An Investigation of Self-Concept in Relation to Student Participation in an Academically Talented Program

Kristine L. Schulte
The College at Brockport

Follow this and additional works at: https://digitalcommons.brockport.edu/ehd_theses

Part of the Gifted Education Commons

To learn more about our programs visit: http://www.brockport.edu/ehd/

Repository Citation

This Thesis is brought to you for free and open access by the Education and Human Development at Digital Commons @Brockport. It has been accepted for inclusion in Education and Human Development Master's Theses by an authorized administrator of Digital Commons @Brockport. For more information, please contact digitalcommons@brockport.edu.
AN INVESTIGATION OF SELF-CONCEPT
IN RELATION TO
STUDENT PARTICIPATION IN AN ACADEMICALLY TALENTED PROGRAM

THESIS

Submitted to the Graduate Committee of the
Department of Education and Human Development
State University of New York
College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education

by
Kristine L. Schulte
State University of New York
College at Brockport
Brockport, New York
July, 1990
SUBMITTED BY:

Kristine L. Schulte 7/13/90
Candidate
Date

APPROVED BY:

Betty Ann Belzand 7/22/90
Thesis Advisor
Date

Robert S. Siddle 7/22/90
Second Faculty Reader
Date

Mervin L. Jones 7/25/90
Director of Graduate Studies
Date
ACKNOWLEDGEMENTS

I would like to thank my husband, Carl, whose love, support, and encouragement helped to make the writing of this thesis, and the completion of my studies, possible.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. NATURE OF THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>Self-Concept Defined</td>
<td></td>
</tr>
<tr>
<td>The Importance of Self-Concept</td>
<td></td>
</tr>
<tr>
<td>Self-Concept and the Gifted</td>
<td></td>
</tr>
<tr>
<td>The Effects of Labeling</td>
<td></td>
</tr>
<tr>
<td>The Impact of Gifted Programs</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>III. DESIGN OF THE STUDY</td>
<td>23</td>
</tr>
<tr>
<td>Purpose</td>
<td></td>
</tr>
<tr>
<td>Sample</td>
<td></td>
</tr>
<tr>
<td>Instrumentation</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td></td>
</tr>
<tr>
<td>Hypothesis</td>
<td></td>
</tr>
<tr>
<td>Data Analysis</td>
<td></td>
</tr>
<tr>
<td>IV. STATISTICAL ANALYSIS</td>
<td>30</td>
</tr>
<tr>
<td>Total Self-Concept</td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td></td>
</tr>
<tr>
<td>Intellectual and School Status</td>
<td></td>
</tr>
<tr>
<td>Physical Appearance and Attributes</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
</tr>
<tr>
<td>Popularity</td>
<td></td>
</tr>
<tr>
<td>Happiness and Satisfaction</td>
<td></td>
</tr>
<tr>
<td>Results</td>
<td></td>
</tr>
<tr>
<td>V. DISCUSSION</td>
<td>47</td>
</tr>
<tr>
<td>Conclusions</td>
<td></td>
</tr>
<tr>
<td>Limitations</td>
<td></td>
</tr>
<tr>
<td>Directions for Future Research</td>
<td></td>
</tr>
<tr>
<td>REFERENCES</td>
<td>53</td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
<tr>
<td>A. Eligibility Matrix for the Academically</td>
<td></td>
</tr>
<tr>
<td>Talented Program</td>
<td>56</td>
</tr>
<tr>
<td>B. Item Content of the Piers-Harris</td>
<td>57</td>
</tr>
<tr>
<td>C. Item Content of the Cluster Scales on the</td>
<td>59</td>
</tr>
<tr>
<td>Piers-Harris</td>
<td></td>
</tr>
<tr>
<td>D. T-tests</td>
<td>61</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>1. Total Self-Concept Scores</td>
<td>31</td>
</tr>
<tr>
<td>2. Behavior Cluster Scores</td>
<td>33</td>
</tr>
<tr>
<td>3. Intellectual &amp; School Status Cluster Scores</td>
<td>35</td>
</tr>
<tr>
<td>4. Physical Appearance &amp; Attributes Cluster Scores</td>
<td>37</td>
</tr>
<tr>
<td>5. Anxiety Cluster Scores</td>
<td>39</td>
</tr>
<tr>
<td>6. Popularity Cluster Scores</td>
<td>41</td>
</tr>
<tr>
<td>7. Happiness &amp; Satisfaction Cluster Scores</td>
<td>43</td>
</tr>
</tbody>
</table>
Along with the proliferation of academic programs for the gifted in recent years, there have been numerous research studies and theoretical reports generated as well. For the most part, this work has tended to focus on student identification procedures, along with the development and evaluation of programs. While much of the research has centered around the cognitive sphere, the literature has increasingly begun to recognize the impact of social and personality factors in terms of dealing with the gifted. Self-concept, having demonstrated its usefulness as a personality descriptor and its impact on other characteristics of human behavior, has become a commonly studied topic in this area (Loeb & Jay, 1987).

There is a widespread belief that being gifted guarantees a positive self-concept. "It is as if it is expected that gifted individuals have all of the wherewithal to automatically develop strengths in all areas of personality by virtue of their intellectual abilities" (Klein & Cantor, 1976, p. 100). Although much of the research does suggest that gifted students generally possess relatively high self-concepts, the evidence is by no means conclusive. One problem is that the self-concept is a multidimensional construct, and while gifted students may demonstrate positive self-concepts in one area, they may in fact have negative
Some of the important considerations in examining the self-concepts of gifted students involve the effects of labeling children as gifted and the effects of placing them in special programs. Though there have been some studies conducted in this area, it has not been thoroughly investigated in relation to student self-concept. Some people contend that labeling students as gifted promotes unrealistic expectations and increases stress, while others believe that labeling is necessary in order to acquire needed services for the gifted. Likewise, there is some evidence that placing students in either totally or partially segregated gifted programs can lead to diminished self-concept. On the other hand, however, is the assertion that such programs actually encourage more realistic self-concepts, if not more positive ones, and that they are beneficial in the long run. In view of the controversy generated in this area, it seems that further investigation is warranted.

This study, therefore, attempts to examine further the issue of identifying and placing students in gifted programs, and the impact of such practices on self-concept. The purpose was to determine whether or not there were any significant differences in the self-concepts of students participating in a resource program for the academically talented and a comparable group of students not enrolled in the program.
Self-Concept Defined

According to Piers (1984), the term self-concept refers to an individual's self-perceptions in regards to important aspects of life. While these self-perceptions are influenced by biological and cultural factors, they are generally formed through interactions between the individual and the environment during childhood, as well as by the behavior and attitudes of others. Self-perceptions develop into self-evaluative attitudes and feelings which serve to motivate behavior. Although an individual's self-concept may change over time in response to environmental or developmental changes, Piers contends that any such changes would occur gradually and would not be in response to isolated experiences.

Felker (1974) regards the self-concept as the totality of the view which an individual has of him or herself. Perceptions, ideas, and attitudes about the self are acquired through individual experience, thus forming the basis for self-concept. While experiences serve to shape self-concept, the self-concept also plays an active role in shaping experiences. Not only is self-concept influenced by what happens in the environment, it also determines how an individual will react in a variety of situations. According to Felker, there are three main functions of the self-concept.
It acts as a maintainer of internal consistency, it determines how experiences will be interpreted, and it also provides a set of expectations about what will happen in certain situations. The three of these factors act as a powerful influence on behavior.

Believing that the self-concept strives to maintain internal consistency, Felker contends that people will act in ways which are consistent with the way they see themselves. If ideas, perceptions, or feelings are harbored which are in opposition with one another, there is a tendency for the individual to feel psychologically uncomfortable. In order to alleviate this discomfort, a person will make an effort to bring actions and happenings into harmony with his or her self-view. Thus, the sense of internal consistency is maintained.

Just as people tend to act in ways which are consistent with the view they have of themselves, there is also a tendency to interpret experiences in a consistent manner as well. As a result, it is extremely difficult to change a person's self-concept once it has been developed. Felker states that the self-concept can be compared to an inner filter. As each perception goes through the filter, meanings are attached to it, and these meanings are largely determined by how the individual sees himself.

