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Bridget Lee Toon  
*University of Nebraska at Omaha*

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TRAITS OF INSTRUMENTALITY AND SELF-CONCEPT AS RELATED TO  
MATHEMATICAL ABILITY IN PRE-ADOLESCENT GIRLS

A Thesis

Presented to the Department of Counseling

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

University of Nebraska at Omaha

by

Bridget Lee Toon

July 1999

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THESIS ACCEPTANCE

Acceptance for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree Master of Arts, University of Nebraska at Omaha.

Committee

Judy L. Harrington

John F. Reed

Jeannette Seaborn

Chairperson Scott Armstrong

Date 7/23/99

# TRAITS OF INSTRUMENTALITY AND SELF-CONCEPT AS RELATED TO MATHEMATICAL ABILITY IN PRE-ADOLESCENT GIRLS

Bridget Lee Toon, M.A.

University of Nebraska, 1999

Adviser: Scott Harrington, Ph.D.

This study examined whether the androgynous trait of instrumentality, (otherwise known as having an androgynous gender-type), and having a positive self-concept is related to higher mathematical ability in pre-adolescent girls in the seventh and eighth grades. Since participants were in both honors and average math classes, the additional variable of being in honors math versus regular math was also analyzed. There were 39 participants that were selected from Norris Middle School, which is in the Omaha Public School System. From these 39 participants, 18 were in honors math classes, while 21 were in regular math classes. The Piers-Harris Self-Concept scale was used to measure self-concept. The Children's Sex Role Inventory was used to assess the participants' gender role, or trait of instrumentality. The California Achievement Test's math section was used to measure the subjects' mathematical ability. Multiple regression was used to examine the independent variables of traits of instrumentality and self-concept as predictors to the dependent variable of mathematical ability. Pearson R correlation was used to examine the intercorrelations between the independent variables; while Univariate Analysis of Variance was used to analyze any main effects or interactions between the variables. Alpha was set at .05. Results of the study suggest that one's trait of instrumentality and one's level of self-concept do not predict mathematical achievement in pre-adolescent girls. However, the results did illustrate that being in

honors mathematics class and having a positive self-concept were significant predictors of higher mathematical achievement on the CAT in the pre-adolescent girls who participated in this study. The results also illustrated that a masculine trait of instrumentality was significantly related to having a positive self-concept in the pre-adolescent girls who participated in this study.

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## **Chapter 1: Introduction**

### **Statement of the Research Problem**

This study utilizes a correlational design to examine if there is a relationship between mathematical ability exhibited by seventh and eighth grade girls who have a high level of self-concept and their trait of instrumentality. Due to the fact that the participants in this particular study are students with varying mathematical backgrounds, varying levels of self-concept, and varying traits of instrumentality due to differing environmental and cultural backgrounds the conditions for the study already existed. Therefore, an experimental design was not possible. Each participant's math sub-score on the California Achievement Test assesses mathematical ability. Traits of instrumentality were assessed by each participant's score on Janet Boldizar's Children's Sex Role Inventory, which is the children's version of the Bem Sex Role Inventory (Bem, 1974). Finally, self-concept was assessed by each participant's score on the Piers-Harris Children's Self-Concept Scale.

### **Purpose/Significance of this Study**

The purpose of this study is to investigate the relationship of one's self-concept and trait of instrumentality to mathematical ability in pre-adolescent girls in the seventh and eighth grades. Current literature suggests that a positive self-concept in adolescent girls leads to higher achievement in both mathematics and the sciences (Whitley, 1983). The literature also suggests that girls who have an androgynous trait of instrumentality

are more prone to having a more positive self-concept due to their more assertive nature (Ziegler, Dusek, & Carter, 1984). Thus, it may be possible that there is a relationship to higher mathematical achievement in pre-adolescent girls who possess an androgynous trait of instrumentality and a positive self-concept. This relationship may be due to the fact that both androgyny and a positive self-concept lead to better decision-making skills that are necessary in mathematical achievement. If androgyny and a positive self-concept are related to higher mathematical achievement in pre-adolescent girls, then future intervention research may be necessary to promote the assertion skills that come natural to girls who possess a positive self-concept and an androgynous trait of instrumentality. This future research may contribute to all adolescent girls so that they learn the necessary skills to compete in the constantly changing world of technology that requires both math ability and decision making skills.

### Operational Definition of Key Terms

Traits of instrumentality or sex role, is defined as one's personal preference for feminine traits, masculine traits, or androgynous traits (both masculine and feminine traits) (Unger and Crawford, 1996, p.50). These traits influence how one carries out life tasks such as decision making and goal setting. Psychologists such as Margaret Bem, Janet Spence, and Robert Helmreich have developed inventories that measure individual differences in androgyny (Bem, 1974; Spence & Helmreich 1978). These inventories conceptualize masculinity and femininity on separate dimensions so that one can understand the differences among traits of instrumentality. Individuals who score high in

masculinity are characterized by traits such as independence, aggressiveness, and unemotionality. Individuals who score high in femininity describe themselves in terms of being empathetic, emotional, and nurturing. Individuals who score high in androgyny are characterized as having both masculine and feminine traits. For example, androgynous people behave like their masculine peers when put under pressure to conform, in this instance they would most likely resist pressure and stick to their own opinions. Whereas, they behave more like their feminine peers in “feminine” situations such as being good at listening to the problems of a lonely colleague (Unger & Crawford, 1996, p.173).

Self-concept refers to one’s personal judgement of one’s self, or the overall awareness of oneself (Webster’s Dictionary, p.533). Although self-concept is traditionally referred to in the singular, it is actually a collection of hundreds of selves or self-perceptions. Thus the major components of these clusters include: body image, how I perceive my body and feel about it; the self-image, the self I see myself to be; the ideal-self, the self I would like to be; and our social selves, or the ways I feel others see me (Unger et. al., 1996, pp.33-31). Self concept as assessed by the Piers-Harris Self Concept Scale, which is the instrument that is used to measure self concept in this particular study, is defined as, “a relatively stable set of self-attitudes reflecting both a description and an evaluation of one’s own behavior and attributes (Piers, 1984).”

Mathematical achievement scores for the purposes of this particular study will adhere to the standards of the California Achievement Test (CAT) on the mathematical subsection. Individual scores on the participants’ California Achievement Test yield scores that can be compared to the normative population of the nation, the state, the

school district, and the individual school. In this particular study, the individual's percentile score as compared to the nation will be used as a determination of mathematical ability.

