and utilized to educate students of all ability levels. Students are educated using a variety of different programs including, full-time self-contained classrooms, within-class clusters, pull-out programs, acceleration, enrichment classes, mentor schemas, after-school provisions, advanced placement programs, and International Baccalaureate Programs (Lyold, 1999). No matter which program is used, it is essential that the learning environment of a gifted child provides practice in building skills in the use of logic, high level thinking, cooperation, creative problem-solving, organization, and leadership skills (National Association of School Psychology, 2007).

However, the BFLPE indicates that higher achieving students will have higher academic self-concepts unless they are placed in a setting where their level of achievement is similar to other high achieving students. As a result, the social and academic environment that gifted children find themselves in from day to day has significant effects on their academic self-concept and how realistic this sense of their abilities really is (Neihart, Reis, Robinson, & Moon, 2002).

As previously stated, a great deliberation has surfaced on the best educational placement setting or grouping for gifted students (Marsh, Chessor, Craven & Roche, 1995). Issues of equality when comparing special education and gifted education, as well as maximizing

academic potential, are often at the heart of this deliberation (Marsh, Chessor, Craven & Roch).

Although there is no legal mandate to provide gifted education in schools, many different gifted

programs have been developed and implemented. When comparing types of educational

programming for gifted students, they can be described by two general categories: homogenous

grouping and heterogeneous grouping. These are relative terms that can be thought of as being

on a continuum and in past studies, have been defined in different ways. As studies of the gifted

educational placement have progressed, the definitions of heterogeneous and homogeneous have

evolved. In general, homogenous groupings are made up of students with similarities, while

heterogeneous groupings are made up of students displaying greater differences than the group

they are being compared to (Renzulli, Gentry & Reis, 2003). In research that preceded this

study, grouping children according to their ability was considered homogenous grouping and

included grouping practices such as accelerated classes, selective schools, non-graded groupings,

and multi-level classes.

Accelerated classes, also referred to as skipping a grade, is when a child accelerates

through the grades at a faster pace than most students do, placing them in an environment with

other students of equal or greater ability levels. The next type of grouping, *selective schools*, can

be defined as schools developed specifically for gifted children. Usually to gain entrance to

these schools, there are intellectual criteria and a child must meet minimum requirements. *Non-graded schools* contain children of different ages in the same classroom and they are grouped

depending on the speed of their individual academic development and ability. Age is not a

determining factor when deciding when a student is ready to move onto the next grade or

classroom. Therefore, within these classrooms, although student's ages are varied, their ability

level is similar. Children are with the same teacher for more then one year and the focus is on

developmentally appropriate material (Rohr, 1997). *Multi-level classes* consist of students divided into three tiers based on intelligence test results.

Examples of heterogeneous groupings in previous research studies include; cluster grouping or with-in classroom grouping, pull-out enrichment programs, multi-grade grouping and multi-age groupings (Renzulli, Gentry & Reis, 2003). *Cluster grouping*, also referred to as with-in class grouping, is a form of grouping where children of different ability levels are educated within the same classroom but are grouped together in smaller groups according to their ability to learn some specific subject material. *Pull-out programming* is a term only used in selected geographical areas. It refers to taking a gifted child out a classroom containing children of mixed ability to educate them in a more homogenous grouping made up of only gifted children but only for a short time period during the day. *Multi-grade grouping* can be defined as a type of educational grouping that assembles children together that have traditionally spanned two grade levels (Lloyd, 1999). As members of multi-grade classrooms, children are still seen and taught grade-specific curricula and the classes are formed for economic or administrative purposes (Lloyd, 1999). *Multi-age groupings* are very similar and assemble children together that span two or more grade levels but the philosophy behind the grouping method is quite different. These children are taught cross grade material and stay with the same teacher for more than one year. Proponents of multi-age classrooms argue that educating students in this type of classroom allows for smaller groups to be developed that balance personalities and learning styles as well as minimizes the competitive nature of some classrooms (Veenman, 1995). Multi-age however, is not to be confused with multi-grade classrooms. This type of grouping is formed by choice and not because of economical need (Lloyd).

Although these types of programs and grouping methods have been used for years, systematic program evaluation is relatively new to the area of gifted education (Zeidner &

Schleyer, 1999). In past years, these new programs were not scientifically researched and benefits were just assumed. As a result of realizing the importance of performing a systematic evaluation of these programs, researchers have realized that just because the academic achievement of these students is usually higher in these selective schools, does not mean they are the best choice for all students (Zeidner & Schleyer, 1999; Marsh & Parker, 1994; Marsh, 1991).

In more recent years and as studies have progressed to include a variety of different educational settings, there has been an increase of research that supports a trend to educate children in more heterogeneous or mixed-ability settings (Holloway, 2003). Kulik & Kulik (1992) conducted another meta-analysis to further evaluate the debate as to which educational setting has the most benefits for gifted students. Three types of groupings were compared: the multilevel class, cross-grade grouping, and with-in class grouping. Within this study, students educated in the multilevel class as well as cross-grade groupings were considered to be educated in a homogeneous setting while student's participating in the within class grouping were considered part of a heterogeneous setting when compared to the other groups involved in this particular study. The overall conclusion of this research was that within class groupings have a significant impact on the academic achievement of high ability learners but a less significant impact on the academic achievement of average ability learners. Studies in the area of grouping for gifted children have a clear inclination toward recommending mixed-ability groups (Neber, Finstgerwald & Urban, 2001).

