A CROSS-CULTURAL COMPARISON OF DRAW-A-PERSON, DRAW-A-HOUSE-TREE TASK, AND PIAGETIAN COGNITIVE TASKS (NEWCAB) FOR CHINESE AND AMERICAN CHILDREN

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May, 1994

OKLAHOMA STATE UNIVERSITY

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ACKNOWLEDGMENTS

Words can not express my heartfelt thanks and much appreciation to my advisor, Dr. Ruth Tomes, without whose help, this project would never have been accomplished. It is her invaluable guidance, constant encouragement, and enormous patience that held me up throughout the work of this project. She deserves all the credits for what has been accomplished. I would also like to extend my thanks to Dr. Patti Self and Dr. Linda Robinson for their service as my committee members and valuable suggestions and assistance.

I know my beloved late mother would have been very proud of me at this special moment. Special thanks also go to my father and other family members, who have always believed in me and taught me to believe in myself. To my husband, Jun, for his profound and enduring moral support and practical help as a computer expert. I can not ignore to acknowledge my son, Jeffrey, whom I have ignored so much of the time during the process of my study.

Thanks to the parents for their enthusiasm and willingness to allow their children to participate in my study.

Thanks to everybody who has extended me a helping hand during the completion of this project.

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CHAPTER I

THE PROBLEM

Introduction

Use of a child's drawings to assess his/her intellectual status has been a popular approach by many researchers. Over the years, two theories have most often been applied in the study of children's drawings. They are the psychometric and Piagetian approaches which were both developed for the purpose of examining children's intellectual development, yet each bears a different theoretical background.

The psychometric theorists suggest a developmental sequence in drawing ability which reflects intellectual maturity. They believe that children's intellectual ability progresses with quantitative changes and can be measured with standardized tests. Goodenough (1926) and Harris (1963) were among the first researchers who employed the psychometric scoring system in children's drawings to assess their intellectual status. In 1926, Goodenough found that children's drawings were related to their intelligence and established the Goodenough Draw-A-Man Test. In 1963, Harris revised and updated the Goodenough test battery and

published the Goodenough-Harris Drawing Test (GHDT). The GHDT has been used for over 20 years as the principal rating system applied to children's drawings to estimate their intellectual status.

The recently published Draw-A-Person: A Quantitative Scoring System (DAP-Q) (Naglieri, 1988) remodeled the Goodenough-Harris Draw-A-Person Test by norming it on a more recent and representative sample and modernizing the scoring guidelines. The DAP-Q has demonstrated good inter-rater, intra-rater and test-retest reliabilities (Naglieri, 1988). Its validity in relation with other intelligence tests such as the Matrix Analogies Test-Short Form (MAT-SF) (Prewett, Bardos, & Naglieri, 1989; Haddad, & Juliano, 1991), and McCarthy Scales of Children's Abilities (Harrison, Schmitt, & Brown, 1990) was also high.

The Piagetian theory, on the other hand, proposes that cognition develops through a series of stages, with each stage being quanlitatively different from the preceding and the following stages. There are four major levels of cognitive development in Piaget's theory: (1) sensorimotor stage (birth to 2 years); (2) preoperational stage (2 to 7 years); (3) concrete operational stage (7 to 11 years); and (4) formal operational stage (11 to 16 years) (Piaget & Inhelder, 1969). Drawing was considered by Piaget as one of the five semiotic functions emerging in the preoperational stage (Piaget, & Inhelder, 1969). Piaget believed that children's drawings progress through five basic stages:

scribbling, fortuitous realism, synthetic incapacity/failed realism, intellectual realism, and visual realism (Piaget & Inhelder, 1969). Each of these drawing stages is viewed to reflect corresponding cognitive stages characterized by certain psychological structures which are qualitatively different from preceding and succeeding stages. This Piagetian age-stage approach applied in tasks such as Draw-A-House-Tree has been found to be a valid indicator of Piagetian cognitive stages (Kalyan-Masih, 1976, 1981; Chappell, & Steitz, 1993).

Studies have indicated that these two theories correlate positively with each other in the assessment of intelligence (e.g., DeVries, 1974). Both theories emphasize a sequence in the development of children's cognitive functioning. Piaget also believed the stages of development are universal through all cultures (Piaget & Inhelder, 1969). However, more recent studies have revealed that differences existed in the drawings of children from a range of ethnic groups (Bart, Kamal, & Lane, 1987; Steward, Furuya, Steward, & Ikeda, 1982). Differences in drawing ability between male and female children are also reported (Lynn & Hampson, 1987; Bart, et al., 1987). These differences have been found to be influenced by the overall atmosphere of a society especially its traditions, its expectations, and its practices (Fassler, 1986; Dennis, 1966). Thus, children's drawings provide a unique introduction to a society and offer an opportunity to

observe an integration of a child's intellectual development and the cultural environment. These studies suggest that the rate of stage acquisition and the extent of progression through the developmental sequence of drawing may vary from individual to individual and from one cultural group to another.

Purpose

In the past, children's drawings have most often been used to assess intra- and inter-individual differences within cultural groups (Kalyan-Masih, 1976; 1981). Of the few cross-cultural studies, comparison of social and cognitive development of children have been touched (Munroe, & Munroe, 1983; Steward, Furuya, Steward, & Ikeda, 1982). However, studies are sparse on the comparison of the performance of children from different cultural groups on a standard psychometric test like DAP-Q and their performance on a developmental test such as Piagetian Draw-A-House-Tree Task. The reason that the author chose Chinese and American children specifically in this study is that there have been no particular cross-cultural studies focusing on Chinese and American children's drawings. China and America are two characteristic cultures of represented similarities and divergences in terms of their origin, tradition, social system, and general beliefs. As far as children's drawing development is concerned, both cultures share some resemblances as well as manifesting differences in the

social expectation, beliefs, and practices (Tomes & Fan, 1993), which the author views to play an ultimate role in the outcome of children's development.

The present study is designed to investigate if the development of Chinese and American boys' and girls' drawing ability correlates with their general cognitive ability. By using both a standard normed psychometric test (i.e., Draw A Person: A Quantitative Scoring System (DAP-Q) (Naglieri, 1988)) and two cognitive developmental tests (i.e., the Piagetian House-Tree Drawing Task (HT) (Piaget, & Inhelder, 1969), and the Nebraska-Winsconsin Assessment Battery (NEWCAB) (Kalyan-Masih, Marshall, Tomes, & Kastl, 1980)), the investigator intends to find if there are significant correlations between the five-year-olds' scores on the respective drawing tests (DAP-Q, and HT), and the Piagetian cognitive tasks (NEWCAB). Also, the author wants to know if there are any differences on the scores of DAP-Q, HT, and NEWCAB between the Chinese and American five-year-olds. Gender differences on the scores of the above tasks are also of interest to the investigator.

This chapter is followed by the review of the related literature respectively on the theories and the research in this area; chapter III details the samples, the methods, and the procedures of the study; Chapter IV reveals the findings of the present study; lastly, Chapter V summarizes the study and discusses the results.