Finally, the self-concept determines what a person expects to happen in a given situation. People who view them-
selves as having little self-worth will expect others to treat them in a way which is consistent with this expectation, and so they will act in a way which brings this about. Likewise, individuals who have a positive view of themselves will have very different expectations, and will act in a manner consistent with these expectations. This tendency often creates self-fulfilling prophecies, either in a positive or negative sense. Thus, the self-concept impacts not only behavior and interpretations of experiences, but also one’s expectations.

Another important facet of the self-concept is that it can be viewed as having both global as well as specific components (Piers, 1984). Global self-concept refers to how an individual feels about him or herself as a total person in terms of interactions with others, general and specific abilities, and physical self-image. Specific aspects of self-concept result from an individual’s self-evaluation in particular areas of functioning. While some of these areas are rather broad, such as physical self and academic self, others are more narrow in their focus, such as being good at math or music. Piers believes that the importance of each of these areas determines to what extent any successes or failures will impact the global self-concept.

The Importance of Self-Concept

Felker (1974) believes the development of a positive self-concept to be an extremely important goal for all chil-
dren. He refers to the self-concept as "a filtering and coloring mechanism in human experience" (p. 121). If the self-concept is negative, then everything in life takes on a negative hue, whereas if it is positive, it serves as the basis for seeing the world in a constructive way. According to Felker, the importance of self-concept extends into the area of academics as well.

Both Felker and Purkey (1970) concluded that a well-established relationship exists between self-concept and academic achievement. Purkey states that academic success or failure may be more strongly linked to self-concept than to measured mental ability. He refers to numerous studies which tend to support that claim. Many of these studies also found evidence that the relationship between self-concept and achievement in boys was stronger than in girls.

Purkey further examined the literature on self-concept in regards to successful and unsuccessful students. He concluded that the successful student can generally be described as having a positive self-concept and a high degree of self-worth. In contrast, unsuccessful students tend to have negative self-attitudes and see themselves as being less able, less adequate, and less self-reliant. This tendency seems to apply whether the student is an underachiever or a nonachiever.

More recent studies, however, have begun to focus on one particular aspect of self-concept, the individual's
self-concept of ability or academic self-concept, as being more closely associated with scholastic performance than global self-concept. According to Shavelson and Bolus (1982), correlations between measures of academic self-concept and achievement tend to be higher than correlations between general self-concept and achievement. In a study conducted by Kanoy et al. (cited in Piers, 1984), using the Piers-Harris Children's Self-Concept Scale, no relationship was found between global self-concept and achievement. However, a significant relationship was found in the more specific area of academic self-concept and achievement. Wylie (1979) summarized the research relating achievement and self-concept stating that, "It does appear that the relationship between achievement level and self-concepts of ability may be stronger and more replicable than the relationship of over-all self-regard to achievement level" (p. 406).

Brookover (cited in Purkey, 1970) conducted a longitudinal study among students while in the seventh through the twelfth grades and found that, while confidence in one's academic ability was a necessary factor in determining scholastic achievement, it was not in itself sufficient enough. Although students who had low self-concepts of ability rarely performed at above-average levels as was expected, many of the students who reported high self-concepts of ability did not perform at a comparable level.
Thus, it seems that scholastic success is frequently accompanied by a positive academic self-concept, though there are some students who report a high self-concept of ability and do not perform as would be expected.

While much of the research concedes that achievement and self-concept are in fact related to some degree, there is often disagreement as to the causal ordering of the two (Calsyn & Kenny, 1977; Purkey, 1970; Shavelson & Bolus, 1982). According to Calsyn and Kenny (1977), self-enhancement theorists believe that self-concept variables are primarily responsible for academic achievement. As such, they argue that one of the initial goals of an educational program should be to increase the self-concept of children. In contrast, skill development theorists believe that self-concept variables are, for the most part, consequences of academic achievement, and that more time should be devoted to structuring the curriculum. Calsyn and Kenny conducted their own research study and found their results to be more supportive of the skill development model, in which academic achievement is causally predominant over self-concept of ability. Shavelson and Bolus (1982), on the other hand, reached a different conclusion in their study on causal predominance, finding instead that self-concept appeared to be causally predominant over achievement.

After reviewing a number of similarly opposing research studies, Purkey (1970) concluded that, "Although the data do
not provide clear-cut evidence about which comes first — a positive self-concept or scholastic success, a negative self-concept or scholastic failure — it does stress a strong reciprocal relationship and gives us reason to assume that enhancing the self-concept is a vital influence in improving academic performance." (p. 27). Thus, it seems that the overall importance of self-concept in the realm of education cannot be denied.

**Self-Concept and the Gifted**

According to Klein and Cantor (1976), most definitions of giftedness focus on intellectual ability. As a result, programs designed for the gifted generally emphasize the cognitive sphere, with little attention given to the affective domain. Klein and Cantor argue that, "While we tend to think of the normal average child as a whole child with emotional and cognitive aspects of personality, gifted children, as a group, are often viewed as 'brains' with very little consideration given to their social and emotional development" (p. 98).

In an effort to verify the need for such affective development, Klein and Cantor measured the self-esteem of 92 children in kindergarten through fourth grade, using two separate measures of self-concept. Thirty-eight of the 92 students were classified as gifted with an IQ of 130 or above. Based upon the scores obtained from the two self-concept measures, the students were categorized into a High
Esteem Group and a Low Esteem Group, the cut off points being the top 27% and bottom 27% respectively. The results indicated that 41.4% of the gifted children fell within the Low Self-Esteem Group and 33.3% fell within the High Esteem Group. Of the nongifted children, 37.6% fell within the Low Esteem Group and 32.9% fell in the High Esteem Group. Klein and Cantor concluded that intellectual giftedness does not necessarily lead to high self-esteem.

Bracken (1980) suggested that, although intelligence may indeed affect the development of self-concept, it is only one of many factors to do so. According to Torrance (cited in Bracken, 1980), if being gifted is not viewed as an asset by the child's friends and family, then such negative appraisals will most likely be reflected in the gifted child's self-concept. Bracken, however, found no significant differences between gifted children and a nongifted normative sample in regards to their perceived self-concept.

Karnes and Wherry (1981) conducted a study of the self-concepts of gifted children using the Piers-Harris Self-Concept Scale. Their results indicated a significant difference between the gifted students and the standardization population, suggesting that gifted students have more positive self-concepts than their intellectually average peers. Piers (1984) confirmed this finding in her review of the research on the use of the Piers-Harris with gifted populations, stating that studies with gifted children consistent-
ly find that they report higher self-concepts than do other students, such as those in the normative sample. Olszewski et al. (1987) reports that, although studies with gifted children have found that they obtain higher scores in regards to global self-concept, this is not necessarily the case for students who have an IQ level above 125.

With some studies suggesting that gifted children have more positive self-concepts than nongifted children, other studies suggesting that the opposite is true, and still others finding no significant differences, it becomes apparent that the literature provides a pattern of inconclusive findings (Chan, 1988; Chapman & McAlpine, 1988; Colangelo et al., 1987; Karnes & Wherry, 1988; Loeb & Jay, 1987). According to Loeb and Jay (1987), these inconsistent results could be attributable to differences among subject samples (due to different definitions for giftedness), measures of self-concept employed, and decisions concerning data analysis. Moreover, they suggest that gender differences may be important in studying the self-concepts of gifted students.

In an effort to determine whether or not sex differences did indeed impact self-concept, Loeb and Jay compared 125 gifted students with 102 nongifted students using three different self-report measures, as well as mother and teacher ratings. The results indicated that giftedness was more of an advantage for girls than for boys. Whereas gifted girls reported a more positive self-concept than nongifted girls,
no difference was found for boys. Gifted boys did, however, give some evidence of lower self-satisfaction, especially in the areas of physical strength and aggressiveness, in comparison to their nongifted male peers. Thus, Loeb and Jay concluded that the impact of giftedness in children appears to be best understood in the context of gender.