A review of the research on types of classroom settings and academic self-concept for gifted children revealed several studies that have the same conclusion as previously mentioned studies examining the BFLPE: academic self-concept was found to be lower for gifted students educated in a more homogenous setting when evaluated against a comparison group educated in a setting with other students of diverse ability levels (Marsh, Chessor, Craven & Roche, 1995).

When examined together, research completed on the BFLPE and research completed on various types of classroom settings seem to provide more support to the conclusion that gifted children should be educated in settings made up of student's with a variety of ability levels.

Multi-age groupings

Due to this research, one type of setting has become very popular with school districts across the country. More and more schools are implementing multi-age classroom as an educational setting option for the students taught in their district (Olaiya, 2001). Multi-age classrooms were first used in the 1800's and were originally referred to as the one room schoolhouse (Lloyd, 1999). Many studies as well as reviews have been completed to determine the advantages and disadvantages of educating a child in a multi-age classroom. Advantages include, student academic growth due to classroom structure, peer tutoring, students are allowed to progress at individual rates, and students are allowed to acquire social skills at individual rates as well. Some proponents of the single-age classroom suggest that the quality of academics received in a multi-age classroom will decrease and the curriculum will be more work and overwhelming for the teachers (Kolstad & McFadden, 1998).

A study was conducted by Ong, Allison & Haladyna (2000) that compared the achievement of third graders in comparable single age classrooms verse multi-age classrooms. Six urban schools in Arizona were selected to participate in this study. The sample consisted of 256 girls and 289 boys in third grade. Each of these participants was given an achievement measure, which was an integrated assessment of their performance in math, reading, and writing. A four-way analysis of variance (ANOVA) was used for each of the three dependent variables (reading, writing, and math). It was concluded that students taught in multiage classrooms performed better than students taught in single aged classrooms but to varying degrees depending on gender, SES and ethnicity (Ong, Allison & Haladyna, 2000). In this study, no

support for the hypothesis that multi-age classrooms would academically benefit students with lower economic status when compared to the same population of students educated in single-aged classroom settings was found (Ong, Allison & Haladyna). However, significant differences were found in academic achievement levels between students with a higher economic status educated in multi-age setting verses students educated in single-age settings, in favor of educating students in multi-age settings (Ong, Allison & Haladyna).

In another study, academic achievement tests given to students educated in multi-age classrooms reveal scores that indicate similar or slight improvement in academic achievement when compared to the academic achievement of children educated in typical single aged classrooms (Slavin, 1992). Studies have revealed that there also seems to be a positive effect on the social and emotional development of students educated in multi-age classrooms as well (Lloyd, 1999). A best evidence synthesis regarding cognitive and non-cognitive effects of multi-age classrooms was conducted by Veenman (1995). The results of this analysis lead to the conclusion that multi-age classrooms have small but positive effects on the self-concept and attitude of students (Ong, Allison & Haladyna, 2000; Veenman).

Curriculum

As stated before, researchers have made the argument that social comparisons are made within the context of many classroom factors, not just grouping, which interact and determine student outcome and academic self-concept (Marshall and Weinstein, 1994). Another one of these factors, in addition to grouping arrangements, that has been researched and is thought to play a role in the development of self-concept, is curriculum (Tieso, 2005). Research has suggested that students make gains in academic achievement when educators modify curriculum to include lessons that encourage different perceptions and reflections as well as topics that allow the student to become well-balanced in many topic areas. There is a need for curriculum to

present the appropriate challenges to sustain motivation, recognition that gives realistic feedback, the need for task-oriented situations, the need for a peer group that does not force them to choose between achievement and social growth, and the need for adequate adult models. Gains in achievement are also observed when using teaching techniques to enhance problem-based learning and higher level thinking skills (Wiggins & McTighe, 1998; Kulik & Kulik, 1992). Previous research has indicated that grouping practices with minor adjustments to course content have little or no effect while grouping methods with larger curriculum adjustments produce positive effects (Kulik & Kulik, 1992). Curriculum experts advocate for a balance in developing both cognitive and social abilities in gifted students (Elmore & Zenus, 1994). Many researchers have proposed different learning models and have suggested different curriculums to use, but one type of curriculum that has been recently developed, and seems to have potential to help gifted students succeed in exhibiting their full educational potential is The International Baccalaureate Program.

International Baccalaureate Program

The International Baccalaureate program is a challenging and demanding curriculum that can be appropriate for the gifted or non-gifted child (Tookey, 1999). Its features are very different from traditional curriculum that is usually fact oriented and is developmentally appropriate for a 12-month age range (or one grade-level). This program was founded in 1967 by The International Baccalaureate Organization, a private organization founded in Geneva, Switzerland, and it uses elements of education from many different countries to provide students with international awareness, knowledge, and critical thinking skills essential for living in a global economy (Tookey, 1999). The program was first designed as a pre-university, gifted curriculum; however, it was then modified to educate younger gifted as well as non-gifted children (Singh, 2002; Tookey). From this, the Middle Years Program was developed in 1994.

The program was then further modified and in 1997 the Primary Years Program was developed, which is an international curriculum appropriate for 3-12 year olds (Singh). Both programs were developed by teachers and administrators working in international schools (Tookey). This curriculum focuses on helping students become adults that take risks, are inquiring, caring, open-minded, reflective, and well balanced. It also focuses on concepts over content (Singh). There are eight key concepts that are taught in international classrooms including: form, function (how things work), causation, perspective, responsibility, reflection, connection, and change (Singh). Another area of focus included in this curriculum is language, and each student is required to learn an additional language. Many aspects of the Primary IB program have been identified as factors that promote gains in student's academic achievement levels (Singh, Tookey).