CHAPTER II

REVIEW OF THE LITERATURE

Organization of Literature

This chapter will explore the two theories that are widely used in examining children's drawings (i.e., the psychometric theory and the Piagetian theory) in terms of their origin and application. Three devices that were derived from these theories are to be used in this study: the DAP-Q, the Piagetian HT Task, and the NEWCAB. The following will also review the literature on cross-cultural comparisons of drawings which reflect children's social, behavioral, and cognitive development. The variables that will be looked into include culture and gender.

Psychometric Approach

Psychometric assessment views the development of intelligence as a quantitative change that can be measured in achievement tests. It takes only the products or results of cognitive processes into consideration, using answers to cognitive tasks as a mathematical indicator of intellectual ability.

Children's drawings are believed to be "indicative of

general aspects of development and skill" (Goodnow, 1977, p.2). Burt (1921) concluded from a review of research on children's drawings that developmental progress and delay were evident in children's drawings.

The rationale for the human figure drawing to assess children's intelligence is that drawing reflects knowledge, the consequence of intelligence. Drawing is hypothesized to reflect the content and form of the child's idea, and should be seen as the expression of the child's cognition. Goodenough (1926) claimed that children's drawings were dependent on their extent of concept formation rather than on their general developmental level. That is, children's developmental patterns in drawings are a consequence of cognitive development as well as age-based norms of symbolic development. She also believed that concept formation is one of the ingredients of intellectual ability, requiring one to differentiate all the characteristics that are unique to each concept. In addition, the fact that drawing represents another intellectual element, oral speech, earned drawing the fame as a "graphic language" (Goodenough, 1926).

In 1926, Goodenough published findings that children's drawings relate to intelligence, and developed a scale of intelligence based on children's drawings: the Goodenough-Draw-A- Man-Test. This test includes 51 items which are scored as 1 or 0. The presence of a part or detail, correct proportion of the body parts, and quality of drawing strokes are the three criteria for scoring. Children, as their age

increases, are assumed to show increased performance on the measures of the above three criteria. A mental age equivalence is then transformed from the raw scores earned on the drawings. During the years of application of the test, Goodenough found significant differences between the performance of boys and girls, yet she considered the difference as a matter of quality. This left much space for later exploration for other possible factors that caused the difference between the male and female children on the performance of the Draw-A-Man-Test. In 1963, Harris revised the Goodenough-Draw-A Man-Test and published the Goodenough-Harris Drawing Test (GHDT) (Harris, 1963). To provide an alternate form of the task, Harris created and normed a scale for the drawing of a woman (DAW). In addition, there are 73 scoring points for DAM and 71 for DAW means of measurement, comparing to the Goodenough DAM Test which has only 51 scoring items. In a similar vein, Harris found differences in performance between the boys and the girls. Instead of ignoring it, Harris utilized different norms for each sex. The GHDT has been used for over 20 years as the principal rating approach applied to children's drawings to estimate their intellectual status. Since publication of the GHDT, the test has been shown to correlate with intelligence tests such as the Wechsler and Binet scales (Dunn, 1967; Naglieri & Maxwell, 1981; Scott, 1981; White, 1979) and to have good interrater and intrarater reliability (Anastasi, 1982; Gottling, 1985; Naglieri & Maxwell, 1981; Scott,

1981).

The recently published Draw-A-Person: A Quantitative Scoring System (DAP-Q) (Naglieri, 1988) provides the rating system for the drawings of a man, woman, and self. The system requires application of the same 64 items to rate the man, woman, and self drawings, resulting in standard scores with a mean of 100 and standard deviation of 15 for each of the three drawings separately and for a total test score (which is a composite of the three drawing scores).

Research Related to Psychometric Theory

Naglieri (1988) used 100 nine-year-olds to investigate the concurrent validity between the DAP-Q and the Matrix Analogies Test-Short Form (MAT-SF) (Naglieri, 1985), and the Multilevel Academic Survey Test (MAST) (Howell, Zucher, & Morehead, 1985). The findings show moderate correlation (.28 to .31, $p<.01$, N=594) between the DAP-Q and the MAT-SF, and support for the validity of the DAP-Q as a nonverbal measure of ability.

Wisniewski and Naglieri (1989) examined the convergent and concurrent validity of the DAP-Q in relation to WISC-R. Fifty-one (34 boys and 17 girls) children aged 6 to 16 and who were experiencing academic difficulties participated in the study. The results revealed that the DAP-Q yielded a comparatively lower means (4 points) than those of the WISC-R. The authors attributed this to the "softening" fact of the relatively new DAP-Q. The results also indicated

significant correlation between the DAP-Q Total Test and the WISC-R FSIQ (.51). Each individual scale of the WISC-R was also found to correlate significantly with the DAP-Q man, woman, self, and composite scores.

In 1989, Prewett, Bardos, and Naglieri looked at the relation between the DAP-Q and the MAT-SF and the Kaufman Test of Educational Achievement (KTEA), using both normal and developmentally delayed children as subjects. The performance for the normal group of 46 children on the DAP-Q yielded a significant correlation ($p<.05$ to .01) with the MAT-SF. For the 39 developmentally delayed children, the performance of the vast majority (97%) showed no significant relationship between the DAP-Q and the MAT-SF.

In 1991, Kamphaus and Pleiss compared the DAP-Q with other intelligence scales in establishing the concurrent validity. They concluded that the DAP-Q generally correlated highly with such scales as The WISC-R short forms and full scale.

Haddad and Juliano (1991) also compared the DAP-Q with the two intelligence tests -- Matrix Analogies Test and the Iowa Tests. The sample had 82 grade 4 children from low socioeconomic families. The result showed that the correlation coefficient between the Matrix Analogies Test and the Iowa Tests was .51. The correlation coefficient between the DAP-Q and the Iowa test was .30, and that between the DAP-Q and the Matrix Analogies Test was .32.

Piagetian Approach

Piaget proposed four major stages for cognitive development. They are: (1) sensorimotor, when cognition is merely carried out through reflexes; (2) preoperations, when children express their thoughts verbally and graphically in a manner of ego-centrism; (3) concrete operation, in which stage children's intelligence is symbolic and logical; and (4) formal operations, when children are able to think abstractly.

According to Piaget, drawing is one of the five semiotic functions of the preoperational period. The other four semiotic functions are: deferred imitation, symbolic play, mental image, and verbal evocation (Piaget & Inhelder, 1969). Drawing was considered by Piaget (Piaget & Inhelder, 1969) in a status between symbolic play and the mental image, in that enjoying the drawing process itself is like symbolic play, while copying the reality is similar to the functioning of the mental image. Piaget (Piaget & Inhelde, 1969) viewed children's drawings as passing through systematic stages with qualitative changes, and at the same time, as revealing children's cognitive functioning. He believed that a child drew what he knew about a person rather than what he actually saw of the person. Piaget also argued that the evolution of drawing was inseparable from the whole structuration of space depicted in different phases of cognitive development. Thus, a child's drawing is a good medium to test intellectual status.