### Research Hypothesis

The present research study was designed to investigate the sociological predictors of mathematical achievement in pre-adolescent girls in the seventh and eighth grades. For the purposes of this particular study, the sociological predictors of traits of instrumentality, or sex role and self-concept were explored. The research hypothesis of this study is as follows: positive self-concept and an androgynous trait of instrumentality significantly predicts higher mathematical ability in pre-adolescent girls in the seventh and eighth grades.

## Chapter 2: Literature Review

The United States educational system and other environmental influences such as the media, family of origin, and socioeconomic status shape children for full and active roles in the family, the community, and the work force (AAUW report, 1992). Whether we look at the issues from an economic, political, or social perspective girls are one-half of our future (AAUW report, 1992). According to Chapter 2 of the AAUW 1992 report, current research on girls reveals that girls receive significantly less attention from classroom teachers than do boys. In a study done by Myra and David Sadker, boys in elementary school and middle school called out answers eight times more often than girls. A 1992 AAUW poll, *Shortchanging Girls, Shortchanging America*, found a loss of self-confidence in girls that is twice that for boys as they move from childhood to adolescence. Furthermore, when scholarships are given based on the Scholastic Aptitude Test scores, boys are more apt to receive scholarships than are girls who get equal or slightly better grades (AAUW, 1992). These alarming statistics reported by the American Association of University Women Educational Foundation are indicators that further studies must be done on educational and environmental influences that disregard the potential of many talented young women for futures in science, mathematics, and technology. At this time the AAUW suggests that teachers, administrators, and counselors should be evaluated on the degree to which they promote gender equity and multicultural education in the classroom.

In this particular study, sociological influences of one's trait of instrumentality or gender type and self-concept are explored in relation to mathematical ability in pre-

adolescent girls in the seventh and eighth grades. For the purposes of the literature review, mathematical ability and self-concept in relation to pre-adolescent girls is reviewed. Then, self-concept and the traits of femininity, masculinity, and androgyny are reviewed. As one can observe after reviewing the literature, relationships have been established in previous studies between self-concept and mathematical achievement in adolescent and pre-adolescent girls. Relationships have also been established between self-concept and one's trait of instrumentality or sex role. Due to the fact that no literature at this time relates the variables of self-concept and trait of instrumentality or sex role, to math ability in pre-adolescent girls, the present study explores possible significant relationships between these variables.

#### Mathematical Ability, Self Concept, and Preadolescent Girls

Girls' mathematical ability is better than boys' in the elementary school years, but by high school they have lost their early advantage in computational skills and perform similarly to boys (Unger et. al., 1996, p.85). Early studies that were conducted in the 1940's and 1960's, show that the differences in mathematical ability between boys and girls were much larger due to the fact that standardized tests were just first being normed (Chippman & Wilson, 1985). Yet in present day society, contrary to beliefs that girls don't like mathematics and are not good at it, many studies illustrate that girls like math and perform similarly in math than boys do during the years previous to high school (Feingold, 1988). During the high school years, there are documented differences that favor males in advanced mathematics performance, which has been illustrated by their scoring an average fifty points higher on the math portion of the SAT (Benbow &



Stanley, 1980; Halpern, 1992)). According to a 1992 AAUW report, differences between girls and boys are declining in mathematics achievement, although by high school girls are still less likely to take the most advanced courses in math. The AAUW report also reports that girls who see math as “something men do” do less well in math than girls who do not hold this view. According to Mary Pipher in her book Reviving Ophelia, she observes that girls have trouble in math because math requires exactly the qualities that junior high girls lack, confidence, trust in one’s judgement, and the ability to tolerate frustration without becoming completely overwhelmed. Thus, Pipher suggests that girls need to be encouraged to “persevere in the face of difficulty, while calming down and believing in themselves.” Pipher concludes that girls begin to decline in mathematics and the sciences in junior high, during which time girls feel pressure to be socially popular, and grades get in the way of attaining popularity. Thus, as a result of the research and professional observations, one can assume that girls are less likely to receive an appropriate math education in order to compete with their male colleagues in the constantly changing world of technology.

In a 1988 study, Hollinger and Fleming examined internal barriers that are in existence for girls relative to mathematics. The barriers that were found included 1) avoidance of math because it is not feminine; 2) the girls’ lack of assertion; 3) success avoidance; and 4) social expectations. A study done by Fox in 1976 found that teachers discourage girls from taking mathematics courses. Other factors that influence the underachievement of girls are cultural ones, such as family, school, and peer expectations, which often discourage high achievement or high career aspirations (Davis

& Rimm, 1989). Personality and socialization factors that also influence underachievement in adolescent girls are self-esteem and locus of control (Reis, 1987). In the study done by Hollinger and Fleming in 1988, it indicated that social self-esteem is central to the achievement issue and is the product of the two self-perceptions of instrumentality (self-assertiveness attributed to sex role), and expressiveness (nurturance). In 1994 Kathleen Campbell and Cay Evans did a study on gender issues and the Math/Science curricula. In this study, they found a significant relationship among girls who are enrolled in advanced math and science courses having a more positive self-esteem and an internal locus of control along with a strong parental support network. A 1983 study done by Hollinger, revealed that androgynous females, those who are both high in assertiveness and expressiveness, scored the highest in self-esteem. In both the Hollinger study (1983) and the Campbell study (1994), both researchers assert the need for more research on androgynous characteristics among girls enrolled in advanced math and science courses. Thus, previous studies depict the notion that self-concept is related to achievement in mathematics in pre-adolescent and adolescent girls with the possibility of gender trait as a factor in this relationship.