The IB program is a curriculum that has been used for a number of years but the primary program is still considered new. After a thorough search, no systematic research could be found that directly compared the Primary IB curriculum to other types of curriculum used in other classrooms. Therefore, very little is really known regarding how appropriate this curriculum really is for educating gifted and non-gifted students compared to other types of curriculum. The current study analyzed the effects of the Primary Years Program combined with a mixed-aged classroom on the academic self-concept of gifted and non-gifted students.

Present Study

Recalling that homogeneous and heterogeneous are relative terms, for purposes of this study, homogenous grouping is defined as a group of students that are taught in a classroom consisting of only students in the same grade (generally single-aged classrooms). Heterogeneous grouping is defined as a group of students taught in a classroom consisting of students spanning two grade-levels (generally multi-aged classrooms). Four different groups were compared during this study. The first group was made up of gifted students educated in single-age

grouping classroom that were taught using traditional curriculum. The second group was made up of gifted students educated in multi-age groupings that were taught with the International Bacculaurate curriculum. A third group consisted of non-gifted students educated in single-age grouping classroom that were taught using traditional curriculum, and the fourth group consisted of non-gifted students educated multi-age groupings taught with the International Bacculaurate curriculum. The following hypothesises were tested :

1. Academic self-concept (Verbal and Mathematical) will be greater for gifted students in multi-age classrooms learning an International Baccalaureate curriculum compared to the academic self-concept (Verbal and Mathematical) of gifted children educated in single-age classrooms learning traditional curriculum due to the great heterogeneity in the multi-age classroom as well as the modified curriculum used to teach the students.

2. The academic self-concept of non-gifted children will be significantly higher for children in the multi-age classroom learning an international baccalaureate curriculum compared to the non-gifted children educated in single-age classroom learning traditional curriculum due to the modified curriculum used to teach the students.

CHAPTER THREE

Methodology

Participants

Voluntary participants (*N*=65) included mostly Caucasian, gifted and non-gifted, third

and fourth grade students. The academic self-concept of four different groups of students ages

nine to eleven years old were compared during this study; gifted (*n*=22) and non-gifted (*n*=24)

students learning in homogeneous groups being taught using traditional curriculum were

compared to gifted (*n*=9) and non-gifted (*n*= 10) students learning in heterogeneous groups using

the Primary International Bacculaurate curriculum. Participants were not randomly assigned to

each group, making this a quasi-experimental study. All students attended suburban elementary

schools in one school district located in Western New York that was selected to participate in

this study due to their willingness and cooperation. Median household income within this

district is slightly higher than the median household income of the surrounding counties. The

gifted participants were students that met the standards of the gifted program determined by their

school district.

Demographic information (e.g. age, gender, social economic status, race, and ethnicity)

was collected to characterize the sample (Table 1). Race and ethnicity information were not

reported in the table since only two participants indicated that they belonged to a racial group

other than Caucasian and only three participants indicated Hispanic ethnicity. Male participants

made up 62.7% of the sample while 37.3% of sample was female. Third graders made up 60.9%

of the participants while 39.1% of the participants were fourth graders. Parent level of education

was assessed to determine the social-economic status (SES) of the participants. Their mother's

level of education was determined as well as their father's level of education and these factors

were combined to form the participant's parent level of education. Thirty-one percent of their

mothers had attended some college or had less of an education while 68.8% of their mothers had at least a Bachelor's degree or a higher amount of education. The percentage of fathers with some college education or less was 52.5% while 47.5% of them had been educated with at least a Bachelor's degree or a higher amount of education. A 2x2 analysis of variance was completed to compare each of the four groups regarding parent educational background. For the three participants whose parent only reported the value of mother's educational background, this value was doubled to form a value for parent educational background. A 2x2 analysis of variance (ANOVA) revealed a significant main effect for grouping status, $F(1, 57) = 10.76$, $p = .002$. It was determined that family SES was significantly different between the gifted and non-gifted groups, with gifted students having a higher family SES.

A multi-way frequency of analysis was completed to compare the four groups regarding gender. The three-way interaction between gender and each group was not significant, Likelihood Ratio $\chi 2 (1) = .280$, $p = .596$. Another 2x2 ANOVA was completed to compare participants regarding age. A significant interaction was found between all four groups containing gifted and non-gifted participants educated in multi-age and single-age classrooms, $F(1, 60) = 8.53$, $p = .005$. When analyzed further, it was determined that there is an average of a five month age difference between the groups, which was determined to be significant but not practically meaningful for the purposes of this study.

Gifted Status

The selection process for the gifted program is very extensive and has evolved a great deal from the process that was used in previous years when gifted students were selected on cognitive scores alone. Students attending the single-aged and multi-aged classrooms were selected using the same process since it is a procedure that is used district wide. Students are nominated by teachers or parents for evaluation of giftedness if they appeared to possess gifted

cognitive traits and other criteria that are identified in Carolyn Callahan's and Carol A. Tomlison's Association for Supervision and Curriculum Development (ASCD) 1997 article entitled, *The Gifted and Talented Learner: Myths and Realities (*see this reference for specific qualifications*).* Qualitative information was collected by the three gifted teachers within the school district by requiring the student to undergo an interview as well as a structured observation that both examine the creativity, math problem-solving, and spatial reasoning of the student. Parents and teachers also were required to fill out an observation checklist and a student's writing sample was obtained. Quantitative information was obtained when the students were required to complete a timed aptitude test entitled Olis-Lennon School Ability Test (OLSAT) that was developed by Pearson Assessments and contains verbal and nonverbal indexes. All of these results were used to determine if the students appropriately qualified for the gifted program. An identification or screening committee, which is made up of the three gifted teachers employed by the district, then makes a final decision regarding each student's ability to participate in the gifted education program. This program is voluntary so if the student qualifies, parent permission is then obtained.