Incorporating Luquet's (1927) ideas on children's drawings, Piaget proposed five distinctive stages of development of drawings: (1) scribbling, in which children can only draw lines and dots, and whose meaning is denoted in the act of drawing itself; (2) fortuitous realism, in which certain meaning is randomly realized in the scribbling; (3) synthetic incapacity/failed realism, in which the parts of the drawings are juxtaposed rather than being coordinated intactly; (4) intellectual realism, by which stage children have developed ability to draw the human figure with facial and body features in better proportions, but with little visual perspectives, and (5) visual realism, when children draw what they see from one particular angle, and the parts of the drawings are with better proportions (Piaget, & Inhelder, 1969). Luquet (Piaget, & Inhelder, 1969) believed that children of age between 5 and 9 years who were at the intellectual realism developmental stage could only draw what was in their mind about the targeted objects. By age 9, children have evolved to the stage of visual realism, when they attempt to produce drawings according to their internalized knowledge of three-dimensional space of the particular objects. This is when children start to conceal the tree trunk behind the house when asked to accomplish the House-Tree Task. The Draw-A-House-Tree Task focuses on how children resolve the problem of representing the three-dimensional "front-behind" relationship on a two-dimensional sheet of paper.

The House-Tree Task was derived from the Piagetian theory of drawing development by Kalyan-Masih (1976, 1981) in her series of studies. The task basically requires the child to draw a picture of a house with a tree behind it. This task was designed to see if the child could resolve the problem of placing the tree "behind" the house. According to Piaget (1969), only children (9 years-old and up) at the visual realism stage can graphically represent the three-dimensional space concept. The HT Task has been found to correspond significantly with various Piagetian tasks such as conservation and seriation (Kalyan-Masih, 1976). Positive correlation between the HT Task and such intelligence measures as WISC-R and Peabody IQ were also recorded (Kalyan-Masih, 1981).

The NEWCAB tasks were derived from Piagetian theory. All the tasks in the battery are modified versions of classical Piagetian theory. Piagetian theory proposes four cognitive developmental stages: sensorimotor stage (birth through 2+ years), when the infant develops sensorimotor schemes by which he controls his movements and manipulates objects in space; preoperational stage (3 through 6+ years), when the child can think symbolically, express via language, imagery, and so on; concrete operational stage (7 through 11+ years), when the child's thinking is logical and less egocentric; and formal operational stage (11 through adult years), when the child can think abstractly and is able to make and test hypotheses (Piaget & Inhelder, 1969).

Maturation, physical and logicomathematical experience, social transimission, and equilibration were the four means that a child needed for qualitatively different cognitive changes (Piaget, 1971). Equilibration was considered by Piaget (1971) as the most important factor that enhanced the cognitive development. If a child was not satisfied with his current knowledge base, he then tried to restore the balance by altering his current cognitive structures. As a result, a new structure of cognition developed. Piaget (Piaget & Inhelder, 1969) also believed that there might be variance in children's rate of development, but the sequence of such development was invariant.

In developing the NEWCAB, Kalyan-Masih, Marshall, Tomes, and Kastl (1981) assumed the Piagetian four developmental stages concept as proceeding from initial preparation and intervening disequilibrium to achievement of equilibrium and final qualitatively different structural changes. Thus, the Piagetian four developmental stages were defined primarily by qualitatively different cognitive changes, rather than the chronological ages. The measures chosen to assess children's intellectual functioning in NEWCAB are relations, classifications, number and length. The arrangement of the NEWCAB tasks for children aged 3 to 5 (the age group used in the present study) are: simple seriation and double seriation without tansformation for the Relations tasks; free sorting and specified sorting for the Classifications tasks; and cardinal correspondence, length

identity, and length equivalence for the Number and Length tasks.

Research Related to Piagetian Theory

Kalyan-Masih (1976, 1981) conducted two studies to look at Piagetian perspective of the "graphic representation" using the Draw-A-House Tree Task. Children's ability to solve the three-dimensional relationship of the house and the tree, rather than the artistic aspect of the drawings, was the interest of the two studies.

In 1976, Kalyan-Masih examined if the Draw-A-House-Tree task (HT) was a valid indicator for children's cognitive developmental level. The sample included 42 boys and 56 girls aged 3 to 6 years. The HT, Stanford Binet (SB), Peabody Picture Vocabulary Test (PPVT), and a series of Piagetian cognitive development tasks including seriation and conservation were administered. The results indicated a developmental sequence in children's HT performance which corresponded with the Luquet-Piaget drawing developmental stages. The Pearson correlation coefficients between the HT Task and the SB MA, IQ, and Peabody MA, and IQ were .76, .17, .51. and .05 respectively. All the correlations were significant ($p < .001$) except the last one. The author suggested that the HT was an economical and easy method for measuring cognitive development of young children.

Different strategies used by children to resolve the problem were identified in the Kalyan-Masih's studies. This

brought about questions to the researcher: were these strategies used because the children chose to do so, or did they simply reflect their developmental progression? It was these questions that inspired the researcher to conduct follow-up studies.

Kalyan-Masih (1981) used the Piagetian tasks to assess developmental changes with rural Nebraskan children aged 3-5, 6-8, and 9-11 who were followed from 1976 to 1978. The other purpose of the study was to see if the children's performance on HT correlated with their cognitive status. Two measures derived from Piagetian theory were employed: the Draw-A-House-Tree Task and The Nebraska Wisconsin Cognitive Assessment Battery (NEWCAB). To see whether the children's performance on the HT task correlates with their cognitive status, two IQ scales, i.e., Peabody Picture Vocabulary Test (PPVT) and Wechsler Intelligence Scale for Children (WISC-R), were also used. The findings suggested that children's performance on the HT increased with age and was consistent with their performance on the NEWCAB. Significant correlations between the Piagetian tasks and the IQ tests were also reported.

In summarizing her research, Kalyan-Masih (1981) reported three major strategies that have been used most often by children between developmental stages of visual realism and intellectual realism: (1) Transitional strategies. To avoid putting the tree inside the house which looks awkward, the child instead places the tree away from

(2) Compromise solution. In order to meet the requirement of drawing the tree "behind" the house, the child solves the problem by superimposing the house on the tree or by simply turning over the paper and drawing the tree. (3) Partial solution. The child draws the tree, but it is partially hidden behind an object such as a garage or a side wall.

Co-incidently, in a similar vein with that of the HT Task, Freeman and Janikoun (1972) examined the transition from intellectual realism to visual realism. The sample included 60 children aged 5 to 9. Each child was asked to draw a cup with a painted flower. The side with the handle was turned around so that the handle was invisible to the child. As a surprising result, more younger children (5-7 year-olds) included the invisible handle but omitted the visible flower, and the older ones (8-9 year-olds) did the opposite thing. The authors argued that the result supported Piagetian stage theory on children's drawing. That is, before the age of 7 to 8, children drew according to their mental image of an object, whereas children from the age up drew on what they actually saw.