### Self Concept and Traits of Instrumentality

According to the renowned psychologist, Jung, he reflected in his “Concepts of the Anima” (1953; 1971), the feminine part of the self in men, and animus; the masculine part of the self in women should be integrated within each of us if the self is to be fully complete. Thus, psychological androgyny, or the blending of psychological traits as

stereotyped as being masculine and feminine is considered by Jung to be necessary in relation to having higher self-esteem. In studies done by Sandra Bem (1975) she looks at differences between gender types. Bem depicts the masculine type person as feeling comfortable and being likely to excel in situations that necessitates his/her abilities to be assertive, active, and dependent, but not when the situation calls for tenderness, empathy, or emotional expressiveness. Bem depicts feminine people as excelling in situations that demand interpersonal skills, nurturing, and kindness, without competition. Bem finally depicts androgynous typed people as similar to both their masculine and feminine peers. Thus, an androgynous person would behave similarly to a masculine typed individual when there is pressure to excel under pressure; while at the same time the androgynous person would behave like their feminine peers when nurturing or listening to another's problem. As mentioned earlier, Hollinger's 1983 study depicts androgynous females as those being both high in assertiveness and expressiveness as having the highest level of self-esteem. Although in other studies, masculine people have been depicted to be most comfortable than other gender types in a larger variety of tasks due to higher levels of self-confidence (Helmreich, Spence, & Holahan, 1979). In addition, O'Heron and Orlofsky (1990) found that people who possess the trait of masculinity as having the highest level of self-esteem and positive adjustment in society. These findings suggest the possibility that masculinity is the most valued trait that one can have in expressing oneself in society today. Thus, one can be feminine in society today, but without the added bonus of having a masculine trait along with the feminine trait, femininity is devalued and thus leads to lower self-confidence and lower levels of success in society.

### Summary of Literature Review

The findings of this review indicates a devaluing of femininity which illustrate the need for further studies that may give indication as to how the United State's educational system may encourage change in teaching styles in subject areas in which girls lag behind. As the AAUW has suggested, inadequate education limits the opportunities for women in the changing world of technology that requires mathematics and science prerequisite courses. Therefore, future research studies, similar to the present study, can help educational institutions in the United States to understand sociological and environmental influences that deter women from excelling in the fields of science and mathematics.

## Chapter 3: Methodology

### Subjects

The participants in this study include pre-adolescent girls in the seventh and eighth grades in the Omaha Public School System. Forty girls in the seventh and eighth grades were recruited in the cooperation with the Omaha Public Schools. Thirty-nine of these girls fully completed their questionnaires. Prospective volunteers were identified by the following characteristics. Subjects consisted of children in the seventh and eighth grades from Norris Middle School. Since gender is a factor that is being examined in this study only female students were involved. Participants consisted of average math achievers and above average to superior math achievers enrolled in average and honors math classes as defined by the Omaha Public Schools. Excluded from this study were girls that are currently receiving special education. Average and honors math classes were selected in cooperation with the administration of Norris Middle School from the Omaha Public School system. Since the thirty-nine participants each scored average to above average on the Piers-Harris Self-Concept Scale, positive self-concept was the only level of self-concept that could be analyzed.

### Research Design

A correlational design was used to evaluate whether pre-adolescent girls' mathematical ability, as reflected on their California Achievement Test scores, is related to self-concept and their trait of instrumentality. Due to the fact that the participants have different life circumstances and have exhibited differing mathematical abilities on their

California Achievement test, the conditions already existed and further manipulation was not possible. Therefore, an experimental design was not possible. Thus, once the researcher had received thirty-nine of the fully completed mailed inventories and California Achievement Test scores along with parental consent and youth assent, data analysis began.

### Study Procedures

Once the researcher arranged dates and times with individual math instructors at Norris Middle School, the researcher attended eight different math classes at Norris Middle School, three of the eight classes were honors math classes while the remaining five were average math classes. The researcher explained confidentiality and the procedures of the study to the students. Female students were given parent consent forms and youth assent forms to take home and discuss with their parents. The parent consent form described the research to the parents. The parents then signed the form if they approved that their daughter could participate in the study. In addition, the parent listed their home address so that the inventories could be sent directly to the participants' homes. Once parents signed and approved their child to participate in the study, participants returned the forms to their math teachers. Math teachers collected consent forms, which listed the students' names, addresses, and math class level, the researcher picked up the collection from each math instructor. California Achievement Test scores were collected at Norris Middle School's counseling department. The researcher then matched the participants' CAT scores with the Children's Sex Role Inventory and the

Piers-Harris Self-Concept Scale with a code number so that participants' CAT scores matched the appropriate inventories. The researcher then sent the matched inventories to the participants' homes to be completed. Once the participants completed the inventories they were sent back in the provided self-addressed and stamped envelope back to the University of Nebraska at Omaha's Counseling Department, where the researcher picked up the completed packets. Coded inventories that assured anonymity were then compared to their corresponding CAT score. Once comparisons were made the students' identities were completely removed.

### Instrumentation

The California Achievement Test is used to assess mathematical achievement in pre-adolescent girls in the seventh and eighth grades. The Omaha Public School System states that the major purpose of the assessment program is to "measure student accomplishment of academic standards." In order to reach this goal the Omaha Public Schools use standardized tests to "measure acquisition of basic knowledge and skills (Instructional Research Report 1998-99)." The California Achievement Test, Fifth Edition was used to measure achievement in three subject areas of Reading, Language, and Mathematics. For the purposes of this particular study the Mathematics section, which includes the subtests, Computation and Concepts/Applications, was examined by the researcher to determine mathematical achievement of the participants. The content of the CAT/5 was developed from instructional objectives identified through a comprehensive national review. State and district curriculum guides, textbook series,

instructional programs, and norm referenced and criterion-referenced methodologies were used to enable both validity and reliability. An analysis of the student mastery of these objectives is conducted at both the district and school levels to assist with instructional planning. One should note that according to the Instructional Research Report of 1998-1999, that caution must be used when determining whether certain objectives denote deficiencies or whether the objectives have a high level of difficulty as demonstrated by the performance of the national norm. Mean percentile ranks are used to assess student performance. The percentile ranks compare the achievement of students in the district to that of students in the national norm group. A percentile rank is defined as the percentage of students in the national norm group who scored below a particular point. The 50<sup>th</sup> percentile is the midpoint on the percentile rank scale. Half of the students in the national norm scored above the 50<sup>th</sup> percent, half scored at or below the 50<sup>th</sup> percentile. For the purpose of the CAT/5, the mean or average range of achievement is denoted by the publisher as extending from the 77<sup>th</sup> percentile to the 23<sup>rd</sup> percentile. In this particular study, the researcher gathered CAT scores from participants with the permission of the Omaha Public School System, the permission of the participants, and the permission of the parents (see Appendices A, B, C). Once permission was obtained, the researcher was able to go through the counseling center at Norris Middle School to retrieve individual CAT scores of the participants. Once CAT scores were obtained, the participants' inventories were coded with a specific number that matched their inventory number. After inventories were sent to the homes of the participants, their identities were removed due to the matched code numbers.