Depending on the school that they attend, once a student gains entrance to the gifted program, they are placed in a single-age or multi-age classroom setting. Students educated in the single-aged classrooms are taught a combination of traditional curriculum and are being educated by a gifted and talented teacher as well as their classroom teacher. The gifted and talented teacher co-teaches the gifted students in the single aged classroom as well as pulls the gifted students out of the classroom and combines them by grade-level to teach them accelerated curriculum. This allows the gifted teacher to form a class for two days a week for forty-five minutes each day that is made up of only gifted students and creates a more homogeneous group of gifted students. Curriculum taught to these students was designed to support the acquisition of

thinking and processing skills as well as social skills and is consistent with New York State guidelines (Fairport Central School District: Parent Handbook, 2007).

Students placed in the multi-age classroom are educated using the International Baccalaureate Program. This classroom is located in an elementary school that is an alternative choice for parents living in this school district. To gain entrance and be educated in this school, parents request that their child's name be placed in a district lottery. If their name is selected, they then have the opportunity to attend this school rather then the other schools in the district that educate students in typical single-age classrooms and teaches them using traditional curriculum. Evaluation that is required to determine if a student is appropriate for the gifted program within this school follows the same procedure as mentioned above for the schools in the district educating students in single-age classrooms. Gifted and non-gifted students educated in this alternative school of choice are organized in multi-aged classrooms as follows: kindergarten, Primary (grades 1-2), Elementary (grades 3-4) and Intermediate (grades 4-5). This type of environment allows students of different ages to work together and allows the student to stay with the same teacher for two years. Students educated at this school are taught using the Primary Years International Baccalaureate Program designed to promote an intercultural understanding and respect. Students also start learning Spanish as a second language as soon as they enter kindergarten.

Procedure

Special precautions were taken to ensure the confidentiality of all children and families that participated in this study. This study was approved by The Rochester Institute of Technology's Institutional Review Board (IRB). Teachers sent to the participants' parents/legal guardians, the coded demographic form (see Appendix A) and consent form, (see Appendix B) as well as a description of The Self-Description Questionnaire (SDQI) that the participants

would be completing in class. When the forms were returned, the teachers provided the data to the investigator. Teachers also tracked those students who provided verbal assent and whose parents provided written informed consent on the class list. The coded class list was also provided to the principle investigator in the event that a participant elected to withdraw from the study. This made it possible to remove that participant's data from the data file, and for the data to be destroyed, if they elected to withdraw from the study. None of the participants or their parents requested to withdraw from the study and all the data that were collected were used in the current analysis.

After the investigator received all of the completed packets that were sent home, students in each of the four groups were administered The Self-Description Questionnaire I (SDQI) (Marsh, 1992) in a group setting. The classroom teachers provided each participating student with a questionnaire that had a code that matched their code on the class list and on their demographic sheet. The investigator then read the standardized SDQI directions to the group. All completed SDQI questionnaires were returned to the investigator. Upon completion of the questionnaire, each student was presented with a coupon redemable at Friendly's restaurant for one free children's meal as compensation and appreciation for their participation in this study.

Instrument

There are currently three versions of the SDQ questionnaire depending on the age group being studied. The scale used in the current investigation, The Self-Description Questionnaire I (SDQI), was originally intended for use on students in grades 4 through 6 but current research suggests that the test is suitable to use with children that are successful in reading at a second grade level. The questionnaire is made up of 76 items divided into three academic self-concept scales, Math, Reading, and General School academic ability. The SDQI also yields a Total Academic score. There are also four nonacademic self-concept scales including, Parent

Relations, Physical Ability, Appearance, and Peer Relations also yielding a Total Non-academic Score. A Global Self-Esteem Scale is also included in this questionnaire. To complete this 6-point Likert scale, directions are read out loud to the group of students and they are asked to respond to declarative statements by choosing one of five responses including: False, Mostly False, Sometimes False, Sometimes True, Mostly True and True. Within each scale, eight of the statements are worded positively. A total of 12 negative statements are dispersed throughout the questionnaire in order to avoid positive response bias, while negative response bias is avoided by calculating control scores (Marsh, Chessor, Craven &Roche, 1995). Administration of the questionnaire normally requires 15-20 minutes. To obtain valid results, each participant was required to be able to read at no less than a second grade reading level, which was determined by teacher judgment.

Empirical research has provided evidence that the SDQI that has favorable psychometric properties. It was normed on 3,562 students from New South Wales, Australia, in grades second though sixth. The internal consistency estimates for the eight individual scales ranged from .80 (parent relations) to .90 (Physical performance) with a median of .87 (General school= .86, General self= .81). Coefficient alphas for Total Academic, Total Non-academic and Total Self score are .92, .91 and .94, respectively (Marsh, 1992).

Also provided by the manual is evidence for adequate test-retest reliability. This instrument has been used with students attending schools in many different countries. The mean test-retest reliability in Australia (.74), the country the scale was developed in, did not differ significantly from the rest of the countries either, including the United States (Marsh & Hau, 2003; Marsh, 1992). The reliability for this scale is consistently reasonable across all 26 countries with a mean coefficient of .76. This indicates that the test-retest reliability of this instrument is consistent no matter which country it is used in.

Many factor analyses on diverse samples (gender, age, country, and language) have been completed to support the validity of the factor model. The results of these analyses indicate that the domains of self-concept are distinct with the mean correlation between these individual scales being quite low (r=. 17). A cross-cultural study has demonstrated the generalizability of these factors.