Chappell and Steitz (1993) conducted a study to investigate the "age-stage" relationship between children's drawings and their cognitive developmental level. They included 45 children aged 3 to 6. Each child was asked to draw a picture of him/herself, which was then analyzed with the standards provided by Piaget (1969). Four Piagetian tasks were also administered, which included the

conservation of volume, liquid, and number, and a seriation task. They found that children's performance on the drawing significantly correlated with their cognitive developmental stages. Thus, the authors concluded that draw-a-person technique is a valid indicator of children's general intelligence.

The Influence of Culture

Human figure drawings have been widely used for comparing intellectual development of children of various cultural and ethnic groups. According to Goodenough's, the Goodenough Draw-A-Man Test (Goodenough, 1926) is one with no cultural influence because the language factor in intelligence tests has been eliminated. Children's drawings have been used to assess culture differences in various social, behavioral, cognition, and general intelligence aspects. It is believed that children's drawings, despite the similarity in the skills, generally reflect the overall tone of a society. The drawings also reveal the fact that children not only draw what they perceive, but also what they have come to understand about their cultures (Fassler, 1986).

Rubenstein, Feldman, Rubin, and Noveck (1987) examined children's drawing as a function of gender, picture content, and social context. Eighty-nine U.S. town children, 132 Israeli town children and 88 Israeli kibbutz children participated in the study. The three social settings

differed from one another in terms of size, tradition, religion, ideology, and so on. Each child was asked to draw pictures of same- and mixed-sex peer interaction. Scores were graded for the degree of focus of activity and the nature of interaction (e.g., cooperation, aggression). Of the three independent variables, culture emerged as strongest in its influence on children's drawings. For example, Kibbutz children displayed fewer themes of competition and more hierarchical relationships than their town peers, which was consistent with the social atmosphere. Data also showed that Israeli boys depicted a greater variety of activities when drawing same-sex peer interactions, yet they demonstrated much less imagination on the activities when a boy played with a girl. In contrast, American boys did not show significant differences in their depiction of activities of both same- and mixed-sex peer interaction.

In Victoria's 1990 study, children's drawings of objects and scenes were compared. Eighty-five drawings were collected from a second-grade sample which comprised 35% of foreign-born children who had come to the United States within the previous three years. Still-life drawings of plants, a human figure in an activity, and a self-portrait in an activity were administered. The results showed that children used different techniques such as topological transformations and horizontal and vertical oblique, yet, no evidence of the effect of culture-ethnic background was

found.

Japanese and American children's drawings to reflect their perception of body and sense of self were examined by Steward et al., (1982). Forty-one Japanese and 33 American 5 to 6 year-old children were included with gender equally distributed in both groups. Each child was given the Outside/Inside Body Booklet and colorful crayons to finish the outside and inside parts of a picture of a human body. The results revealed that American children obtained a higher score on drawing the outside body parts than the Japanese counterparts with means of 14.94 and 7.44 respectively, ($F(1, 71)= 89.04$, $p < .001$). No significant differences were found in the portrayal of the inside of the body between the two groups, except the ways the bones were represented; the Japanese children's drawings were more like fishbones and the American children's drawings were more like cowbones. Age differences were also identified, with 5 year-old American children earning higher scores than 6 year-old Japanese peers. The researchers attributed this to the role of the cultures. They cited previous studies that showed the Japanese children generally tended to be modest and seldom revealed themselves both physically and verbally, which is consistent with the Japanese social practice that collective effort is highly desired.

In another study, Yama (1990) investigated the relation between the Vietnamese refugee children's human figure drawings and their overall adjustment to the number of times

they were placed in foster homes. The 56 boys and 5 girls were 6 1/2 to 13 1/2 years of age. All participated in a training and placement program in the U.S. During the initial evaluation, these children were instructed to draw a person. The drawings were then scored according to the four variables: overall artistic quality, overall bizarreness, estimated adjustment of the client, and emotional indicators. The results showed a negative correlation between the number of times that a child was placed in a foster home and the overall artistic quality, bizarreness, and estimated adjustment of the child, but not for number of emotional indicators.

Cultural learning experience is considered as one of the factors that bring about the different results in children's drawings (Gottling, 1990). Scientific and technological development in a society is assumed to be one of the factors that influence children's intellectual development (Bart, et al., 1987). Several studies conducted in the Arab countries such as Iraq and Lebanon on Piagetian concrete operational stage concluded that there was a lag of about 2 to 4 years of children's operational development behind Western children (Al-Fakhri, 1977).

In the 1960's, Badri and his colleagues conducted a couple of studies on the influence of modernization on children's drawings in Sudan. Both studies included 293 4th grade boys who were divided into four groups according to rate of modernization of the areas they were from.

Modernization was defined as social progress from a primitive and conservative way of life to adaptation of modern science and technology.

The first study was conducted in 1964 by Badri and Dennis. The purpose of the study was to assess the relation between the boys' drawings and their attitudes towards modernization. Each boy was asked to draw a man, and distinction of modern and traditional features of clothing were the primary criteria for scoring. These differences between modern and traditional dress included the different descriptions of the hat, collar, necktie, shirt, and so on. The result showed that the number of modern features depicted in the boys' drawings correlated significantly with the degree of modernization of the areas from which the subjects were recruited.

The 1965 (Badri) research studied the relation between modernization and children's performance on the Goodenough's (1926) Draw-A-Man test by reanalyzing the data of the previous study. The result revealed a positive correlation between the drawing and modernization. It was found that boys from modernized areas generally drew pictures with dress displaying attributes of modernization.

Parents' values and beliefs in social competencies within a culture are believed to influence the child-rearing practices, which in turn lead to the different outcomes of the child's development. In given cultures, certain skills are perceived necessary for later success, thus parents try

to convey the importance of these skills to their children and attempt to make them master what is seen important (Ogbu, 1981). In reviewing the literature on the effects of specific child rearing practices, Rollins and Thomas (1979) found that parental methods, strategies, and techniques are more effective in bringing about expected behaviors if these behaviors are valued by the parents themselves.

In a study by Pfeffer and Olowu (1986), socialization was found to affect Nigerian children's human figure drawings. Drawings of 125 Yoruba children from middle and low income classes were analyzed for the overall shape of the figure, the number and position of body parts, and attention to clothing and other details. Middle-class children earned higher scores on the 4 criteria than the children from low income families. The investigators interpreted this result as indicating that middle-class children were more influenced by their westernized parents, exposed to quantitative art materials, and trained by the schools.

In Rosenthal and Gold's 1989 study, twenty-five working-class Vietnamese mothers, 32 working-class and 39 upper-middle-class Anglo-Australian mothers of five-year-old children were asked about the heritability and stability of intelligence, its importance in different life domains and the roles of parents and teachers in developing intelligence. Culture emerged as a significant influence on mothers' beliefs considerably more than did social class or

sex of their children. Vietnamese mothers perceived intelligence as more important than did Anglo mothers, had a more narrowly focused view on education and intellectual development, and expected later acquisition of intellectual abilities. Those differences were found to be consistent with traditional Vietnamese values.