The Children's Sex Role Inventory is a recently developed assessment tool and was based on the Bem Sex Role Inventory (Appendix D). The CSRI was used to assess sex roles, which determine one's trait of instrumentality. The three main traits of instrumentality, masculinity, femininity, and androgyny were all assessed using six domain specific subscales. Global self-worth is the first subscale that is associated with masculinity, due to the fact that masculinity was expected to be a significant predictor of self-worth in boys and girls. In addition, it has also been reported that androgynous boys and girls (high in both masculinity and femininity) score even higher than masculine sex-typed persons in self esteem (Alpert-Gillis & Connell, 1989). The second subscale, scholastic competence, is also associated with masculinity. In previous studies by Hall & Hallberstadt, 1980 and Wilson & Cairns, 1988, girls who scored high in masculinity related high in self-perceived intellectual or school competence. The third subscale social acceptance, has been associated with femininity through numerous studies (Bem, Martyna, & Watson, 1976; Orlofsky & Windle 1978; and Wilson and Cairns, 1988). Expressive qualities such as nurturance, empathy, and sympathetic listening are all associated with social acceptance and femininity. The fourth subscale, athletic competence is strongly associated with masculinity. The fifth subscale, physical attractiveness relates sex typing and self-confidence of physical appearance. Findings from Wilson and Cairns (1988) reveal that both masculinity and femininity are strongly associated with perceived physical attractiveness. Finally, behavioral conduct is significantly related to femininity, in which girls have been reported to have higher self-concepts with regards to good behavior than did masculine sex-typed children (Hall et.

al., 1980). Additional studies (Baucon, 1980; Bem, 1975; & Berzings, Welling, & Wetter, 1976) suggest that feminine sex-typed persons have been found to be more conforming, submissive, and non-assertive than persons of differing gender roles, which further suggest that misbehaving is perceived as non-feminine in nature.

Reliability for the Children's Sex Role Inventory was established through high internal consistency (.81) and stable test-retest reliabilities averaging .60 (Boldizar, 1991). Initial construct validity was established by correlating the results of the Bem Sex Role Inventory and the Children's Sex Role Inventory. The correlation between the two was reported to be .86. Refer to Appendix D for the sample test.

The Piers-Harris Self Concept Scale is an 80-item, self-report questionnaire that assesses how children and adolescents feel about themselves (Piers, 1984). The scale can be administered to children and adolescents ranging from ages 8 to 18. The test-retest reliability ranges from .42 to .96; while the internal consistency ranges from .88 to .93. The average convergent validity coefficient is .77. Children or adolescents are asked to respond to a number of statements, which indicate how some people feel about themselves. They are asked to identify each statement which applies to them using a simple "yes" or "no" response (Piers, 1984). An overall assessment of self-concept is illustrated in three summary scores: a total raw score, a percentile score, and an overall stanine score. For the consistency purposes of this particular study, the overall raw score were compared, raw scores start at 0 (low) and move up to 80 (high). In addition, the Piers-Harris Self Concept scale utilized six cluster scales that were developed by using several factor analyses (Piers, 1984). These six cluster scales include: Behavior,

Intellectual and School Status, Physical Appearance, Attributes, Anxiety, Popularity, and Happiness. The cluster scales are scored in the direction of positive self-concept so that a high score on a particular cluster scale indicates a high level of assessed self-concept in one particular area (Piers, 1984). Raw scores are also used within each cluster scale to determine level of self-concept. Raw scores within the six clusters range from 0 to 18; with 0 being the lowest and 18 and greater being the highest. The first scale “Behavior” is a 16-item cluster which reflects the extent to which the child admits or denies problematic behavior (Piers, 1984). A low or moderately low score reflects the acknowledgement of bad behavior; while a high score suggests either a lack of behavioral problems or an attempt to deny problems (Piers, 1984). The second scale “Intellectual and School Status” is a 17-item cluster scale that reflects the child’s self-assessment of his or her abilities with respect to intellectual and school tasks (Piers, 1984). A low score suggests specific difficulties with school-related tasks. The third scale “Physical Appearance and Attributes” is a 13-item cluster which reflects the child’s attitudes concerning his or her physical characteristics, as well as leadership and the ability to express ideas to others (Piers, 1984). The fourth scale “Anxiety” reflects general emotional disturbance and dysphoric mood (Piers, 1984). If a child scores low on the anxiety scale it is important to assess which areas are of concern to the child by looking at individual items. The fifth scale of “Popularity” is a 12-item cluster, which reflects the child’s deciphering of his/her popularity with classmates (Piers, 1984). Low scores in this area may reflect shyness, lack of interpersonal skills, and isolation (Piers, 1984). Finally, the sixth scale “Happiness and Satisfaction” reflects a general feeling of being a

happy person, who is easy to get along with, and is generally happy with life (Piers, 1984). Low scores in the “Happiness” scale reflect feelings of negative self-worth, and a need for change (Piers, 1984).

A major caution should be considered when using the scale. First of all, one should consider the notion of “false positives.” Consider a child that may be identified as having significant problems in self-concept who may not show any other signs of emotional difficulties. In this instance, if a child were to set very high standards for themselves, are more self-critical or self-aware, or are simply more candid than most of their peers (Piers, 1984). Thus, extremely high scores on the Piers-Self Concept Scale may result due to social desirability or defensiveness. In addition, very low scores need to be interpreted cautiously due to defensiveness of the child, but should be looked at very seriously. A response index is computed for each individual participant. This response bias index is based on the number of “yes” responses that the respondent answers. The “yes” responses are converted into a raw score and a T-score in order to assess any response bias that may occur. Raw scores for the response bias index range from 23 to 57 and greater. The greater the raw score, the more likely the possibility that there was some sort of response bias, such as “faking good” or “faking bad.” Thus, this assessment is not recommended to be administered to children or adolescents who are overly hostile, uncooperative, prone to distortions, or who may be mentally retarded or who have low verbal ability due to organic impairment or due to a bilingual background (Piers, 1984). In addition, cultural considerations must be taken into consideration with this particular assessment tool due to the fact that there may be cultural differences in

personality traits and attitudes toward self-disclosure (Piers, 1984). Finally, it is important to consider that the original norms are based on data from one Pennsylvania school district. Thus, generalizing the comparability of the normative data for other populations must not be assumed, yet subsequent studies indicate that the findings generalize to more diverse school populations (Piers, 1984).