Responses to the SDQI were discovered to be either positively or negatively correlated to age, SES, gender, academic achievement and self-concept. Responses are systematically related to these different external criteria in a way that is consistent with Shavelson's multi-dimensional self-concept theory, supporting construct validity (Marsh, 1988). External psychometric reviews of this instrument also suggest that it is one of the best instruments to measure the multiple dimensions of self-concept currently available (Byrne, 1984).

Scoring

Scoring is facilitated using the score calculation and summary page found in the SDQI manual. Raw scores from each question are grouped for each self-concept scale and are added together to obtain a score that reflects the sum of its items. These total raw scores were then used to calculate the Total Academic, Total Non-academic and Total Self raw scores. Norms tables from the manual were then used to convert these raw scores to percentile ranks and standard scores. Control scores developed by Marsh are internal checks meant to discover inconsistency in responses as well as negative biases related to performance and may determine if the participant's scores are valid. Calculating these scores is optional and is only used when statistical analysis indicated an outlier. To be considered an outlier, the participant's scores had to be numerically different from the rest of the data, which was determined by visually analyzing the box plots created for each dependent variable. Many participants' responses did contain outliers in which control scores were calculated for. All control scores indicated that the

participant's responses could be considered valid and the scores were used in the 2x2 ANOVA analyses.

Statistical Analysis

Results of statistical analysis were obtained using SPSS 16.0 (SPSS, Inc, 2007). Descriptive statistics were obtained for demographic features of the sample including gender, age, and SES and statistical analysis was completed to determine if there was a difference in these features between any of the four groups assessed. Specifically students social-economic status (SES), measured by a parents educational background, was analyzed to determine if it was an important co-variate that may need to be controlled for. Years of parental education rather than parent occupation was used as a measure of SES. This was done because many sociologists now consider education to be the most important predictor of occupational success (Bjorklund & Weiss, 1985). Also, in previous studies, it was determined that parent education, occupational position and class position are highly correlated variables justifying the use of parental education alone as an indicator of family SES (Kohn, 1977 as in Bjorklund & Weiss, 1985).

Since there was a significant difference found in SES between the four groups, indicating that this may have been a co-variate that needed to be control for, the statistical assumptions of ANOVA as well as ANCOVA were evaluated in a variety of ways to determine the most appropriate statistical test to utilize. Although ANCOVA is a statistical test that can adjust scores on the dependent variables for pre-existing differences between groups (in this case, student SES), assumptions needed to perform an ANCOVA were found to be violated when assessed. Also the ANCOVA is an inappropriate test to use within a quasi-experimental study (Pedhazur, 1982). Therefore, in the current study, a series of 2x2 ANOVAs were utilized. Statistical assumptions of ANOVA that were evaluated include normality, independence, and homogeneity of variance. These assumptions were analyzed for each dependant variable.

Normality was assessed using visual analyses of the data. Examining the histograms, stem and leaf plots and box plots indicated that some of the dependent variables including Reading and Total academic self-concept scores were positively skewed but this test is robust to the violation of this assumption. Comparing the variances between each of the groups as well as analysis of the Levene statistic, indicated that the assumption of homogeneity of variance was not tenable for many of the dependant variables, including the Reading, Math, and Total Academic subscales. Because this assumption was violated, an alpha of .025 was used to determine significant differences of these scales to control for Type 1 error. An alpha level of .05 was used for comparing the General School variable between the four groups since the assumption of homogeneity of variance was not violated for this dependent variable.

Standard score results of the Self-Description Questionnaire I (SDQI) were then compared between the group of gifted and non-gifted students educated in a multi-age classroom using an International Baccalaureate curriculum verses the group of gifted and non-gifted students educated in a single-age classroom setting using traditional curriculum. Statistical analyzes using the ANOVA were completed on the following four standard score results: Math self-concept, Reading self-concept, Academic self-concept and General School self-concept.

CHAPTER FOUR

Results

Shown in Table 2 are the mean and standard deviations of each of the four academic self-concept scores compared between each group. Table 3 displays the results of the four 2x2 ANOVAs that were completed. When assessing Reading self-concept, no significant differences were found for the gifted vs. non-gifted main effect, F (1, 61) = .013, p= .909, multi-age vs. single age main effect, F (1, 61) = 3.81, p= .056, or for the interaction, F (1, 61) = .077, p= .782. When assessing Math self-concept, no significant differences were found for the gifted vs. non-gifted main effect, F (1, 61) = 1.01, p= .318, multi-age vs. single age main effect, F (1, 61) = 3.075, p= .085, or for the interaction, F (1, 61) = 4.514, p= .038. When assessing General School self-concept, no significant differences were found for the gifted vs. non-gifted main effect, F (1, 61) = .478, p= .492, multi-age vs. single age main effect, F (1, 61) = .086, p= .770, or for the interaction, F (1, 61) = .881, p= .352. When assessing Total Academic self-concept, no significant differences were found for the gifted vs. non-gifted main effect, F (1, 61) = 1.154, p= .287, multi-age vs. single age main effect, F (1, 61) = 3.424, p= .069, or for the interaction, F (1, 61) = 2.268, p= .137.

For each ANOVA completed, partial omega squared was calculated as a measure of effect size for the gifted verse non-gifted main effect, because it is a non-manipulated variable and omega squared was calculated for the multi-age verse single age main effect as well as the interaction effect (Olejnik & Algina, 2003). Effect sizes of .01 are considered small, effect sizes of .06 are considered medium, and effect sizes of .15 are considered large (Cohen, 1988). Most of the effects were small but a medium effect was detected between the groups of students educated in a multi-age setting verse a single age setting when comparing Reading and Total

Academic self-concept scores and for the interaction effect when comparing Math self-concept scores.