In 1992, Power and his colleagues conducted a study on cross-cultural comparison of childrearing patterns among American and Japanese parents. Participants were 282 Japanese and American mothers of children 3 to 6 years old. After analyzing the questionnaire, it was found that the American mothers expected their children to follow more rules and emphasized more on their children's development of social skills. The Japanese mothers, on the other hand, reported more use of physical punishment with children's disobedience to adult authority.

In another study, O'Reilly, Tokuno, and Ebata (1986) examined cultural differences in the development of social competence by analyzing rankings in importance of 8 social competency units administered to 136 white Americans and 124 Japanese Americans. A multiple analysis of covariance (MANCOVA) displayed a significant main effect for culture and for the interaction of culture by age of child. It was concluded that the ethical background of parents influenced their valuing of competencies in their children.

Through observation of and working experiences with children from both China and America, the author sees

differences in the perceptions, expectations, and practices of the parents and teachers. American parents and teachers believe that children's intellectual development proceeds with the increase of age. American parents tend to allow and encourage their children to freely explore and simply enjoy the process of art. No specific guidance on how to draw is provided until the child reaches the school age. Equally, little result is expected from the child's free play with the art materials. These characteristics somehow fall into the general social tone that emphasizes freedom, individualism, and the like.

Chinese parents have traditionally placed a very important emphasis on education. Acquiring basic skills in reading, writing, music, art, and so on are highly valued, encouraged, and rewarded. Early intellectual investment with time and money is seen necessary for later achievement. Although the Chinese parents hold the same kind of philosophy as the American moms and dads that children's abilities progress with age, they also believe that early intervention can make a difference. That is, by being trained at an age earlier than corresponding developmental stage, the child can acquire skills that are seen as more advanced than those of his/her age. With such a perception, it is not uncommon for the Chinese parents to send their young children to the art training schools where intensive drawing skills are taught systematically. It is also a common practice for the parents to physically guide their

children at home with their drawing performance. A parent actually sits by the child and gives him/her corrections, suggestions, and feedback while the youngster is engaged in the art activity. By doing so, the child gets to know that mastering good drawing skills is important, at least to his/her parents. It is believed that one cannot be a good artist if he does not obtain basic and systematic drawing skills. Anecdotal stories about the renowned Italian painter da Vinci's drawing thousands of eggs before he produced the famous "Last Supper" are widely spread, thus young children are often seen practicing with basic drawing skills, such as making vertical and horizontal lines, and simple shapes as well (Tomes & Fan, 1993).

The Influence of Gender

Previous studies have recorded significant differences between scores earned by male and female children in their drawings (Goodenough, 1926; Harris, 1963; Rubenstein et al., 1987). Harris (1963) found the gender difference was so great that he even created separate scoring criteria for males and females.

Social system, beliefs, and values that are transmitted to the child-rearing practices are believed to affect the overall sex typing in children in a society. In some countries, especially in the third world nations, the position of females is generally inferior than that of males. There is a higher rate of illiteracy and a lower rate

of employment among female adults in African, Asia, and West Asia (Boulding, 1977). Women in the Arab countries have even been conventionally banned from education and participating in public life. In the third world nations, a female's intelligence is attributed more to her efforts, luck, and ease of the task (Deaux & Emswiller, 1974; Feldman-Summers & Kiesler, 1974).

In Shek's 1988 paper on the sex differences in the psychological well-being of Chinese adolescents, female adolescents were found to show significantly more psychiatric and somatic symptoms and scored lower on measures reflecting positive mental health. It is also believed that Western women have a more positive self-concept than their Oriental counterparts (Getsinger, 1974; Logan & Kaschak, 1980).

In 1985, Pfeffer and Olowu investigated the socialization effects on the size of Nigerian children's drawings. One hundred and fourteen primary school children were divided into two groups according to their social-economic classes. These children were from Yoruba, a south western Nigerian tribe, where females' roles have been traditionally differentiated from those of males both at home and at work. The husband is the powerful person for he is the bread-winner, while the wife stays at home and takes the responsibilities of raising children and domestic chores. The children were asked to draw pictures of a man and a woman. The results showed that the mean length of a

man was drawn greater than a woman ($p<.001$) by the low social class children, whereas no significant differences in the size of the drawings of a man and a woman were found with the middle income group. The findings, as suggested by the authors, reflected the overall sex-typing in the society where males were valued and in dominant position, while females were considered as merely dependents of males.

In the same study explained previously on the influence of culture and gender on U.S. and Israeli children's drawings, Rubenstein et al. (1987) found significant gender differences in children's graphical description of the mixed-sex peer interaction. Data analysis showed that boys overall drew more aggression themes than girls. Eighty-one per cent of boys compared to 57% of girls drew a powerful male when representing power differential concepts. American boys drew significantly more aggressive themes than did American girls ($p<.01$), whereas neither Israeli boys nor girls drew notable amounts of aggressive themes.

Munroe and Munroe (1983) tested Dennis' (1966) hypothesis that children draw what they value in a specific society. The sample was comprised of 375 Kenyan children from three areas: Kipsigis, Logoli, and Gusii. The former two areas demonstrated high valuation for modernization, but the third area maintained a traditional atmosphere. The children were asked to draw models of a man and a woman, both dressed with modern dress, for instance, a skirt for the woman model, and slacks for the male model. The results

revealed significant correlation between the Draw-A-Man and culture and gender ($p<.01$). Kipsigis and Logoli children presented more modern dress than the Gusii counterparts, and boys depicted more modern dress than girls in an overall manner. On the Draw-A-Woman, no significant correlations were found between the task itself and culture and gender. Little involvement of women in modern activities were accounted for by this finding.

In China, boys have traditionally been preferred to girls because of the fact that it is an agricultural society where labor power has always been as a priority for survival. Consequently, boys had more opportunities for education, employment, and social recognition. Nowadays, as a part of its effort to reduce further population, China is assertively promoting the concept of single-child/family. While parents have come to equally welcome their baby girl to the world, the long-term prejudice of the superior status of male children still influences people's attitude towards the position of males and females in the society, and thus affect the social environment for the development of boys and girls. As China opens its door to the outside world and the booming economy brings about unprecedented tense competition for jobs, a female is facing the handicap of her gender to a greater extent than her male counterpart (Tomes, & Fan, 1993).

In contrast, no significant gender differences on the performance of children's drawings within the American

cultural group have been reported (Naglieri, 1988; Gottling, 1990).

Summary and Conclusions

The DAP-Q, the Piagetian HT Task and NEWCAB were created for the purpose of examining children's intellectual functioning. The DAP-Q has been found to correlate significantly with other intelligence measures such as the WISC-R (Winsniewski & Naglieri, 1989) and the Matrix Analogies Test (Haddad & Juliano, 1991). The HT Task was found to correlate with various Piagetian tasks and such intelligence measures as the WISC-R and PPTV (Kalyan-Masih, 1981). The HT Task was also noted to correlate with Piagetian cognitive tasks which are furnished in NEWCAB. Thus, all three tests are valid indicators of children's cognitive and drawing abilities.