In order to score the Piers-Harris Self-Concept Scale individual raw scores are indicated by the six cluster scales, and a total score is computed on the profile form. A high total score indicates a favorable self-concept, while a low total score indicates a lower self-concept. Scores range from 0 to 80, 0 being the lowest score, 50 average score, and 80 highest score. By examining the individual cluster sets one can assess which areas are lower and higher in self-concept, and which areas may be considered in therapeutic interventions (Piers, 1984). These cluster groups enable one to measure self-concept as a non-unitary dimension, in which children are not characterized simply by one overall level of self-concept, but view themselves differently across different areas (Piers, 1984). For the consistency purposes between the three instruments of this particular study, the overall raw score will be used to assess self-concept in the pre-adolescent girls.

There are three main validity considerations that need to be considered when scoring this scale. First of all, “faking,” in which a child may “fake good” or may “fake bad.” “Faking good” is the tendency to distort answers in what the respondent feels is in a positive direction (Piers, 1984). “Faking bad” is the tendency to illustrate oneself in a negative manner (Piers, 1984). As a general rule, total scores which deviate in a positive

direction, with a raw score of 70 or above, should be interpreted cautiously (Piers, 1984). In addition, acquiescence and negative response bias should be considered (Piers, 1984). Acquiescence is the tendency to say “yes” to all or almost all the items; while negative response bias is the tendency to disagree with all the items (Piers, 1984). Furthermore, random responses should be considered. In the case of random responses a record will contain a number of responses that are logically inconsistent (Piers, 1984).

### Data Analysis

Frequencies were first computed to determine the equality in the population sample, eighth graders versus seventh graders and honors students versus average math students. The added variable of being in honors math and average math was examined in the statistical analysis as well. Multiple regression was used to assess if the independent variables of traits of instrumentality and self-concept are predictors of the criterion variable of mathematical ability. Pearson R correlation was used to analyze if there is a relationship between the variables of self-concept and femininity and masculinity.. Finally, Univariate Analysis of Variance was used to examine between subjects main effects and interactions. An alpha level of a .05 was set for all of the statistical tests. A more conservative alpha value of .001 was used in addition to the .05 alpha value in the Pearson R correlation.

### Null Hypotheses

The first null hypothesis is as follows: positive self-concept and an androgynous trait of instrumentality are not significant predictors of mathematical ability among the pre-adolescent girls in the seventh and eighth grades. The second null hypothesis is as follows: positive self-concept and a masculine trait of instrumentality are not significant predictors of mathematical ability among the pre-adolescent girls in the seventh and eighth grades. The third null hypothesis is as follows positive self-concept and a feminine trait of instrumentality are not significant predictors of mathematical ability among the pre-adolescent girls in the seventh and eighth grades.

## Chapter 4: Results

Frequencies were computed to determine valid equality in the population sample that was used in this particular study. There were 26 seventh graders which contained 66.7% of the population of the sample; while there were 13 eighth graders which contained 33.% of the population of the sample. Second of all, there were 21 regular math students that composed 53.8% of the total population of the sample, while 18 were honors math students, which composed 46.2% of the total population. One could assume from this data, that while honors and regular math students were equally represented, eighth graders were not equally represented due to the seventh grade student participant majority.

Linear multiple regression was used to determine significant predictors of mathematical achievement in pre-adolescent girls. Tables 1, 2, 3 illustrate three separate regression models. These models were used to explore the hypotheses of this particular study with the added variable of being in honors or regular math. Table 1 illustrates the independent variables of positive self-concept, with the additional variable of being in honors math, and the feminine trait of instrumentality as predictors of the dependent variable of mathematical achievement as illustrated by the California Achievement Test subscore. Table 1 illustrates when  $p < .05$  that a positive self-concept ( $p = .001$ ) and being in an honors mathematics class ( $p = .000$ ) were significant predictors of high mathematical achievement, which depict mathematical ability in this particular study. Table 1 also illustrates that the feminine trait of instrumentality is not a significant predictor of mathematical achievement as shown by the p-score of .078. Table 2



examines the independent variables of positive self-concept, being in honors math, and having a masculine trait of instrumentality as predictors of the dependent variable of mathematical achievement as illustrated by the California Achievement Test math score. Similar to Table 1, this particular regression model illustrates a positive self-concept ( $p = .002$ ) and being in honors mathematics ( $p = .000$ ) as being significant predictors of mathematical achievement on the California Achievement Test math subscale. In addition, Table 2 shows that the masculine trait of instrumentality is not a significant predictor of mathematical achievement in pre-adolescent girls with  $p$  at .262. Table 3 addresses the independent variables of being in an honors math class, and the trait of instrumentality of androgyny as to whether they predict the dependent variable of mathematical achievement. Table 3 illustrates that when  $p < .05$ , being in an honors math class ( $p = .000$ ) and having a positive self-concept ( $p = .001$ ) were significant predictors of mathematical achievement on the California Achievement Test. In addition, table 3 illustrates that the androgynous trait of instrumentality ( $p = .088$ ) was not a significant predictor of mathematical achievement of the participants in this study. Thus, from these three tables one can conclude, that being in an honors mathematics class and having a positive self-concept were significant predictors of mathematical achievement in pre-adolescent girls in this particular study; while traits of instrumentality were not significant predictors of mathematical achievement of the participants in this study.

Table 1.

Summary #1 of Regression Analysis for Variables Predicting Mathematical Ability in Pre-Adolescent Girls (N=39)

| <u>Variable</u> | <u>B</u> | <u>SE B</u> | <u>Beta</u> | <u>t</u> | <u>p&lt;</u> |
|-----------------|----------|-------------|-------------|----------|--------------|
| Self-Concept    | 1.060    | .291        | .350        | 3.637    | .001*        |
| Honors          | 42.236   | 5.404       | .736        | 7.815    | .000*        |
| Femininity      | -.560    | .309        | -.176       | .353     | .726         |
| (Constant)      | -.281    | 21.495      |             | -0.13    | .990         |

Note.  $F(3,38) = 26.89, *p < .05$

Table 2.

Summary #2 of Multiple Regression Analysis for Variables Predicting Mathematical Ability in Pre-Adolescent Girls (N=39)

| <u>Variable</u> | <u>B</u> | <u>SE B</u> | <u>Beta</u> | <u>t</u> | <u>p&lt;</u> |
|-----------------|----------|-------------|-------------|----------|--------------|
| Self-Concept    | 1.61     | .356        | .383        | 3.265    | .002*        |
| Honors          | 43.554   | 5.486       | .759        | 7.939    | .000*        |
| Masculinity     | -.505    | .443        | -.134       | -1.139   | .262         |
| (Constant)      | -.281    | 21.495      |             | -0.13    | .990         |

Note.  $F(3, 38) = 24.888, *p < .05$

Table 3.