Observed power of each statistical analysis was also analyzed. These results can also be viewed in Table 3. Our sample size was probably too small to detect a significant difference between groups. However, when visually analyzing the means of each dependent variable for each of the four groups compared, even if a significant difference was detected, the pattern of the resulting differences between groups was not consistent with the BFLPE theory. This was true when comparing participant's scores of all four dependent variables (see Table 2).

CHAPTER FIVE

Discussion

Results of previous research seem to conclude that there is a negative impact on student's academic self-concept from BFLPE and that this negative impact seems to be very strong. This is an important factor to consider when studying the educational environment of gifted and non-gifted students since academic self-concept seems to be related to academic achievement. In the current study, it was hypothesized that Academic self-concept (Verbal and Mathematical) would be greater for gifted students and non-gifted students educated in multi-age classrooms learning an International Baccalaureate curriculum compared to the academic self-concept (Verbal and Mathematical) of gifted children educated in single-age classrooms learning traditional curriculum due to the assumption of greater heterogeneity in the multi-age classroom as well as the modified curriculum used to teach the students.

Using the SDQI self-concept instrument, the hypotheses were not supported in this study: no significant differences were found between gifted and non-gifted student's scores on the four dependent variables compared. In fact, visual analyses of the pattern of the results indicated that the pattern of mean academic self-concept scores were not consistent with the BFLPE.

Limitations

Homogeneous groups were defined in previous studies to be selectively gifted schools or classrooms as well as accelerated classes. However, definitions have slowly progressed over the years and there may be less of a distinction between students educated in homogeneous verse heterogeneous settings. The homogeneous group in this study was defined as a group of students that were taught in a classroom consisting of only students in the same grade. The heterogeneous group was defined as a group of students that were taught in a multi-age classroom and was assumed to contain students that possessed a larger variety of academic

ability than the homogeneous setting. Because there academic skills were not able to be directly assessed, it was not possible to precisely determine whether academic ability was truly more homogeneous in the single aged classroom and more heterogeneous in the multi-age classroom. It was possible that multi-age classrooms were not sufficiently heterogeneous relative to single age classrooms, in order to study the BFLPE and detect academic self-concept differences in gifted and non-gifted children.

The issue of defining giftedness in children is also problematic when comparing this study to previous studies. Each state as well as each school district has their own method of determining the status of giftedness in children. Previous studies are vague when describing how giftedness was defined for their participants but it is known that in earlier years when many of these research studies were conducted, giftedness was determined only by cognitive scores. Comparatively participants in the current study, who were deemed to be gifted by their school, were assessed in many different areas. This method of assessment compared to methods that were likely to be utilized in previous studies could have resulted in qualitatively different gifted students in this study. In addition, participation in the gifted program is voluntary. It is possible that the non-gifted sample may have contained students that may actually be gifted but did not elect to participate in the gifted program.

These issues may be related to the unexpected pattern of results in this study. Issues also existed in the quasi-experimental design of this study. Participants were not able to be randomly assigned to each group, which makes controlling for confounding variables difficult.

It was not possible to study the unique effect of curriculum on the academic self-concept of students in this study either. It is unclear if and how this variable may have affected the results of this study. When summarizing and making conclusions regarding the Social Comparison Theory and The Big-Fish-Little-Pond-Effect, from this study we can conclude that

the settings and curriculum defined in this study did not have an effect on the academic self-concept of gifted or non-gifted students. This is true even though previous research has shown a decrease in academic self-concept for gifted children placed in a more homogeneous setting when compared to gifted children educated in a heterogeneous setting.

Future Research

Future research should improve upon these limitations and focus on developing an advanced method for collecting academic achievement data for comparison between groups to more precisely define homogeneous and heterogeneous groupings. Larger groups of participants that are randomly assigned to each group being compared as well as comparing students from different school districts should be utilized when attempting research on this topic in the future. However, this may be difficult to do within the school setting. This prospective research could bring to light clarification for the best educational setting for gifted students that will maximize their learning potential as well as academic self-concept. This research will also increase the awareness that teachers and practitioners possess regarding the importance of student academic self-concept and the contribution of a students academic self-concept to long-term effects such as, the outcome of students academic and career success. Future research should also look to examine the effect that curriculum has on the academic self-concept of students separately from classroom setting. Knowledge in this area increases the likelihood that teachers and administrators will measure and monitor a student's academic self-concept when making recommendations and decisions regarding the best educational setting for their students.

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Table 1

Sample Demographics

	Group				
	Gifted Students		Non-gifted Students		Total
	Multiage	Single Age	Multiage	Single Age	
	n=9	*n*=22	*n*=10	*n*=24	*N*=65
Gender					
Male	62.5%	52.4%	66.7%	71.4%	62.7%
Female	37.5%	47.6%	33.3%	28.6%	37.3%
Grade					
Third	66.7%	31.8%	50.0%	91.3%	60.9%
Fourth	33.3%	68.2%	50.0%	8.7%	39.1%
Mothers Level of Education					
Less than High school to me College	11.1%	22.7%	20.0%	52.5%	31.2%
Bachelor's degree to PhD	88.9%	77.3%	80.0%	47.8%	68.8%
Fathers Level of Education					
Less than High school to some college	33.3%	38.1%	50.0%	76.2%	52.5%
Bachelor's degree to PhD	66.7%	61.9%	50.0%	23.8%	47.5%