Literature review in the area of children's drawings indicated that differences existed in drawings among children from various ethnic backgrounds (Steward et al., 1982; Power et al., 1992). Gender differences in drawings between male and female children were also noted (Rubenstein et al., 1987). No studies have been conducted on the comparison of the drawings between the Chinese and American children. Thus, it is necessary to investigate if there are any differences in the drawings between Chinese and American boys and girls.

Research Hypotheses

Since there is no well-established test on children's drawings originated in Chinese, nor have there been studies on the comparison of Chinese and American children's drawings, it may be valuable and realistic to use the already validated tests to experiment on the Chinese sample by comparing it to an American sample. Based on the literature review and the researcher's observations and assumptions, the author proposes the following three sets of hypotheses:

The first set of hypotheses concerns the interactions of culture and gender on the respective drawing tasks:

(1) There will be significant interactions between culture and gender on the DAP-Q/Man scores;

(2) There will be significant interactions between culture and gender on the DAP-Q/Woman scores;

(3) There will be significant interactions between culture and gender on the DAP-Q/Self scores;

(4) There will be significant interactions between culture and gender on the DAP-Q/Composite scores.

(5) There will be significant interactions between culture and gender on the HT task scores.

The second set of hypothese deals with the interactions between culture and gender on the individual Piagetian cognitive tasks:

(6) There will be significant interactions between culture and gender on the NEWCAB/RT scores;

(7) There will be significant interactions between culture and gender on the NEWCAB/CT scores;

(8) There will be significant interactions between culture and gender on the NEWCAB/NLT scores;

(9) There will be significant interactions between culture and gender on the NEWCAB/Total scores.

The third set of hypotheses predicts the correlations between the drawing tasks and the Piagetian cognitive tasks (NEWCAB):

(10) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the total sample of 48 children;

(11) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the Chinese children;

(12) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the American children;

(13) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the 24 boys;

(14) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the 24 girls;

(15) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB for the Chinese boys;

(16) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the Chinese girls;

(17) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB scores for the American boys;

(18) There will be significant correlations between the respective DAP-Q and the HT scores, and the respective NEWCAB for the American girls;

It was anticipated that there would be significant main effects of culture and gender and interactions of the two on the DAP-Q/Man, DAP-Q/Woman, DAP-Q/Self, DAP-Q/Composite, and the HT scores. It was also expected that there would be significant interactions between culture and gender on the NEWCAB/RT, NEWCAB/CT, NEWCAB/NLT, and NEWCAB/Total scores. Significant correlations between the drawing scores (DAP-Q and HT) and the Piagetian cognitive scores (NEWCAB) were also expected.

CHAPTER III

METHODOLOGY

Part of the data analyzed for the purpose of the present study were obtained from a study on children's drawing, cognitive functioning and neuromotor development conducted by Tomes and Heilbuth (1992).

Subjects

The total sample was comprised of 48 5 year-olds, with 24 Chinese children and 24 American children. Gender of the subjects was equally distributed.

Children with the Chinese cultural background are those who were born in China and came to the U.S. with their parents within the last three years. Their parents are individuals who were born and raised in China and who adhere to the Chinese culture through practices such as maintaining Chinese citizenship, speaking Chinese at home, celebrating Chinese traditional holidays, and keep their religious beliefs even after they have been in the U.S. for years. Children with American cultural background are individuals who were born and grew up in the U.S., which is typical Western, capitalist, openly competitive, and oriented toward individual achievement.

The Chinese subjects were recruited by contacting the Chinese Friendship Associations at four university towns in the central U.S. The 24 Chinese children were divided into two subgroups, which respectively consisted of 12 five-year-old boys, and 12 five-year-old girls. The socioeconomic status of the families vary from low- to upper-middle class.

Twenty-four American subjects were randomly selected from the 5-year-old sample used in Tomes and Heilbuth's study (1992) which totally consisted of 72 children. The 72 children had originally been divided into four subject groups: 18 five-year-old boys (mean age=5 yr 5 mo; range is 5-3 to 5-11), 18 five-year-old girls (mean age = 5 yr 4 mo; range is 5-2 to 5-11), 21 seven-year-old boys (mean age = 7 yr 3 mo; range is 7-0 to 7-11), 15 seven-year-old girls (mean age = 7 yr 4 mo; range is 7-1 to 7-11). The sample population consisted of predominantly white children with varying socioeconomic backgrounds ranging from low- to upper-middle class. The 7 year old subjects were recruited from two public elementary schools of a midwestern town. Seven of the 5 year-old subjects were from half-day kindergarten programs and the remaining eight were from a half-day preschool program. Participation was on a voluntary basis. For the purpose of this study, however, only Caucasian American children were included to prevent the factor of possible culture influences of the nonwhite American children. From the 5-year-old American subject group, a total of 24 children was randomly drawn with gender

of the children being equally distributed.

Instruments

The instruments used were: The Draw A Person: A Quantitative Scoring System (DAP-Q) (Naglieri, 1988), the Piagetian Draw-A-House-Tree Task, and Nebraska-Wisconsin Cognitive Assessment Battery (NEWCAB) (Kalyan-Masih et al., 1980). The DAP-Q is a revision and update of the classic draw-a-person technique. It provides a rating system for the drawings of a man, woman, and self. The system requires application of the same 64 items to rate the man, woman, and self drawings, which results in standard scores with a mean of 100 and standard deviation of 15 for each of the three drawings separately and combined into a total test score.

The DAP-Q was normed on a sample of 2,622 children from 5 to 17 years old who were representative of the 1980 U.S. Census data according to age, sex, race, geographic region, ethnic group, socioeconomic status, and community size. The DAP-Q is intended for use as a nonverbal measure of ability, and thus it may be used with special populations such as minority children, since this kind of test may not be culturally transmitted as the verbal tests (Sattler, 1982). The DAP-Q includes an examiner record form and a student response form.

The stability of DAP-Q scores was studied by retesting a subsample of the standardization sample consisting of 112 individuals from the Western region of the U.S. All

retesting was performed four weeks after the initial testing. Students in grades 1 through 7 participated in the study. The stability coefficients for the DAP-Q total score range from .60 to .89 with a mean of .74. Results of the test-retest analyses for the Man, Woman, and Self scores are consistent with the results for the Total score. The mean coefficients for the Man, Woman, and Self scores are .70, .65, and .58, respectively. Forty-five children in elementary school (15 each in grades 1, 2, and 3) and 44 students in junior high school (approximately 15 each in grades 5, 6, and 7) were obtained for the interrater reliability study. The interrater reliabilities of the DAP-Q and Goodenough-Harris scoring systems are quite similar at both the elementary and junior high school levels. The interrater reliability ranged from .93 to .95 (Gottlling, 1985). The drawings used in the interrater reliability investigation (Gottling, 1985) were scored a second time by the same raters. One rater scored the drawing of grades 1-3 using both scoring systems, and rescored the drawings after an average of 16 days. The other rater followed accordingly with the grades 5-7, with an average interval of 25 days. The results of this investigation provide high intrarater reliability (.95 to .97, $p < .01$ for all correlations) of the DAP and Goodenough-Harris scoring systems.