Summary #3 of Multiple Regression Analysis for Variables Predicting Mathematical Ability in Pre-Adolescent Girls (N=39)

| <u>Variable</u> | <u>B</u> | <u>SE B</u> | <u>Beta</u> | <u>t</u> | <u>p&lt;</u> |
|-----------------|----------|-------------|-------------|----------|--------------|
| Self-Concept    | 1.081    | .296        | .357        | 3.650    | .001*        |
| Honors          | 46.572   | 5.589       | .811        | 8.333    | .000*        |
| Androgynous     | -10.636  | 6.058       | -.178       | -1.756   | .088         |
| (Constant)      | -20.477  | 18.104      |             | -1.131   | .266         |

Note.  $F(3,38) = 26.685$ ,  $*p < .05$ .

Correlations were computed to determine if traits of instrumentality were related to self-concept in the participants in this particular study. Table 4 illustrates the Pearson R Correlation method, which was used to correlate both the traits of femininity and masculinity in relation to self-concept. With correlations being significant at both  $p < .001$  or  $p < .05$ , masculinity, in which  $p = .000$ , has a significant relationship to self-concept in this particular study. Femininity had no relationship to self-concept in the participants in this study, with a p-score of .121.

Table 4.

Intercorrelations Between Variables of Self-Concept, Femininity, and Masculinity

| Subscale        | 1                | 2     | 3      |
|-----------------|------------------|-------|--------|
|                 | ( <u>n</u> = 39) |       |        |
| 1. Self-Concept | 1.000            | .253  | .580** |
|                 | ---              | .121  | .000   |
| 2. Femininity   | .253             | 1.000 | .364   |
|                 | .121             | ---   | .023   |
| 3. Masculinity  | .580**           | .364  | 1.000  |
|                 | .000             | .023  | ---    |

Note. \*\*Correlation is significant at the 0.001 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

Table 5 indicates with  $p < .05$  that there is a main effect that occurs between positive self-concept ( $p = .00$ ) and being in honors mathematics ( $p = .00$ ). There are no other interactions or main effects between the variables that were studied. Please refer to Table 5 on the following page for actual results of the Univariate Analysis of Variance. As one can see from looking at the results, trait of instrumentality has a p-score of .18 and trait of instrumentality and honors have a p-score of .65, thus, signifying no interaction or main effects between these variables. Thus, due to these results, one can not postulate that traits of instrumentality, having a positive self-concept, and being in honors mathematics class effect mathematical achievement on the California Achievement Test in this particular study.

Table. 5

Tests of Between-Subjects Effects Using Univariate Analysis of Variance with Dependent Variable as Mathematical Ability as Illustrated by the Participants' Math Score on the California Achievement Test Score.

| Source           | Type III Sum of Squares | df   | f         | p<   |
|------------------|-------------------------|------|-----------|------|
| Between Subjects |                         |      |           |      |
| Self-Concept     | 3256.530                | 1    | 12.930    | .00* |
| Trait (T)        | 1040.848                | 2    | 1.785     | .18  |
| Honors (H)       | 12017.368               | 1    | 41.207    | .00* |
| T x H            | 253.921                 | 2    | .435      | .65  |
| S within-group   |                         |      |           |      |
| Error            | 9332.226                | (32) | (291.632) |      |

Note. R Squared = .708; Adjusted R Squared = .653, \*p<.05

## Chapter 5: Discussion

### Discussion of the Hypotheses

While the results of this study did not support the main hypothesis that a positive self-concept and an androgynous trait of instrumentality are predictors of a higher level of mathematical ability in pre-adolescent girls in the seventh and eighth grades, the results do provide interesting information. First, the null hypotheses were supported from the results. The first null hypothesis of positive self-concept and an androgynous trait of instrumentality are not significant predictors of mathematical ability in pre-adolescent girls in the seventh and eighth grades was accepted. In addition the second null hypothesis of positive self-concept and a masculine trait of instrumentality are not significant predictors of mathematical ability was also accepted. Furthermore, the third null hypothesis of positive self-concept and a feminine trait of instrumentality are not significant predictors of mathematical ability was accepted. Thus, there were no significant findings that would lead one to conclude that the participants' mathematical ability is due to the participants' traits of instrumentality or self-concept. The results of this study lead one to reject the research hypothesis that an androgynous trait of instrumentality and positive self-concept predicts higher mathematical ability in pre-adolescent girls.

According to the results of this study one's feminine, masculine, or androgynous trait is not related to one's mathematical ability on the California Achievement Test's math subscale. Yet, the study's results do reveal that having a higher self-concept was significantly related to having a masculine trait of instrumentality. In addition, the

study's results reveal that a positive self-concept was a significant predictor of higher mathematical achievement in pre-adolescent girls. Finally, as one would expect, being in honors math was a significant predictor of mathematical achievement in pre-adolescent girls. The results of this study correspond with the literature as cited in the literature review section of this particular study. O'Heron and Olofsky (1990) report that individuals who possess the trait of masculinity as having the highest level of self-esteem and positive adjustment in society. Similarly, Helmrich, Spence, and Holahan (1979), depict masculine people as being the most comfortable than other gender types in a larger variety of tasks due to higher levels of self-confidence. Therefore, one could postulate from these results, and one may look closer in further studies, at the possibility that students who are in honors math are more likely to have a positive self-concept which is related to having a masculine sex role, which in turn may influence one's mathematical ability.

### Strengths of the Study

A possible strength of the present study is the diverse population that the Omaha Public School system offered to the researcher. Although ethnicity was not accounted for in the present study, due to the diverse nature of OPS, ethnicity could be a variable that is easily accessible for future research. Another possible strength of the study would be the measures that were selected by the researcher. All measures had significant reliability and validity, yet it is imperative to account for and consider cultural differences when testing. Finally, this study opens up other hypotheses for future research that continues to

be requested from previous and current research studies in the areas of adolescent girls' development and education. Due to the fact that the study may be easily replicated, future research using broader populations may easily be accomplished.