Age=   Multiage, Gifted (*M*=9.33, *SD*=.500)
           Multiage, Non-gifted (*M*=9.6, *SD*=.699)
           Single age, Gifted (*M*=9.77, *SD*=.612)
           Single age, Non-gifted (*M*=9.17, *SD*= .388)

Table 2

Means and standard deviations for SDQI subscales[a]

	Multi-age Groups				Single-age Groups			
	Gifted Students educated in a Multi-age classroom setting (n = 9)		Non-Gifted Students educated in a Multi-age classroom setting (n = 10)		Gifted Students educated in a Single-age classroom setting (n=22)		Non-gifted Students educated in a Single-age classroom setting (n=24)	
SDQI Subscales	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Reading Subscale	48.33	13.63	49.30	7.73	53.83	8.07	53.42	8.25
Math Subscale	46.78	11.42	53.60	7.06	55.23	8.33	52.79	8.88
General School Subscale	49.78	13.39	53.80	7.15	52.82	7.29	52.21	9.73
Total Academic Subscale	46.22	15.80	52.90	8.09	54.91	5.60	53.79	9.28

Notes [a]: SDQI scores are Non-normalized T- scores which are Standard Scores ($M = 50$, $SD = 10$).

Table 3

Results of 2x2 ANOVAS[a]

SDQI Subscales		Sum of Squares corrected total	F-value	Significance	Effect Size (Partial omega squared or Omega Squared)		Observed Power
Reading Subscale							
	Gifted vs. non-gifted	5266.985	.013	*p*=.909	Partial	.015	.051
	Multi-age vs. single age		3.81	*p*=.056		.043	.484
	Interaction effect		.077	*p*=.782		.014	.059
Math Subscale							
	Gifted vs. non-gifted	4345.446	1.01	*p*=.318	Partial	.0002	.168
	Multi-age vs. single age		3.08	*p*=.085		.030	.408
	Interaction effect		4.51	*p*=.038		.051	.552
General School Subscale							
	Gifted vs. non-gifted	5068.215	.478	*p*=.492	Partial	.008	.105
	Multi-age vs. single age		.086	*p*=.770		.014	.060
	Interaction effect		.881	*p*=.352		.002	.152
Total Academic Subscale							
	Gifted vs. non-gifted	5988.985	1.15	*p*=.287	Partial	.002	.185
	Multi-age vs. single age		3.42	*p*=.069		.036	.445
	Interaction effect		2.27	*p*=.137		.019	.317

Notes. [a] ANOVAS for the Reading, Math, and Total Academic subscales were analyzed at an alpha level of .025. The ANOVA for the General School subscale was analyzed at an alpha level of .05

Appendix A

Demographic Information

The information provided will help us understand characteristics of the students participating in this study. Please answer every question as thoroughly as you can.

What is your relationship to the student (circle one): Mother   Father   Other (specify):_____

Student Characteristics: Please circle one:

Gender: Male or Female   Race: White   Ethnicity: Hispanic
                                      Black or African American   Latin
                                      American Indian   Not Hispanic
                                      Asian
                                      Native Hawaiian/Pacific Islander
                                      Other:_____

Primary Language Spoken by Child: _____   Grade: _____   Current Age: yrs. _____ mos. _____

School: _____

When looking at your child's report card:
Current grades: 2007-2008   Highest grade possible

Math:	_____	_____
English:	_____	_____
Science:	_____	_____
Social Studies:	_____	_____
Foreign Lang.:	_____	_____

Consider the above listed grades in comparison to other students who are the same age. Which category would you place your child?

Math:	☐ below average	☐ average	☐ above average	☐ not applicable
Reading:	☐ below average	☐ average	☐ above average	☐ not applicable
Writing:	☐ below average	☐ average	☐ above average	☐ not applicable
Spelling:	☐ below average	☐ average	☐ above average	☐ not applicable
Foreign Lang.	☐ below average	☐ average	☐ above average	☐ not applicable

What are your child's strengths?
_____
_____

What are your child's weaknesses?
_____
_____

What are your child's interests?
_____
_____

How does your child view themselves and their abilities? Please read the statements below and circle the number that best describes your child. Please reserve answers of three for questions you really can't decide on.

My child performs well in all school subjects.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

My child is good at Mathematics.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

My child enjoys doing work in Mathematics.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

My child enjoys Reading.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

My child reads well.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

In general, my child is happy with the person they are.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

Other children want to be friends with my child.

5	4	3	2	1
False	Mostly False	Sometimes True Sometimes False	Mostly True	True

Does your child participate in a gifted education program?

☐ Yes   (If yes, answer the section below)   ☐ No   (If no, skip to the **family composition** section)

Gifted Education

Age child entered gifted program: _____   Year child entered gifted program: _____

What characteristics did your child possess that gained them entry into the gifted program?

_____

_____

Please read the statements below and circle the number that best describes your opinion.

This gifted education program has had a positive effect on my child.

5	4	3	2	1
Strongly disagree	disagree	Neither agree or disagree	Agree	Strongly agree

My child would benefit from being educated in a classroom consisting only of gifted children.

5	4	3	2	1
Strongly disagree	disagree	Neither agree or disagree	Agree	Strongly agree

What do you like about your child's current educational program?

_____

_____

_____

What do you dislike about your child's current educational program?

_____
_____
_____

Family Composition

Who lives at home? Please check all that apply

☐ Mother   ☐ Father   ☐ Siblings: Circle one gender and write their age.