The concurrent validity of the DAP-Q in relation to the Goodenough-Harris scoring system was investigated in two independent studies. The first one used the same sample of

those involved in the interrater and intrarater reliability (Gottling, 1985). The result yielded standard scores that correlate .75 to .84. The second study used 100 nine-year-olds drawn from the DAP standardization sample (50 of each gender). The correlations between the two scoring systems are higher (.80 to .87) than those found in the first study. The concurrent validity of the DAP in relation to measures of nonverbal ability and to achievement in reading and mathematics (Naglieri, 1988) was investigated using the same students included in the standardization samples of the DAP, the Matrix Analogies Test-Short Form (MAT-SF)(Naglieri, 1985), and the Multilevel Academic Survey Test (MAST) (Howell, Zucher, & Morehead, 1985). The findings show significant correlation (.28 to .31, $p < .01$, N=594) between the DAP and the MAT-SF, and support for the validity of the DAP as a nonverbal measure of ability. The system has been found to be related to verbal and nonverbal intelligence despite the fact that the test uses a nonverbal medium (Wisniewski & Naglieri, 1989).

The Draw-A-House-Tree Task involves the ability to solve the problem of representing the three dimensional "front-behind" relationship on a sheet of paper, in the drawing of a house with a tree behind it. A sheet of paper and a pen or crayon are provided for the child who is asked to draw "a house with a tree behind it". An 1-11 scoring scale based on Kalyan-Masih's study (1976) was used to analyze the drawings: (1) scribbling; (2) fortuitous

realism; (3) failed realism/synthetic incapacity; (4) intellectual realism or transparencies; (5) strategy 1--refusing to draw; (6) strategy 2a--ignoring or changing the instructions; (7) strategy 2b--the quality of the drawing is superior to that of 2a, but the strategy is the same; (8) strategy 3--drawing the tree with the trunk juxtaposed on top of the roof, or drawing a "far away" tree; (9) strategy 4--compromise solution; (10) strategy 5--partial solution; and (11) visual realism--awareness of perspective and metrical relations.

The Nebraska-Wisconsin Cognitive Assessment Battery (NEWCAB) was developed by Kalyan-Masih, Marshall, Tomes, and Kastl in 1981 for the purpose of assessing qualitative changes of intellectual functioning of children 3 to 11 years of age. Children within this age range correspond to Piagetian preoperational and concrete operational cognitive stages. According to Piaget (1946), children 3 to 7 years of age were at the preoperational stage in which they could express themselves symbolically with language and imagery, yet, their thoughts were egocentric. Children at 7 to 11 years of age were believed to be in the concrete operational stage, in which children's thoughts were less egocentric, but they still could not think abstractly.

The NEWCAB testing kit includes a small cardboard box with toy testing materials such as pots, strings, plastic chips, etc. The NEWCAB tasks consist of an overall of 16 individual tasks that are applied to the three sections: the

first section includes six relations tasks; the second section consists of four classification tasks; and the third section has six number and length tasks. The Relations task tests children's ability of seriation in many forms. The Classification task examines children's ability in free and specified sorting, class inclusion, and combinatorial reasoning. The Number and Length task assesses children's ability to identify the conflict of number and length, and to reason proportionally with number and length.

The tasks in each section are arranged in a succeeding order of difficulty, with younger children starting with the easiest tasks and older children with the more difficult ones. Each task administered to a child is assigned a score according to protocols listed in the manual. The sum of these scores within each domain constitutes the child's performance score for that domain. The domain scores are then summed to derive a total NEWCAB score. Relations tasks scores may range from 0-33; classification task scores from 0-36; and number/length task scores from 0-41. The total NEWCAB score may range from 0-110. The total NEWCAB score and domain scores comprised the cognitive development data for the present study. Reliability, construct validity, and criterion-related validity of the NEWCAB were emperically supported in the manual.

Procedure

The American subjects were randomly chosen from the study of Tomes and Heilbuth (1992). The original study examined the relationship of picture drawing, cognitive development, visual motor integration, and neuromotor functioning of 5 and 7-year-old American children. The subjects in the study were solicited by distributing letters to the parents through the administrative offices of the participating schools. Only children whose parents signed an informed consent form were included in the research project. Confidentiality of subject identity was maintained throughout the research project. The subjects were tested with the drawing tasks and the NEWCAB tasks in their schools by three graduate research assistants trained by Dr. Tomes and Dr. Heilbuth. All the testing guidelines were followed according to the manuals of the DAP-Q, HT, and the NEWCAB.

In collecting the data with the Chinese children, the investigator sent out a consent letter to the Chinese parents to inform them of the study. A consent form was attached to ask for permission for their children to participate in this study. Only children whose parents signed an informed consent form were included in the study. The children were tested individually at their homes, since it was difficult to obtain consent from a large number of school administrators and thus administer the tests at different schools. This was different from the American sample who were tested at their schools. However, each child

was tested according to the instructions given in the DAP-Q, HT, and the NEWCAB manuals. The children were given the tests at a well-lighted, quiet place free of auditory and visual distractions within their homes. A response form and a 2B pencil was provided to each subject. The examinee was told that the investigator would like him/her to draw some pictures, and that the investigator would like him/her to draw a man first. The child was also told to take time and work very carefully and be sure to draw the whole man, and that he/she would be told when to stop. The testing of drawing a woman and drawing self was administered accordingly. The administration time for the DAP was approximately 5 minutes for each stimulus. During the test, the investigator recorded any observations or comments on the record form.

In conducting the Draw-A-House-Tree Task, the child was provided an 8" x 12" white paper and a 2B pencil, and was told to "draw a picture of a house with a tree behind it". There were no suggestions on the drawing, and any verbalizations and remarks by the child were recorded. The researcher also noted the sequence of the drawing, that is, it was recorded whether the house was drawn first, or if the tree was drawn first.

When giving the NEWCAB, rapport was built before proceeding to the real test. The child was asked to sit beside the examiner. The child was not be given any clues for the answers, rather, s/he was encouraged to continue the

tasks unless s/he was tired. Instructions were repeated when needed.

Data Analysis

Two-way Analyses of Variance (ANOVA) were conducted to examine the main effects of culture and gender and their interactions on the respective DAP-Q, HT, and NEWCAB scores. Means and standard deviations of the DAP-Q, HT, and NEWCAB scores were calculated for the comparison of cultural and gender differences for the sample. Pearson product-moment correlations were run to examine the relationships between the respective drawing scores and the respective NEWCAB scores for the total sample, within each cultural group, between the genders, and between the genders within each cultural group.