### Limitations of the Present Study

A major limitation of the present study is that ethnicity was not accounted for in the demographics section of the questionnaires, thus, leaving out the possibility of exploring differences among ethnic backgrounds in self-concept, trait of instrumentality, and math achievement in pre-adolescent girls. In addition, as indicated in the instrumentation section, cultural differences must be accounted for in the instrumentation that was used to measure the variables of self-concept and traits of instrumentality due to possible attitudinal differences in appropriate personal self-disclosure. Another major limitation of the present study was that since all of the participants in the study scored in the average to above-average range on the Piers-Harris Self-Concept Scale, positive self-concept was the only level of self-concept that could be studied. Future studies may strive to screen participants to locate an equal balance between those possessing a positive self-concept and those possessing a low self-concept, so that self-concept levels can be compared.

There are some threats to external and internal validity, which pose limitations to this study. One of the major limitations to the external validity of this study is that participants used a self-report measure to assess their self-concept and their trait of instrumentality. Thus, posing a threat of reactive arrangements. Participants may be



dishonest in reporting their feelings about themselves or behaviors due to the simple fear of looking dishonorable to others. Although all responses will remain anonymous, subjects may still feel threatened about the nature of some of the questions. Another threat of external validity would be the specificity of variables with regards to the interaction of history and treatment effect. The fact that a participant may have just recently had a troubling situation with a peer, teacher, or family member may significantly effect how a participant may answer a question on the survey. Thus, short-term emotionality may be a limitation to this study. Finally, selection-treatment interaction may pose a limitation to the study. The fact that the subjects are chosen from the accessible population of the Omaha Public School system only, may pose a limitation to generalizing the results to the entire United States population of pre-adolescent girls. In addition, the students have varying levels of existing intelligence quotients that have determined the level math class that they are enrolled in, therefore, threatening the main effects of one's trait of instrumentality and/or self-concept. Thus, the mere fact that one possesses a certain intelligence quotient may limit the possibility that an individual's trait of instrumentality or self-concept influences mathematical achievement on the standardized California Achievement Test.

Another limitation of the internal validity of the present study, is the use of volunteers from the Omaha Public School System. The subjects who participate may be more inclined due to their parents' interest and desire for their child to participate in a study, or the participants may be more inclined because they themselves are more interested in educational research than subjects who do not participate. In addition, extra

credit was used as an incentive to encourage participation. Therefore, the students who participated may be more motivated by nature or by their own personal grade circumstances than students who did not participate. Furthermore, due to the fact that the inventories were mailed to the subjects' homes, a low return rate posed a threat to the representative number of subjects that are necessary for the study to be valid.

### Implications for Future Research

In order to gain more significant information and powerful data about the findings from this small study, it may be beneficial to study a much larger population, which would be more representative of pre-adolescent girls in the United States. Furthermore, it may be beneficial to use differing regions of the United States in which numerous socioeconomic classes, cultures, and races could be compared. Thus, as mentioned earlier in the limitations section of this study, in future research it would be imperative to account for cultural differences by adding the variable of ethnicity to the demographics section. Additional environmental variables may be necessary to study as well; such variables may be learning style, self-efficacy, teacher encouragement of gender equity, and the role of co-ed versus same sex schools.

It may also be beneficial to look at individual subscale clusters that were on the Piers-Harris Self-Concept Scale in relation to the traits of instrumentality and mathematical ability in pre-adolescent girls. Thus, future research may contribute significantly to the United States educational system, which shapes the lives and futures of young women.

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## Appendix A



DIVISION OF RESEARCH

January 6, 1999

3215 CUMING STREET OMAHA, NE 68131-2024 (402) 557-2080 FAX: (402) 557-2049

Bridget Farb  
University of Nebraska at Omaha  
College of Education  
Counseling Department  
Omaha, Nebraska 68182-0167

Dear Bridget:

We have received your letter requesting permission to conduct a research project involving students from the Omaha Public Schools. The purpose of your study is to examine girl's math achievement and how it is related to self-concept and trait of instrumentality.

You indicate your method of data collection will include the use of the Children's Sex role Inventory and the Piers-Harris Children's Self-Concept Scale to measure traits of instrumentality and self-concept levels.

We believe your study has merit and permission is granted for you to proceed under the following conditions:

- The principal of selected School agrees to your study.
- Parents of students in the study will complete a parent consent form "opt in."
- You, the researcher, will be responsible for distributing and collecting parent consent forms. This will not be the responsibility of the schools.
- In the reporting of the results, teachers and students will not be personally identifiable.
- You will be willing to share results of your study with OPS.
- You will work with the OPS Research Division to identify participants for the study.

Best wishes.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter Smith", with a long, sweeping flourish extending to the right.

Peter Smith  
Coordinator of Research

PS/jb



## Appendix B

YOUTH ASSENT FORM

IRB# 004-99-EX

TITLE OF RESEARCH: "Traits of Instrumentality and Self-Concept as Related to Mathematical Ability in Adolescent Girls."

1. I would like you to invite you to take part in this study. You are eligible to participate because you are in the 7<sup>th</sup> or 8<sup>th</sup> grade.
2. Your parents have been asked to give their permission for you to take part in this study. Please talk this over with your parents before you decide whether or not to participate.
3. If you have any questions at any time please ask.
4. In this study we are trying to learn more about how social influences affect mathematical achievement in adolescent girls.
5. You will be asked to complete 2 inventories that will be sent to your house. It will take about 30 minutes to complete both of the inventories. Your California Achievement Test score will be used as a measure of your mathematical ability. Please be assured that your identity will be removed once you turn in your inventories. Your identity will only be used to match your CAT score with your set of inventories, and for your inventories to be sent to your home. Once they are returned in the mail in the envelope that is provided to you, **there will not be any way for your identity to be used in the research findings.**

YOU ARE MAKING A DECISION WHETHER OR NOT TO BE IN THIS STUDY. SIGNING THIS FORM MEANS THAT YOU HAVE DECIDED TO PARTICIPATE AND HAVE READ ALL THAT IS ON THIS FORM.

-----  
Signature of Participant

-----  
Date

-----  
Signature of Investigator

-----  
Date

-----  
Math Class Level

## Appendix C

November 12, 1998

PARENTAL INFORMED CONSENT

IRB# 004-99-EX

TITLE OF RESEARCH: "Traits of Instrumentality and Self-Concept as Related to Mathematical Ability in Adolescent Girls"

Dear Parent,

I am writing this letter to ask your permission to allow your child to participate in a research study that will be conducted at your child's school and to gain access to your child's California Achievement Test score. The purpose of this study is to examine how 7<sup>th</sup>-grade and 8<sup>th</sup>-grade girls' self-concept and traits of instrumentality are related to mathematical achievement. Traits of instrumentality are one's personal preference to feminine traits, masculine traits, or androgynous traits (both masculine and feminine traits). These traits influence how one carries out life tasks such as decision making and goal setting.