Chapman and McAlpine (1988) offer another explanation for the lack of consistency in research concerning the self-concepts of gifted students, stating that results may differ depending upon whether or not self-concept is viewed as being global or multidimensional. They investigated the ability perceptions of 29 intellectually gifted students with an average IQ of 131, and 71 average achievers with a mean IQ of 100. The measuring instrument used was the Perception of Ability Scale for Students, which measured feelings and attitudes regarding school performance in five basic academic areas, as well as feelings about school in general. The findings indicated that the gifted sample held significantly higher ability perceptions in all areas measured except School Satisfaction and Penmanship/Neatness. Chapman and McAlpine concluded that gifted children tend to have higher perceptions of ability in those areas which contribute to their identification as gifted, but not necessarily in those areas (such as neatness) which do not.

Ross and Parker (1980) report that experience in interviewing and assessing the needs of gifted students has led
them to believe that high achieving gifted students generally hold more positive academic self-concepts. In contrast, however, gifted children possess relatively poorer social self-concepts. The study which they conducted included 147 fifth through eighth grade intellectually gifted students, and sought to measure their academic and social self-concepts. The results confirmed their belief that gifted children do, indeed, have higher academic than social self-concepts. Ross and Parker also found that differences between these two areas of self-concept are already established by the fifth grade and remain constant through the eighth grade for both males and females. Thus, the need for re-examining the myth, that those students who may be confident and successful in the area of academics are naturally confident and capable in all other areas, is called for. According to Ross and Parker, such a myth has a tendency to perpetuate the status quo emphasis on the academic realm, while neglecting the socio-emotional needs of the gifted.

The Effects Of Labeling

Although there has been extensive research on the labeling of handicapped children, there has been comparatively little investigation into the effects of labeling gifted and talented students (Colangelo & Brower, 1987; Guskin et al., 1986). Guskin et al. (1986) describes labeling theory as: it applies to gifted and talented students, suggesting that the gifted label itself may be as significant as having out-
standing abilities. Not only are others likely to have a different reaction to those who are labeled gifted, but the gifted will probably tend to view themselves differently, and finally, the effects of the label will result in behavior patterns and experiences "which lead to an irreversible life pattern very different from those of nonlabeled (but equally able) individuals" (p. 62). There is, however, controversy as to whether the gifted label generally has positive or negative consequences.

According to Jenkins-Friedman and Murphy (1988), some of the reported negative outcomes of labeling students as gifted, include snobbishness on the part of the labeled child, social isolation, and hostility of some teachers toward the identified student. There is also the belief that the gifted label encourages chronic perfectionism which in turn leads to increased stress, underachievement, and a poor attitude towards school. Mead (cited in Guskin et al., 1986) concurs that students who are labeled as gifted are often viewed with hostility. Apparently, the gifted student is looked upon as having been given the label, rather than having earned it. Finally, Robinson (1986) points out that there are questions raised regarding the ethics of recognizing and providing specialized treatment for gifted students due to the potential harm such practices may cause for nongifted students. Myers and Ridl (cited in Robinson, 1986) claim that, by defining and labeling some students as
gifted, we are implicitly rejecting those students who are not gifted and labeling them as such.

On the other hand, there are those who hold the belief that the gifted label generates more positive outcomes than negative. In summarizing the literature, Hershey and Oliver (1988) report that, for the most part, gifted students themselves tend to have positive attitudes about being labeled. Jenkins-Friedman and Murphy (1988), in discussing various opinions regarding the advantages and disadvantages of gifted labeling, wrote of the view that such labels can in fact create positive self-fulfilling prophecies. Moreover, Hobbs (cited in Guskin et al., 1986) discusses the importance of labels in making services, opportunities, and programs available for the gifted which they might otherwise not have access to.

In an effort to examine the effects of labeling on the gifted, many researchers have focused on aspects of student self-concept as an indicator of adjustment to the gifted label (Jenkins-Friedman & Murphy, 1988). In a study conducted by Guskin et al. (1986), 295 gifted and talented students, ranging in age from nine to 15 years old, were surveyed regarding their conceptions of the label and their perceived causes and consequences of being so identified. The findings suggested that the labeling of students as gifted and/or talented did not have negative consequences. The majority of the students had a very positive view of
themselves and of gifted students in general. They reported that giftedness can be achieved through hard work, that they are not much different from other students, and that they are treated favorably by others.

Jenkins-Friedman and Murphy (1988) measured the self-concepts of 128 gifted students in grades four through eight and asked their teachers to assess the students' adjustment to gifted services. The researchers then examined the discrepancies between the gifted students' ideal/actual and public/actual self-concept scores, hypothesizing that as students understood and integrated their new status, they would display smaller gaps between their ideal/actual and public/actual self-images. Their hypothesis was confirmed as they concluded that well-adjusted students, as reported by their teachers, tended to show greater coherence between the measured areas of self-concept.

In studying the effects of labeling on the self-concepts of gifted children, it becomes evident that separating attitudes regarding the actual label from attitudes towards gifted programming is extremely difficult, if not impossible. In most instances, students are identified and labeled as gifted for the sole purpose of participating in a special program designed to meet their needs. Nonetheless, Hotter (cited in Hershey & Oliver, 1988) made an attempt to separate the effects of labeling from those of special programming by examining the self-concepts of three groups of
seventh and eighth grade students. One group was composed of gifted students in special programs, another group was made up of gifted students not participating in any special programs, and the third group consisted of general education students. An analysis of student responses on a self-concept scale indicated that the gifted students who were participating in special programs had significantly higher academic self-concepts than the other two groups. This led Hotter to conclude that gifted labeling and gifted programming did not impact negatively on the students in the study.

The Impact of Gifted Programs

Coleman and Fults (1985) draw from the theory of social comparisons in studying the influence of various instructional environments on the gifted. According to this theory, when given similar or dissimilar others, people are more likely to use similar others as a reference group for comparisons. Thus, when gifted children are placed in special programs, they will likely compare themselves with their gifted peers in the same program, rather than with their nongifted peers in the regular classroom. Such comparisons could actually lead to a lowered self-concept among the gifted. While the capabilities of the gifted student may be exceptional in the regular class, these same capabilities may only be seen as typical in the gifted program. As a result, gifted students receive less positive feedback than was previously available to them, leading to deflated
In an investigation of social comparison theory, Coleman and Fults assessed the self-concepts of 194 gifted fourth grade students who had been identified for placement in a one-day-per-week gifted program. The self-concepts of 102 of the children were assessed approximately two weeks prior to participation in the program. The self-concepts of the other 92 students were assessed approximately eight weeks after placement. Following analysis of the scores obtained on the Piers-Harris Self-Concept Scale, the researchers concluded that the self-concepts of students assessed prior to participation in the gifted program were indeed higher than those of students assessed after beginning the program. Coleman and Fults went on to state that the results might be transitive from a developmental point of view and that the self-concept scores of both groups of gifted students were generally quite positive when compared to the normative sample. However, they did point out that even partial segregation in the instructional environment can impact children's perceptions of their own capabilities.

In a previous study by Coleman and Fults, the self-concepts of children participating in an elementary gifted program were compared to those of children who had been nominated for the program, but had failed to meet the requirements for eligibility. The findings indicated that, while neither group demonstrated very poor self-concepts,
the group identified as gifted, who were participating in a one-day-per-week segregated program, did tend to have lower self-concepts than the contrasting group of high achievers. Moreover, it was found that the gifted students in the program demonstrated an increase in self-concept after they returned to full-time regular classroom placement.

Other studies have yielded similar results, thus lending support to the tenets of social comparison theory. Roggers (cited in Chan, 1988 and in Jenkins-Friedman & Murphy, 1988) found that gifted students placed in a part-time resource program showed a decline in self-concept over an eight month period of time, while a control group of gifted students not participating in any program showed no changes in self-concept. Olszewski et al. (1987) examined the self-concepts of gifted junior high students before, during, and after participation in an intensive summer program for the gifted. Their findings indicated that students showed a decline in academic self-concept over time and a transitory decline in social acceptance, suggesting that gifted programs can impact different dimensions of the self-concept.

Chan (1988) investigated the self-perceptions of gifted students enrolled in a full-time segregated program and those who were enrolled in a part-time-extension program. She reported that the students in the full-time gifted program had relatively lower cognitive and physical self-concepts than the gifted students in the part-time program,
although the two groups showed no significant differences in general self-worth. Chan concluded that full-time segregated gifted programs may not be as beneficial in terms of promoting superior self-concepts in the cognitive domain. However, such programs may encourage healthier and more realistic self-perceptions of competence which, in turn, could be advantageous to their future academic success.