☐ Step mother   ☐ Step Father   Male or Female: _____   Age: _____

☐ Grandmother   ☐ Grandfather   Male or Female: _____   Age: _____

☐ Aunt   ☐ Uncle   Male or Female: _____   Age: _____

☐ Other _____

Highest grade completed by child's mother (check one)   Highest grade completed by child's father (Check one)

☐ Less then High School	☐ Less then High School
☐ High School Diploma	☐ High School Diploma
☐ Some College	☐ Some College
☐ Associates Degree	☐ Associates Degree
☐ Bachelors Degree	☐ Bachelors Degree
☐ Masters Degree	☐ Masters Degree
☐ Doctorate Degree	☐ Doctorate Degree

Thank you for your participation!

Appendix B

INFORMED CONSENT

The Effects of Grouping and Curriculum on the Self-Concept of Gifted Children

Dear Parent/Guardian:

My name is Valerie Beaman and I am a third-year graduate student in the School Psychology Program at The Rochester Institute of Technology (RIT). An important part of my degree requirements is to complete a thesis, and I am asking for your help. I am studying the effect that certain aspects of the educational setting may have on a student's self-concept. I am asking for your written consent to allow your child to participate in this study.

Self- concept refers to how one perceives him or herself. I would like to see if a student's placement in a single age or multi-age classroom is related to self-concept and if there are any differences in self-concept between students who are identified as gifted and those students who have not been identified as gifted by their school district. It is hoped that obtaining more information in this area will help schools identify practices that will most benefit a child's self-concept. Your school district, as well as the RIT Institutional Review Board (IRB), have approved this study. The IRB evaluates research proposals to make sure that studies protect the welfare of research participants.

If your child participates, he/she will be asked to complete a self-concept rating scale. This will occur on a school day between February and April of 2008. The exact date and time will be determined by your child's teacher. The rating scale will assess how your child thinks and feels about his or her academic achievement, physical abilities, physical appearance, and social relationships. This scale will be administered in your child's classroom and will take approximately 20 minutes to complete.

Attached to this letter is a questionnaire for you to complete that is estimated to also take approximately 20 minutes. The information obtained from this questionnaire will help me better understand factors related to self-concept for all participants in this study. Please complete this questionnaire and return it to your child's classroom teacher in the envelope provided by April of 2008. The envelope is coded with a number that matches the one found on this consent form and the questionnaire. This code will be on your child's rating scale also so that names or other identifying information does not have to be used. Once your child has completed his or her participation in the study, they will receive a coupon for one free kid's meal at Friendly's Restaurant. This is offered to express appreciation for their effort, and your child is free to accept or decline the coupon.

All of the information collected from you and your child will be kept completely confidential. Because the questionnaire and rating scale will be coded, your child's identity will not appear on the forms. The only place your child's name will appear is on the consent form and on a class list with each child's code next to his or her name. The consent forms will be stored separately from the questionnaire, the rating scale, and the class list in a locked filing cabinet. The only persons that will have access to this information will be myself as well as my thesis supervisor, Dr. Vincent Pandolfi. The classroom teacher will be the only person at the school to have access to the coded class list so that she can track those who have and have not provided consent to participate. The teacher will also need to be sure that your child receives the rating scale with a code that matches your completed questionnaire. Neither the teacher, nor

any school official, will have access to the information in your questionnaire, your child's responses to the rating scale, or your child' results. When analyzing the data and reporting results from the study, information will be presented in group form only.

Once the data are collected and analyzed, I am offering to provide you with the results from this study and your child's individualized self-concept results. Your child's results will be made available to you approximately 6-8 weeks after his or her participation. I anticipate completing this project by May 2008, so results of the entire study will be available to you at this time. You have the right to decline either one of these results and it is your decision if you will share them with your child's school. Your child's results will include his or her self-concept scores obtained in each area measured by the rating scale as well as your child's percentile score that indicates where they rank compared to other same age children. Because this is a research study and not a comprehensive clinical assessment, a detailed interpretation of your child's results and recommendations cannot be offered. Any questions or concerns you may have regarding your child's results should be addressed to Dr. Pandolfi or myself.

Please know that this study is for research purposes only. Participation in this study and the results will not affect your child's schooling. Participation in this study is completely voluntary. Consent can be discontinued at any time without penalty to yourself or your child. The risk associated with participating in this study is minimal, and is likely to be no greater than risks ordinarily encountered during the school day. The benefits for participating in this study include, your child gaining experience in participating in a research study and potentially helping schools identify practices that will most benefit a child's self-concept, and learning more about factors related to self-concept.

If you wish to provide consent for your child to participate in this study, please sign and return this form by February, 28th 2008. I will then sign the consent form in the space provided and a copy will be sent home to you. Please provide a mailing address so that you can receive the copy, and any other information you would like. If you have any further questions, please feel free to contact me by phone at 585-475-6701, or by e-mail at vap1254@rit.edu and I will be happy to answer them. Thank you for your time and consideration.

Sincerely,

_____   _____
Valerie Beaman   Vincent Pandolfi, Ph.D.
School Psychology Graduate Student   Assistant Professor
Rochester Institute of Technology   Rochester Institute of Technology

I have read this consent form and understand the procedure to be used in the study. I also understand the benefits and risks associated with participating. Any questions I may have had were answered. By signing this form, I give consent for my child to participate in this study.

Parent/Legal Guardian Name: _____

Parent/Legal Guardian Signature: _____

Date: _____

☐ Check here if you would like to be provided with results of the study.

☐ Check here if you would like to be provided with your child's results.

These results should be sent to (please provide your mailing address)

_____

_____

_____

I have presented this consent form to the child's parent/legal guardian, and have answered all questions the parent/legal guardian may have had. I have provided a copy of this signed form to the individual who signed above.

Researcher Name: _____

Researcher Signature: _____

Date: _____

Email: Vap1254@rit.edu

Phone: (585) 475-6701