Each child will receive two inventories in the mail that examines self-concept and traits of instrumentality. Each child will be asked to complete each of these inventories and then send them to the University of Nebraska at Omaha in a self addressed, stamped envelope that will be provided by the university. A number will be assigned to each child's set of inventories. This number matches the child's inventories to their California Achievement Test Score so that once the inventories are completed by the child their identity will be removed. Both inventories will take approximately 30 minutes of the child's time. California Achievement Test Scores will be collected at the child's school.

Your child is eligible to participate because she is enrolled in the 7<sup>th</sup> or the 8<sup>th</sup> grade in the Omaha Public Schools.

The activities will not place any pressure on your child and it is hoped that the child will enjoy participating. Please be assured that your child's identity will not be involved in any way with my research findings.

Although there are no direct benefits to your child, it is hoped that the results of this research will tell us more about how social influences affect mathematical ability. Upon completion of this research, a final report of our findings will be shared with the staff of the Omaha Public Schools.

If you have any additional questions regarding this research, please do not hesitate to ask. Please contact me (#554-2764) or the University of Nebraska Institutional Review Board (IRB). Please take a moment and complete the attached form and return it to your child's teacher as soon as possible.

Sincerely,  
Bridget Farb

Please return this form in the enclosed envelope. Thank you very much.

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Your response to one of the following statements indicates whether or not you are allowing your child to participate in the research project entitled, "Traits of Instrumentality and Self-Concept as Related to Mathematical Ability in Adolescent Girls." In addition your response to one of the following statements indicates whether or not you are willing to enable the researcher, Bridget Farb to gain access to your child's California Achievement Test scores. Your signature indicates that you have decided to allow your child to participate and for the researcher to gain access to your child's California Achievement test scores.

\*\*\*\*\*

Please check one of the following statements:

Yes, my child may participate.

No, my child may not participate.

\*\*\*\*\*

\_\_\_\_\_  
Signature of Parent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Child

\_\_\_\_\_  
School Enrolled

\_\_\_\_\_  
Teacher

Please list your current mailing address on the lines provided if your child is going to participate in the study so that questionnaires can be sent to the proper location. Thank you.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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## Appendix D

## The Children's Sex Role Inventory

Taken from: Boldizar, Janet P. (1991). Assessing sex typing and androgyny in children:

The Children's Sex Role Inventory. Developmental Psychology, 27(3), 505-515.

Rate yourself on each item according to "how true of you it is." 4 = very true of me, 3 = mostly true of me, 2 = a little true of me, 1 = not all true of me. Circle your rating number that corresponds to each statement.

1. It is easy for me to make up my mind about things. 1 2 3 4
2. I care about what happens to others. 1 2 3 4
3. I am an honest person. 1 2 3 4
4. I can take care of myself. 1 2 3 4
5. When someone's feelings have been hurt, I try to make them feel better. 1 2 3 4
6. I think I am better than most of the other people I know. 1 2 3 4
7. I can control a lot of the kids in my class. 1 2 3 4
8. I usually speak softly. 1 2 3 4
9. People like me. 1 2 3 4
10. I am a serious person. 1 2 3 4
11. I like to do things that boys and men do. 1 2 3 4
12. I am a warm person. 1 2 3 4
13. I have many friends. 1 2 3 4
14. When a decision has to be made, it is easy for me to take a stand. 1 2 3 4
15. It is easy for people to get me to believe what they tell me. 1 2 3 4

## The Children's Sex Role Inventory - Continued

Rate yourself on each item according to "how true of you it is." 4 = very true of me, 3 = mostly true of me, 2 = a little true of me, 1 = not at all true of me

16. I usually get things done on time. 1 2 3 4
17. I get pretty angry if someone gets in my way. 1 2 3 4
18. Sometimes I like to do things that younger kids do. 1 2 3 4
19. It is easy for me to fit into new places. 1 2 3 4
20. I am a leader among my friends. 1 2 3 4
21. I do not like to say bad words or swear. 1 2 3 4
22. I am always losing things. 1 2 3 4
23. When I play games, I really like to win. 1 2 3 4
24. I like babies and small children a lot. 1 2 3 4
25. I am careful not to say things that will hurt someone's feelings. 1 2 3 4
26. I am willing to work hard to get what I want. 1 2 3 4
27. I am a gentle person. 1 2 3 4
28. I like to do things that other people do. 1 2 3 4
29. I am sure of my abilities. 1 2 3 4
30. When there is a disagreement, I usually give in and let others have their way. 1 2 3 4
31. I like to help others. 1 2 3 4
32. I would rather do things on my own than ask others for help. 1 2 3 4
33. I am a cheerful person. 1 2 3 4



## The Children's Sex Role Inventory - Continued

Rate yourself on each item according to "how true of you it is." 4 = very true of me, 3 = mostly true of me, 2 = a little true of me, 1 = not at all true of me

34. I am a moody person. 1 2 3 4

35. I am good at sports. 1 2 3 4

36. I feel shy around new people. 1 2 3 4

37. I am the kind of person others can depend on. 1 2 3 4

38. It is easy for me to tell people what I think, even when I know that they will probably disagree with me. 1 2 3 4

39. When I like someone, I do nice things for them to show them how I feel. 1 2 3 4

40. I like acting in front of other people. 1 2 3 4

41. I make a strong impression on most people I meet. 1 2 3 4

42. I am faithful to my friends. 1 2 3 4

43. I am a happy person. 1 2 3 4

44. I can get people to do what I want them to do most of the time. 1 2 3 4

45. I like to do the things that girls and women do. 1 2 3 4

46. I never know what I am going to do from one minute to the next. 1 2 3 4

47. I like to think about and solve problems. 1 2 3 4

48. I can usually tell when someone needs help. 1 2 3 4

49. I feel bad when other people have something that I don't have. 1 2 3 4

50. I am good at taking charge of things.

51. I can usually tell when someone needs help. 1 2 3 4

The Children's Sex Role Inventory - Continued

Rate yourself on each item according to "how true of you it is." 4 = very true of me, 3 = mostly true of me, 2 = a little true of me, 1 = not at all true of me

52. I try to tell the truth. 1 2 3 4

53. I am willing to take risks. 1 2 3 4

54. I am good at understanding other people's problems. 1 2 3 4

55. I like to keep secrets. 1 2 3 4