In contrast to those studies which tend to support the theory of social comparisons, other researchers have found either no significant differences when comparing gifted instructional environments, or more positive self-concepts for students participating in a gifted program. Karnes and Wherry (1981) examined the self-concepts of 90 students enrolled in gifted programs and 58 students not enrolled in such programs. Giftedness was defined as students having an IQ score of 120 or above. They found no significant differences in self-concept between the two groups of gifted students. Maddux et al. (cited in Olszewski et al., 1987) studied the self-concepts of gifted elementary students enrolled in a full-time or part-time gifted program and a control group of gifted students not participating in any special program. Although differences were not of statistical significance, it was found that the students participating in special programs actually had higher self-concept scores when compared to those students not enrolled in any program. In conclusion, it seems that the effects of the
instructional environment on the self-concepts of gifted students has yet to be resolved (Chen, 1988).

Summary

The existing research concerning the self-concept, as it relates to the needs of the gifted, indicates that it is indeed an important factor to be considered in the education of gifted students (Ross & Parker, 1980). Most of the studies reviewed tended to be in agreement in regards to the reciprocal relationship between self-concept and academic achievement. It can be concluded that if a gifted student suffers from a poor self-concept, this could result in a life-long pattern of underachievement. Although many studies suggest that gifted students generally have higher self-concepts than their nongifted peers, others have found evidence to refute this conclusion.

A fair amount of controversy seems to exist regarding the identification and labeling of some students as gifted. Those who are concerned about the effects of labeling the gifted can be categorized into two groups. One group consists of people who are primarily concerned with the welfare of the gifted child. The other group is composed of individuals who question the ethics of recognizing and providing specialized treatment for the gifted, because of the potential harm such practices could have on the nongifted (Robinson, 1986). Both groups are concerned with the effects of labeling on self-concept, whether in relation to the gifted
student or the nongifted student. Ross and Parker (1980) make the point that being perceived and related to as "different" may impact gifted students by generating feelings of insecurity. Nonetheless, questions remain in regards to the effects of labeling on the self-concepts of gifted students.

Research regarding alterations in the instructional environments of the gifted has generated inconclusive findings. On the one hand, self-concept theory suggests that there should be a positive outcome in terms of academic performance for those students provided with enrichment opportunities (Chapman & McAlpine, 1988). On the other hand, however, social comparison theory predicts diminished self-concept for students placed in gifted programs, due to the change in the comparison group by which students evaluate themselves (Coleman & Fults, 1985). While the research has not been extensive in this area, the majority of that which has been conducted seems to support the tenets of social comparison theory. In spite of the inconsistent findings in regards to labeling and gifted programming, Jenkins-Friedman and Murphy (1988) conclude that "one message is clear: identification and placement in special education programs impacts gifted students" (p. 27).
CHAPTER III

Design of the Study

Purpose

The purpose of this study was to determine whether or not any statistically significant differences existed in the self-concepts of students participating in an academically talented program and a comparable group of students who had been nominated for the program, but failed to meet all eligibility requirements. Six specific dimensions of self-concept as well as global self-concept were investigated.

Sample

The subjects participating in the study consisted of fourth, fifth, and sixth grade students from an upper middle class, predominantly white, suburban school district in upstate New York. The sample consisted of 30 students enrolled in a pull-out program for the intellectually gifted and 29 students of comparable ability and achievement who had been nominated for the program, but who failed to meet all eligibility requirements. The district referred to the program as the academically talented, or A/T, program.

The sample enrolled in the A/T program was made up of seven fourth graders, 11 fifth graders, and 12 sixth graders. Twenty-two of the students were male, while only eight of the students were female. The length of time students had been participating in the A/T program ranged from two months to over two years. Some of the sixth grade students
had been in the program since the middle of their fourth grade year, while all of the fourth grade students had been admitted into the program approximately two months prior to the study. The other students had been accepted into the program during various screening periods held throughout the fifth and sixth grade years.

Participation in the A/T program required that students meet in small groups by grade level for a one-hour period each week and then in a large group session one morning per month. The large group sessions were held at a central location, with A/T students from all five elementary schools in the district meeting by grade level for a three-hour period. The main focus of the resource program was to engage students in problem solving and creative thinking activities, and to provide them with opportunities to interact with other students of similar capabilities.

In order to be eligible for participation in the A/T program, students were required to meet several criteria. First, to have been nominated for the program, students were required to have a score at the 97th percentile or above on at least two of the following three tests: an intelligence test (97th percentile = 130), and achievement tests in reading and in math. If students met these criteria, two writing samples were then obtained, as well as teacher and parent recommendation scales. If students achieved a combined score of 21 or above on an eligibility matrix which assigned
point values to the various criteria (see Appendix A), they were accepted into the program. Those students who failed to achieve a total matrix rating of at least 21 were placed in an A/T program pool, to be reviewed again during a future screening period.

The sample of students not enrolled in the A/T program, but of sufficient ability and achievement to have been nominated for the program, consisted of 11 fourth graders, seven fifth graders, and 11 sixth graders. Of this group, 11 were males and 18 were females. All students had met the initial criteria for nomination, but had not succeeded in achieving an overall matrix score of 21 or more. As such, these students had been placed in the A/T pool to be reviewed again at the next screening session.

Instrumentation

The instrument used to measure the self-concepts of both sample groups was the Piers-Harris Children's Self-Concept Scale (Piers, 1984). The Piers-Harris consists of 80 declarative statements (see Appendix B), to which the subjects indicate whether or not each item describes the way they feel about themselves. Raw scores can range from 0 to 80, with higher scores reflecting a more positive self-concept.

Six cluster scales, or subscales, are also derived from the 80-item questionnaire, allowing for measurement in the following specific areas of self-concept: behavior; intel-
lectual and school status; physical appearance and attributes; anxiety; popularity; happiness and satisfaction (see Appendix C). The behavior scale, consisting of 16 items, reflects how the student views his or her problems and the extent to which the student assumes responsibility for these problems. The intellectual and school status scale, with 17 items, reflects the child’s self-assessment of his or her abilities in regards to intellectual and academic tasks, including school satisfaction and future expectations. The third scale, physical appearance and attributes, has 13 items, and measures attitudes about physical characteristics and attributes such as leadership. The anxiety scale is a cluster of 14 items which tap a variety of specific emotions such as nervousness, fear, sadness, and worry. The popularity scale, with 12 items, reflects the student’s assessment of his or her popularity with classmates and ability to make friends. Finally, the happiness and satisfaction cluster scale, consisting of 10 items, reflects the extent to which the child is satisfied with life and is a happy person. All subscales are scored in the direction of positive self-concept so that a high score on a particular scale indicates a high level of self-concept within that specific dimension (Piers, 1984).

Procedure

Students participating in the study were organized into groups ranging from a minimum of two students to a maximum
of 10 students. Due to absences and/or scheduling conflicts, some students were given the survey individually by the examiner. Students who were enrolled in the A/T program completed the Piers-Harris survey in their regular small group sessions, while those students not in the program were organized into small groups for the purpose of completing the questionnaire.

Before completing the Piers-Harris, all students were informed that the purpose of the survey was to determine how children feel about themselves. Students were encouraged to answer the questions as honestly as possible and were assured of the confidentiality of their responses. A common introduction to the scale, as outlined in the Piers-Harris manual (Piers, 1984), was given to all students:

Here are a set of statements that tell how some people feel about themselves. Read each statement and decide whether or not it describes the way you feel about yourself. If it is like you, circle the word ‘yes’ next to the statement. If it is not like you, circle the word ‘no.’ Answer every question, even if some are hard to decide. Do not circle both ‘yes’ and ‘no’ for the same statement. Remember that there are no right or wrong answers. Only you can tell (me) how you feel about yourself, so (I) hope you will mark each statement the way you really feel inside. (p. 7)
Following the introduction to the scale, and after all questions had been answered, individual items were read aloud by the examiner and students were asked to circle their response to each statement. Items were read aloud in order to keep the group working together at a similar pace as well as to maintain focus on the task. Completion of the survey itself took approximately 10 minutes.

Hypothesis

The null hypothesis was used in the investigation of total self-concept and the six subcategories measured by the Piers-Harris. Thus, it was stated that there would be no statistically significant difference between the mean scores of the two sample groups, where Group X was the group participating in the A/T program and Group Y was the contrast group not participating in the program. Each of the seven areas of self-concept measured was evaluated independently.

Data Analysis

Individual raw scores were obtained for the total scale and for each of the six subscales. Descriptive statistical information regarding the data was then calculated for each sample group. Following this, the seven experimental hypotheses, covering overall self-concept as well as the six cluster areas examined, were tested separately at the 95% confidence level using an independent t-test (see Appendix)
D) to determine whether or not any statistically significant differences existed between the two sample groups.
CHAPTER IV

Statistical Analysis

Total Self-Concept

Hypothesis #1:

There will be no statistically significant difference when tested at the 95% confidence level between the mean total self-concept scores of the two samples, Group X and Group Y.

Statistical Work-up:

<table>
<thead>
<tr>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 30</td>
<td>n = 29</td>
</tr>
<tr>
<td>md = 70</td>
<td>md = 68</td>
</tr>
<tr>
<td>( \bar{x} = 66.97 )</td>
<td>( \bar{y} = 65.59 )</td>
</tr>
<tr>
<td>Sk = 9.46</td>
<td>Sy = 8.68</td>
</tr>
<tr>
<td>Sk = -0.96</td>
<td>Sk = -0.83</td>
</tr>
</tbody>
</table>

t required = +/-2.00

t obtained = 0.58

Findings:

Since the t required for 57 degrees of freedom at the 95% confidence level was +/-2.00, and since the t obtained was 0.58, we must retain the null hypothesis and conclude that there is no statistically significant difference between the mean total self-concept scores of Group X and Group Y.
### TABLE 1

**Total Self-Concept Scores**

<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80</td>
<td>77</td>
<td>16</td>
<td>70</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>78</td>
<td>76</td>
<td>17</td>
<td>70</td>
<td>66</td>
</tr>
<tr>
<td>3</td>
<td>77</td>
<td>76</td>
<td>18</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>4</td>
<td>76</td>
<td>75</td>
<td>19</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>5</td>
<td>75</td>
<td>74</td>
<td>20</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td>6</td>
<td>75</td>
<td>74</td>
<td>21</td>
<td>65</td>
<td>62</td>
</tr>
<tr>
<td>7</td>
<td>75</td>
<td>74</td>
<td>22</td>
<td>63</td>
<td>62</td>
</tr>
<tr>
<td>8</td>
<td>74</td>
<td>73</td>
<td>23</td>
<td>61</td>
<td>59</td>
</tr>
<tr>
<td>9</td>
<td>74</td>
<td>71</td>
<td>24</td>
<td>59</td>
<td>57</td>
</tr>
<tr>
<td>10</td>
<td>73</td>
<td>70</td>
<td>25</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>71</td>
<td>70</td>
<td>26</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>12</td>
<td>71</td>
<td>68</td>
<td>27</td>
<td>54</td>
<td>52</td>
</tr>
<tr>
<td>13</td>
<td>70</td>
<td>68</td>
<td>28</td>
<td>50</td>
<td>48</td>
</tr>
<tr>
<td>14</td>
<td>70</td>
<td>68</td>
<td>29</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>15</td>
<td>70</td>
<td>68</td>
<td>30</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>
Behavior

Hypothesis #2:

There will be no statistically significant difference when tested at the 95% confidence level between the mean scores of the two samples, Group X and Group Y, on the self-concept subscale for behavior.

Statistical Work-up:

<table>
<thead>
<tr>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 30</td>
<td>n = 29</td>
</tr>
<tr>
<td>md = 15</td>
<td>md = 15</td>
</tr>
<tr>
<td>$\bar{x}$ = 14.60</td>
<td>$\bar{y}$ = 15.14</td>
</tr>
<tr>
<td>$S_x$ = 1.35</td>
<td>$S_y$ = 1.03</td>
</tr>
<tr>
<td>$S_k$ = -0.89</td>
<td>$S_k$ = 0.40</td>
</tr>
</tbody>
</table>

$t$ required = $+/\!-2.00$

$t$ obtained = -1.72

Findings:

Since the $t$ required for 57 degrees of freedom at the 95% confidence level was $+/\!-2.00$, and since the $t$ obtained was -1.72, we must retain the null hypothesis and conclude that there is no statistically significant difference in the mean scores of Group X and Group Y on the self-concept subscale for behavior.
### TABLE 2

**Behavior Cluster Scores**

<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>16</td>
<td>17</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>16</td>
<td>18</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>16</td>
<td>19</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>16</td>
<td>20</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>16</td>
<td>21</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>16</td>
<td>16</td>
<td>22</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>16</td>
<td>23</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>16</td>
<td>24</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>16</td>
<td>25</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>15</td>
<td>16</td>
<td>26</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>12</td>
<td>15</td>
<td>16</td>
<td>27</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>13</td>
<td>15</td>
<td>16</td>
<td>28</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>14</td>
<td>15</td>
<td>15</td>
<td>29</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>15</td>
<td>30</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>
Intellectual and School Status

Hypothesis #3:
There will be no statistically significant difference when tested at the 95% confidence level between the mean scores of Group X and Group Y on the self-concept subscale for intellectual and school status.

Statistical Work-up:

<table>
<thead>
<tr>
<th></th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>md</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>$\bar{x}$</td>
<td>15.67</td>
<td>$\bar{y}$ = 14.90</td>
</tr>
<tr>
<td>$S_x$</td>
<td>1.73</td>
<td>$S_y$ = 2.29</td>
</tr>
<tr>
<td>$Sk$</td>
<td>-0.58</td>
<td>$Sk$ = -0.14</td>
</tr>
</tbody>
</table>

$t$ required = +/-2.00
$t$ obtained = 1.46

Findings:
Since the $t$ required for 57 degrees of freedom at the 95% confidence level was +/-2.00, and since the $t$ obtained was 1.46, we must retain the null hypothesis and conclude that there is no statistically significant difference in the mean scores of Group X and Group Y on the self-concept subscale for intellectual and school status.
TABLE 3

Intellectual & School Status

Cluster Scores

<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>17</td>
<td>16</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>17</td>
<td>19</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
<td>17</td>
<td>20</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>17</td>
<td>21</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>7</td>
<td>17</td>
<td>17</td>
<td>22</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>8</td>
<td>17</td>
<td>17</td>
<td>23</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>9</td>
<td>17</td>
<td>17</td>
<td>24</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>17</td>
<td>17</td>
<td>25</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>17</td>
<td>17</td>
<td>26</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>17</td>
<td>17</td>
<td>27</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>17</td>
<td>16</td>
<td>28</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>14</td>
<td>16</td>
<td>16</td>
<td>29</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>15</td>
<td>30</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
Physical Appearance and Attributes

Hypothesis #4:

There will be no statistically significant difference when tested at the 95% confidence level between the mean scores of Group X and Group Y on the self-concept subscale for physical appearance and attributes.

Statistical Work-up:

<table>
<thead>
<tr>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 30</td>
<td>n = 29</td>
</tr>
<tr>
<td>md = 11</td>
<td>md = 11</td>
</tr>
<tr>
<td>( \bar{x} = 10.20 )</td>
<td>( \bar{y} = 9.41 )</td>
</tr>
<tr>
<td>( S_x = 2.76 )</td>
<td>( S_y = 2.80 )</td>
</tr>
<tr>
<td>( S_k = -0.87 )</td>
<td>( S_k = -1.70 )</td>
</tr>
</tbody>
</table>

\( t \) required = +/- 2.00

\( t \) obtained = 1.09

Findings:

Since the \( t \) required for 57 degrees of freedom at the 95% confidence level was +/- 2.00, and since the \( t \) obtained was 1.09, we must retain the null hypothesis and conclude that there is no statistically significant difference in the mean scores of the two groups on the self-concept subscale for physical appearance and attributes.
TABLE 4

Physical Appearance & Attributes

Cluster Scores

<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>13</td>
<td>16</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>12</td>
<td>17</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>12</td>
<td>18</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>12</td>
<td>19</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
<td>12</td>
<td>20</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>12</td>
<td>21</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>13</td>
<td>12</td>
<td>22</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>12</td>
<td>23</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>12</td>
<td>11</td>
<td>24</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>11</td>
<td>25</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>11</td>
<td>26</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>11</td>
<td>27</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>12</td>
<td>11</td>
<td>28</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>11</td>
<td>11</td>
<td>29</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>11</td>
<td>11</td>
<td>30</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Anxiety

**Hypothesis #5:**

There will be no statistically significant difference when tested at the 95% confidence level between the mean scores of the two samples, Group X and Group Y, on the self-concept subscale for anxiety.

**Statistical Work-up:**

<table>
<thead>
<tr>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 30</td>
<td>n = 29</td>
</tr>
<tr>
<td>$md = 13$</td>
<td>$md = 12$</td>
</tr>
<tr>
<td>$\bar{x} = 11.73$</td>
<td>$\bar{y} = 11.45$</td>
</tr>
<tr>
<td>$Sx = 2.73$</td>
<td>$Sy = 2.23$</td>
</tr>
<tr>
<td>$Sk = -1.39$</td>
<td>$Sk = ' -0.74$</td>
</tr>
</tbody>
</table>

$t$ required = +/- 2.00

$t$ obtained = 0.43

**Findings:**

Since the $t$ required for 57 degrees of freedom at the 95% confidence level was +/-2.00, and since the $t$ obtained was 0.43, we must retain the null hypothesis and conclude that there is no statistically significant difference in the mean scores of Group X and Group Y on the self-concept subscale for anxiety.
### TABLE 5

**Anxiety Cluster Scores**

<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>14</td>
<td>16</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>14</td>
<td>17</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>14</td>
<td>18</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>14</td>
<td>19</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>14</td>
<td>20</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>13</td>
<td>21</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>13</td>
<td>22</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>14</td>
<td>13</td>
<td>23</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>14</td>
<td>13</td>
<td>24</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>14</td>
<td>13</td>
<td>25</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>13</td>
<td>13</td>
<td>26</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>13</td>
<td>27</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>13</td>
<td>28</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>13</td>
<td>12</td>
<td>29</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>12</td>
<td>30</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Popularity

Hypothesis #6:
There will be no statistically significant difference when tested at the 95% confidence level between the mean scores of Group X and Group Y on the self-concept subscale for popularity.

Statistical Work-up:

<table>
<thead>
<tr>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 30</td>
<td>n = 29</td>
</tr>
<tr>
<td>md = 10</td>
<td>md = 10</td>
</tr>
<tr>
<td>( \bar{x} = 9.53 )</td>
<td>( \bar{y} = 8.79 )</td>
</tr>
<tr>
<td>( S_x = 2.47 )</td>
<td>( S_y = 3.47 )</td>
</tr>
<tr>
<td>( S_k = -0.57 )</td>
<td>( S_k = -1.04 )</td>
</tr>
</tbody>
</table>

\( t \) required = +/-2.00
\( t \) obtained = 0.95

Findings:
Since the \( t \) required for 57 degrees of freedom at the 95% confidence level was +/-2.00, and since the \( t \) obtained was 0.95, we must retain the null hypothesis and conclude that there is no statistically significant difference in the mean scores of the two sample groups on the self-concept subscale for popularity.
TABLE 6

Popularity Cluster Scores

<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>12</td>
<td>16</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>12</td>
<td>17</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>11</td>
<td>19</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>11</td>
<td>20</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>11</td>
<td>21</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>11</td>
<td>11</td>
<td>22</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>11</td>
<td>23</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>11</td>
<td>11</td>
<td>24</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>11</td>
<td>25</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>11</td>
<td>26</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>11</td>
<td>11</td>
<td>27</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>10</td>
<td>11</td>
<td>28</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>10</td>
<td>29</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Happiness and Satisfaction

Hypothesis #7:

There will be no statistically significant difference when tested at the 95% confidence level between the mean scores of the two samples, Group X and Group Y, on the self-concept subscale for happiness and satisfaction.

Statistical Work-up:

<table>
<thead>
<tr>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 30</td>
<td>n = 29</td>
</tr>
<tr>
<td>md = 9</td>
<td>md = 9</td>
</tr>
<tr>
<td>( \bar{x} ) = 9.03</td>
<td>( \bar{y} ) = 8.97</td>
</tr>
<tr>
<td>Sx = 1.16</td>
<td>Sy = 1.18</td>
</tr>
<tr>
<td>Sk = 0.09</td>
<td>Sk = -0.09</td>
</tr>
</tbody>
</table>

\( t \) required = +/- 2.00
\( t \) obtained = 0.20

Findings:

Since the \( t \) required for 57 degrees of freedom at the 95% confidence level was +/-2.00, and since the \( t \) obtained was 0.20, we must again retain the null hypothesis and conclude that there is no statistically significant difference in the mean scores of Group X and Group Y on the self-concept subscale for happiness and satisfaction.
<table>
<thead>
<tr>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
<th>Number</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
<td>16</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>10</td>
<td>17</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>10</td>
<td>18</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>10</td>
<td>19</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>10</td>
<td>21</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td>10</td>
<td>22</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>10</td>
<td>23</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>10</td>
<td>24</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>25</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>10</td>
<td>10</td>
<td>26</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>10</td>
<td>27</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>13</td>
<td>10</td>
<td>9</td>
<td>28</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>9</td>
<td>9</td>
<td>29</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>9</td>
<td>9</td>
<td>30</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
Results

The first null hypothesis examined the mean raw scores of the two sample groups on overall self-concept. Group X received a mean score of 66.97, with a standard deviation of 9.46. Group Y received a mean score of 65.59, with a standard deviation of 8.68. Analysis of the data yielded no statistically significant difference between the two sample groups in terms of overall self-concept as measured by the Piers-Harris.

The second null hypothesis looked at the mean raw scores of Group X and Group Y on the Piers-Harris cluster scale for behavior. Group X achieved a mean score of 14.60, with a standard deviation of 1.35, while Group Y achieved a mean score of 15.14, with a standard deviation of 1.03. The null hypothesis was again retained and the conclusion reached that there was no statistically significant difference between the two groups on the behavior scale.

In the third null hypothesis, Group X received a mean score of 15.67, with a standard deviation of 1.73, on the intellectual and school status scale. Group Y received a mean score of 14.90, with a standard deviation of 2.29. We retained the null hypothesis, indicating that there was no statistically significant difference between the two sample groups in the area of intellectual and school status.

The fourth hypothesis examined the mean scores of the sample groups on the physical appearance and attributes
scale of the Piers-Harris. While Group X had a mean score of 10.20 and a standard deviation of 2.76, Group Y had a mean score of 9.41 and a standard deviation of 2.80. Again, no statistically significant difference was found between Group X and Group Y on this particular cluster scale.

In the fifth hypothesis, examining mean scores in the area of anxiety, Group X achieved a mean score of 11.73 and a standard deviation of 2.73. Group Y achieved a mean score of 11.45 and a standard deviation of 2.23. The null hypothesis was retained, concluding that there was again no statistically significant difference between the sample groups on the anxiety cluster scale of the Piers-Harris.

The sixth null hypothesis looked at the mean raw scores of Group X and Group Y on the cluster scale for popularity. With Group X having a mean score of 9.53 and a standard deviation of 2.47, and Group Y having a mean score of 8.79 and a standard deviation of 3.47, no statistically significant difference was found between the two groups in this particular subcategory.

In the seventh and final hypothesis of the study, scores on the cluster scale for happiness and satisfaction were examined for the two sample groups. Group X was found to have a mean score of 9.03, with a standard deviation of 1.16. Group Y had a mean score of 8.97, with a standard deviation of 1.18. Once again, no statistically significant
difference was found between the two groups, and the null hypothesis was retained.
Conclusions

The purpose of this study was to determine whether or not there were any statistically significant differences in the self-concepts of students participating in an academically talented program and a comparable group of students who had been nominated for the program, but failed to meet all eligibility requirements. Six different dimensions of self-concept, as well as total self-concept, were examined.

The results indicated that those students enrolled in the pull-out A/T program did not differ significantly from the contrast group of students not enrolled in the program in terms of self-concept, as measured by the Piers-Harris Self-Concept Scale. No significant differences between the two sample groups were found in overall self-concept, nor in any of the six cluster areas measured by the scale. Thus, it would appear that participating in a part-time academically talented program does not have a substantial effect, either positively or negatively, on students' reported self-concepts. This lends support to the findings of Karnes and Wherry (1981), who studied students with IQ scores of 120 or above, and found no significant differences in self-concept between students enrolled in resource programs for the gifted and those not enrolled.

Evidence suggests that student achievement tends to be
more closely associated with academic self-concept than with general self-concept (Wylie, 1979). Thus, the subscale for intellectual and school status was of particular interest to this study. This scale measured students' self-assessment of abilities in regards to intellectual and academic tasks and also looked at school satisfaction and future expectations. Some researchers (Coleman & Fults, 1985; Olszewski et al., 1987) have reported that students' self-concept is diminished when they participate in programs for the gifted, perhaps as a result of re-evaluating their abilities in comparison to other equally capable students. However, these studies were often unable to measure self-concept after students had been in the program for an extended period of time. Thus, the possibility of such differences in self-concept being only transitory seems plausible. The present study, which included some students who had been participating in the program for approximately two years as well as newly enrolled students, failed to find any evidence of lowered academic self-concepts among the sample group in the A/T program. Other researchers (Hotter, cited in Hershey & Oliver, 1988; Maddux et al., cited in Olszewski et al., 1987), on the other hand, have reported more positive self-concepts among students participating in gifted programs. Again, the present study found no such evidence. Thus, it can be concluded that, for the subjects in this study, participation in the A/T program did not have a significant
impact on their academic self-concepts.

Another area of concern in regards to gifted students has to do with their social self-concepts. According to Jenkins-Friedman and Murphy (1988), one of the reported outcomes of labeling students as gifted (which usually translates into special programming as well) is that it can lead to social isolation for the gifted child. Likewise, Ross and Parker (1980) believe that gifted students tend to have more negative social self-concepts than academic self-concepts. Although this study did not compare social and academic self-concepts within samples, it did examine possible differences in the area of social self-concept between the two sample groups. Scores on the popularity scale, which measured students' self-assessment of their popularity with classmates and their ability to make friends, indicated that there was no significant difference between the two groups. Thus, it appears that participation in the A/T program did not substantially impact students' social self-concepts either.

Limitations

The participants in this study had been admitted into the pull-out A/T program at various times in the school year during their fourth, fifth, or sixth grade years. As a result, some students had been in the program for over two years, while other students had only recently been admitted into the program. Thus, the present study was unable to
measure any before and after changes in self-concept which may have occurred in the sample group participating in the A/T program.

Another limitation of the current study involved the rather limited amount of time in which students actually participated in the resource program. Students in the A/T program only met for a one-hour session each week, along with one three-hour session each month. Thus, it could be argued that the relatively short amount of time which students actually spent in A/T classes would not have influenced their self-perceptions to a large degree.

Finally, this study did not attempt to examine potential differences in self-concept as a result of gender or grade level. Therefore, no generalizations can be made in these areas.

Directions for Future Research

Although the present study found no significant differences in the self-concepts of the two sample groups examined, these findings should not be viewed as conclusive. The research which has previously been generated in this area has tended to produce inconsistent results. While this study found that identifying and placing students in a gifted program did not appear to have impacted their self-concepts, other studies have reported quite the opposite. Thus, it seems that more extensive research is called for. One of the limitations discussed in regards to this study
involved the inability to measure potential before and after changes in self-concept which might have taken place in the A/T sample group. It would be advantageous to conduct a longitudinal study which tracked the self-perceptions of gifted students before and throughout the course of their programming. Measuring their self-concepts over an extended period of time would reveal any transitive changes which might occur in the initial period of adjustment to the gifted label and program. Implementing such a study would require that a contrast group of equally bright students not participating in a gifted program be evaluated throughout the period as well, to allow for comparisons between the two groups. Furthermore, it would prove beneficial to examine the various dimensions of self-concept independently, in view of the growing evidence suggesting a greater link between academic self-concept and achievement.

Another limitation of this study concerned the amount of time in which students actually participated in the gifted program. Many gifted programs are completely segregated, and those which are not, often have greater periods of time allotted to them than the program investigated in this study. It seems logical that students might identify more strongly with a program which requires more of their time, thus leading to a greater influence on self-concept. Further research needs to be conducted to determine the extent
to which different types of programs impact on self-concept.
References


APPENDIX A

Eligibility Matrix for the Academically Talented Program
ACADEMICALLY TALENTED PROGRAM
ELIGIBILITY MATRIX

STUDENT NUMBER ___________________________ SCHOOL ___________________________

AGE _______ GRADE _______ CLASSROOM TEACHER ___________________________

BIRTHDATE _______ NOMINATED BY ___________________________

Group School Ability Index Score

OLSAT

Date: ___________________________

Group Achievement Test - Total Reading

Name of Test ___________________________

Date: ___________________________

Group Achievement Test - Total Math

Name of Test ___________________________

Date: ___________________________

WRITING

Sample #1 Date: ___________________________

Sample #2 Date: ___________________________

OR

Two samples, two raters

Teacher Recommendation

Total Rating Scales Date: ___________________________

Parent Recommendation

Total Rating Scales Date: ___________________________

Additional Comments: ___________________________

TOTAL ___________________________
APPENDIX B

Item Content of the Piers-Harris
Item Content of the Piers-Harris

1. My classmates make fun of me.
2. I am a happy person.
3. It is hard for me to make friends.
4. I am often sad.
5. I am smart.
6. I am shy.
7. I get nervous when the teacher calls on me.
8. My looks bother me.
9. When I grow up, I will be an important person.
10. I get worried when we have tests in school.
11. I am unpopular.
12. I am well behaved in school.
13. It is usually my fault when something goes wrong.
15. I am strong.
16. I have good ideas.
17. I am an important member of my family.
18. I usually want my own way.
19. I am good at making things with my hands.
20. I give up easily.
21. I am good in my school work.
22. I do many bad things.
23. I can draw well.
24. I am good in music.
25. I behave badly at home.
26. I am slow in finishing my schoolwork.
27. I am an important member of my class.
28. I am nervous.
29. I have pretty eyes.
30. I can give a good report in front of the class.
31. In school I am a dreamer.
32. I pick on my brother(s) and sister(s).
33. My friends like my ideas.
34. I often get into trouble.
35. I am obedient at home.
36. I am lucky.
37. I worry a lot.
38. My parents expect too much of me.
39. I like being the way I am.
40. I feel left out of things.
41. I have nice hair.
42. I often volunteer in school.
43. I wish I were different.
44. I sleep well at night.
45. I hate school.
46. I am among the last to be chosen for games.
47. I am sick alot.
48. I am often mean to other people.
Item Content of the Piers-Harris
(Continued)

49. My classmates in school think I have good ideas.
50. I am unhappy.
51. I have many friends.
52. I am cheerful.
53. I am dumb about most things.
54. I am good-looking.
55. I have lots of pep.
56. I get into a lot of fights.
57. I am popular with boys.
58. People pick on me.
59. My family is disappointed in me.
60. I have a pleasant face.
61. When I try to make something, everything seems to go wrong.
62. I am picked on at home.
63. I am a leader in games and sports.
64. I am clumsy.
65. In games and sports, I watch instead of play.
66. I forget what I learn.
67. I am easy to get along with.
68. I lose my temper easily.
69. I am popular with girls.
70. I am a good reader.
71. I would rather work alone than with a group.
72. I like my brother (sister).
73. I have a good figure.
74. I am often afraid.
75. I am always dropping or breaking things.
76. I can be trusted.
77. I am different from other people.
78. I think bad thoughts.
79. I cry easily.
80. I am a good person.
APPENDIX C

Item Content of the Cluster Scales on the Piers-Harris
Item Content of the Cluster Scales on the Piers-Harris

Behavior (16 items)

I am well behaved in school.
It is usually my fault when something goes wrong.
I cause trouble to my family.
I am good in my schoolwork.
I do many bad things.
I behave badly at home.
I often get into trouble.
I am obedient at home.
My parents expect too much of me.
I hate school.
I am often mean to other people.
I get into a lot of fights.
My family is disappointed in me.
I am picked on at home.
I think bad thoughts.
I am a good person.

Intellectual and School Status (17 items)

I am smart.
I get nervous when the teacher calls on me.
When I grow up, I will be an important person.
I am well behaved in school.
I have good ideas.
I am an important member in my family.
I am good in my schoolwork.
I am slow in finishing my schoolwork.
I am an important member of my class.
I can give a good report in front of the class.
In school I am a dreamer.
My friends like my ideas.
I often volunteer in school.
My classmates in school think I have good ideas.
I am dumb about most things.
I forget what I learn.
I am a good reader.

Physical Appearance and Attributes (13 items)

I am smart.
My looks bother me.
I am strong.
I have pretty eyes.
My friends like my ideas.
I have nice hair.
My classmates in school think I have good ideas.
I am good-looking.
I am popular with boys.
Item Content of the Cluster Scales on the Piers-Harris (Continued)

I have a pleasant face.
I am a leader in games and sports.
I am popular with girls.
I have a good figure.

Anxiety (14 items)

I am often sad.
I am shy.
I get nervous when the teacher calls on me.
My looks bother me.
I get worried when we have tests in school.
I give up easily.
I am nervous.
I worry a lot.
I like being the way I am.
I feel left out of things.
I wish I were different.
I am unhappy.
I am often afraid.
I cry easily.

Popularity (12 items)

My classmates make fun of me.
It is hard for me to make friends.
I am shy.
I am unpopular.
I feel left out of things.
I am among the last to be chosen for games.
My classmates in school think I have good ideas.
I have many friends.
People pick on me.
In games and sports, I watch instead of play.
I am popular with girls.
I am different from other people.

Happiness and Satisfaction (10 items)

I am a happy person.
My looks bother me.
I am lucky.
I like being the way I am.
I wish I were different.
I am unhappy.
I am cheerful.
I have a pleasant face.
I am easy to get along with.
I am a good person.
APPENDIX D

T-tests
$H_0$:  

$$
t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{(n_x-1) \cdot S_x^2 + (n_y-1) \cdot S_y^2}{n_x + n_y - 2} \cdot \left(\frac{1}{n_x} + \frac{1}{n_y}\right)}}
$$

$$
t = \frac{66.97 - 65.59}{\sqrt{\frac{29 \cdot 9.46^2 + 28 \cdot 8.68^2}{30 + 29 - 2} \cdot \left(\frac{1}{30} + \frac{1}{29}\right)}}
$$

$$
t = \frac{1.38}{\sqrt{\frac{4704.844}{57} \cdot 0.068}}
$$

$$
t = \frac{1.38}{\sqrt{82.541 \cdot 0.068}}
$$

$$
t = \frac{1.38}{\sqrt{5.613}}
$$

$$
t = \frac{1.38}{2.369}
$$

$$
t = 0.583$$
\[ t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{\left(n_x - 1\right) * s_x^2 + \left(n_y - 1\right) * s_y^2}{n_x + n_y - 2} * \left(n_x^{-1} + n_y^{-1}\right)}} \]

\[ t = \frac{14.60 - 15.14}{\sqrt{\frac{29 * 1.35^2 + 28 * 1.03^2}{30 + 29 - 2} * \left(30^{-1} + 29^{-1}\right)}} \]

\[ t = -0.540 \]

\[ \sqrt{\frac{82.558}{57} * 0.068} \]

\[ t = \frac{-0.540}{\sqrt{1.448 * 0.068}} \]

\[ t = \frac{-0.540}{\sqrt{0.098}} \]

\[ t = \frac{-0.540}{0.313} \]

\[ t = -1.725 \]
\[ t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{(n_x - 1) \cdot S_x^2 + (n_y - 1) \cdot S_y^2}{n_x + n_y - 2} \cdot \left(\frac{1}{n_x - 1} + \frac{1}{n_y - 1}\right)}} \]

\[ t = \frac{15.67 - 14.90}{\sqrt{\frac{29 \cdot 1.73^2 + 28 \cdot 2.29^2}{30 + 29 - 2} \cdot \left(\frac{1}{30 - 1} + \frac{1}{29 - 1}\right)}} \]

\[ t = \frac{0.770}{\sqrt{\frac{233.629}{57} \cdot 0.068}} \]

\[ t = \frac{0.770}{\sqrt{\frac{4.099}{0.068}}} \]

\[ t = \frac{0.770}{\sqrt{0.279}} \]

\[ t = \frac{0.770}{0.528} \]

\[ t = 1.458 \]
\( t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{(n_x - 1) \cdot S_x^2 + (n_y - 1) \cdot S_y^2}{n_x + n_y - 2} \cdot \left( \frac{1}{n_x - 1} + \frac{1}{n_y - 1} \right)}} \)

\( t = \frac{10.20 - 9.41}{\sqrt{\frac{29 \cdot 2.76^2 + 28 \cdot 2.80^2}{30 + 29 - 2} \cdot \left( \frac{1}{30 - 1} + \frac{1}{29 - 1} \right)}} \)

\( t = \frac{0.790}{\sqrt{440.430 \cdot 0.068}} \)

\( t = \frac{0.790}{\sqrt{7.727 \cdot 0.068}} \)

\( t = \frac{0.790}{\sqrt{0.525}} \)

\( t = \frac{0.790}{0.725} \)

\( t = 1.090 \)
\[ H_0: 5: \]

\[ t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{(n_x-1) \cdot S_x^2 + (n_y-1) \cdot S_y^2}{n_x + n_y - 2} \cdot \left(\frac{1}{n_x - 1} + \frac{1}{n_y - 1}\right)}} \]

\[ t = \frac{11.73 - 11.45}{\sqrt{\frac{29 \cdot 2.73^2 + 28 \cdot 2.23^2}{30 + 29 - 2} \cdot \left(\frac{1}{30 - 1} + \frac{1}{29 - 1}\right)}} \]

\[ t = \frac{0.280}{\sqrt{\frac{355.375}{57} \cdot 0.068}} \]

\[ t = \frac{0.280}{\sqrt{6.235 \cdot 0.068}} \]

\[ t = \frac{0.280}{\sqrt{0.424}} \]

\[ t = \frac{0.280}{0.651} \]

\[ t = 0.430 \]
\[ t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{(n_x-1) * S_x^2 + (n_y-1) * S_y^2}{n_x + n_y - 2} * \left(\frac{1}{n_x} + \frac{1}{n_y}\right)}} \]

\[ t = \frac{9.53 - 8.79}{\sqrt{\frac{29 * 2.472 + 28 * 3.472}{30 + 29 - 2} * \left(\frac{1}{30} + \frac{1}{29}\right)}} \]

\[ t = \frac{0.740}{\sqrt{\frac{514.071}{57} * 0.068}} \]

\[ t = \frac{0.740}{\sqrt{9.019 * 0.068}} \]

\[ t = \frac{0.740}{\sqrt{0.613}} \]

\[ t = \frac{0.740}{0.783} \]

\[ t = 0.945 \]
\[ t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{(n_x - 1) \cdot S_x^2 + (n_y - 1) \cdot S_y^2}{n_x + n_y - 2} \cdot \left( \frac{1}{n_x - 1} + \frac{1}{n_y - 1} \right)}} \]

\[ t = \frac{9.03 - 8.97}{\sqrt{\frac{29 \cdot 1.16^2 + 28 \cdot 1.18^2}{30 + 29 - 2} \cdot \left( \frac{1}{30 - 1} + \frac{1}{29 - 1} \right)}} \]

\[ t = \frac{0.060}{\sqrt{\frac{78.010}{57} \cdot 0.068}} \]

\[ t = \frac{0.060}{\sqrt{1.367 \cdot 0.068}} \]

\[ t = \frac{0.060}{\sqrt{0.093}} \]

\[ t = \frac{0.060}{0.305} \]

\[ t = 0.197 \]