CHAPTER IV

RESULTS AND SUMMARY

Means and standard deviations of the DAP-Q standard score equivalents, the HT scores, and the NEWCAB scores for this sample are denoted in Tables I, II and III. Means and standard deviations reported in the DAP-Q manual (Naglieri, 1988) are 100 and 16 respectively for all the Man, Woman, Self, and Composite scores. For this sample, means of all the four DAP-Q scores are much higher for the Chinese subjects than for their American counterparts. Chinese girls obtained a higher mean than the Chinese boys on all the respective drawing and the general cognitive tasks (Table III). American girls had a higher mean than American boys on all the drawing and the general cognitive tasks, except for the NEWCAB Relations tasks ($\underline{m}$=6.42 for American girls, $\underline{m}$=7.25 for American boys) (Table III).

Means and standard deviations on the HT and the NEWCAB scores also vary between the two cultures and genders. The two cultural groups vary slightly on the HT task ($\underline{m}$=7.41 for American sample, and $\underline{m}$=7.58 for Chinese sample (Table I). Chinese girls had largest mean ($\underline{m}$=8.17) and highest standard deviations on the HT task ($\underline{SD}$=2.21). In contrast, Chinese

TABLE I

MEAN AND STANDARD DEVIATION VALUES BY CULTURE

Variable	Chinese Mean	Chinese Std. Dev.	American Mean	American Std. Dev.
DQC[a]	114.75	16.13	90.58	16.36
Man[b]	115.08	14.46	92.88	15.63
Woman[c]	112.04	14.50	91.13	14.08
Self[d]	110.21	15.41	92.50	14.68
HT[e]	7.58	2.10	7.42	1.50
NT[f]	21.67	7.03	17.75	14.03
NR[g]	15.17	5.10	6.84	4.06
NC[h]	2.75	2.82	4.92	8.77
NNL[i]	3.75	2.69	6.00	5.53

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE II

MEAN AND STANDARD DEVIATION VALUES BY GENDER

Variable	Boys Mean	Boys Std. Dev.	Girls Mean	Girls Std. Dev.
DQC[a]	97.17	18.86	108.17	20.33
Man[b]	98.71	16.84	109.25	19.21
Woman[c]	98.38	16.32	104.79	18.68
Self[d]	96.17	16.56	106.54	16.92
HT[e]	7.17	1.69	7.83	1.90
NT[f]	18.08	9.36	21.33	12.70
NR[g]	10.50	5.76	11.50	6.71
NC[h]	3.08	5.00	4.58	7.61
NNL[i]	4.50	4.05	5.25	4.87

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE III

MEAN AND STANDARD DEVIATION VALUES
BY CULTURE AND GENDER

Variable	Chinese				American			
	Boys		Girls		Boys		Girls	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
DQC[a]	111.25	13.97	118.25	17.94	83.08	10.78	98.08	17.91
Man[b]	111.50	10.91	118.67	17.03	85.92	10.82	99.83	16.98
Woman[c]	110.67	12.79	113.42	16.49	86.08	7.97	96.16	17.19
Self[d]	107.08	14.69	113.33	16.12	85.25	9.89	99.75	15.43
HT[e]	7.00	1.91	8.17	2.21	7.33	1.50	7.50	1.57
NT[f]	19.75	7.29	23.58	6.51	16.42	11.14	19.08	16.84
NR[g]	13.75	5.63	16.58	4.27	7.25	3.82	6.42	4.42
NC[h]	2.67	2.23	2.83	2.25	3.53	6.86	6.33	10.46
NNL[i]	3.33	2.71	4.17	2.72	5.67	4.91	6.33	6.30

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

boys earned the lowest mean on the HT task (m=7.00, SD=1.91) (Table III).

Interactions of Culture and Gender on DAP-Q, HT, and NEWCAB scores

In the analyses related to the first and second sets of hypotheses, the interactions on the respective drawing and cognitive tasks, two-way Analyses of Variance (ANOVA) were conducted with culture and gender as independent variables, and the individual drawing and cognitive tasks as dependent variables. Overall, there is no evidence of interactions between culture and gender on any of the drawing or general cognition measures (Tables III & IV). This means the difference in effects of the two cultures on male children was the same as the difference in effects of the two cultures on the female children. Conversely, the difference in effects of the two genders on one culture (such as Chinese) was the same as the difference in effects of the two genders on the other culture.

Main Effects of Culture and Gender on DAP-Q, HT, and NEWCAB scores

A significant cultural main effect in favor of the Chinese children was found on DAP-Q/Total ($F(1,44)=29.38$, $p<.0001$), Man ($F(1,44)=29.07$, $p<.0001$), Woman ($F(1,44)=26.42$, $p<.0001$), Self ($F(1,44)=18.55$, $p<.0001$), and the NEWCAB Relations tasks ($F(1,44)=39.67$, $p<.0001$). No significant cultural main effect was found on the HT

($F(1,44)=.10$, $p<.752$), the NEWCAB/CT ($F(1,44)=1.35$, $p<.251$), NLT ($F(1,44)=3.09$, $p<.08$), and the Total task ($F(1,44)=1.46$, $p<.232$) (Tables IV & V).

A significant gender main effect in favor of girls was found on the DAP-Q/Total ($F(1,44)=6.09$, $p<.01$), DAP-Q/Man ($F(1,44)=6.55$, $p<.01$), and DAP-Q/Self ($F(1,44)=6.37$, $p<.01$). No significant gender main effect was found on the DAP-Q/Woman ($F(1,44)=2.49$, $p<.122$), HT ($F(1,44)=1.61$, $p<.211$), NEWCAB/RT ($F(1,44)=.57$, $p<.454$), CT ($F(1,44)=.65$, $p<.425$), NLT ($F(1,44)=.34$, $p<.565$), and the Total tasks ($F(1,44)=1.01$, $p<.321$) (Tables IV & V).

Correlations Between the Drawing Tasks and the NEWCAB Tasks

The Pearson Correlation Coefficients were calculated on the drawing tests (DAP-Q and HT), and the cognitive tasks (NEWCAB) for the following cultural and gender groups: total sample of 48 children, the 24 Chinese children, the 24 American children, the total of 24 boys, the total of 24 girls, the 12 Chinese boys, the 12 Chinese girls, the 12 American boys, and the 12 American girls.

Significant correlations were found between the NEWCAB Relations task, and DAP-Q/Composite, Man, Woman, Self, and the HT for the total sample of 48 children. The respective r's were .443, .398,.476,.364, and .350. Significant correlations between the NEWCAB respective tasks scores and the HT task scores were also identified for the same sample (Table VI).

TABLE IV

ANALYSIS OF VARIANCE RESULTS FOR DAP-Q/COMPOSITE, MAN, WOMAN, SELF AND DRAW-A-HOUSE-TREE TASK

Variable	df	Mean Square	F	p
DAP-Q/Composite				
Culture	1	7,008.33	29.38	.0001
Gender	1	1,452.00	6.09	.0176
Culture*Gender	2	192.00	0.81	.3745
DAP-Q/Man				
Culture	1	5,918.52	29.07	.0001
Gender	1	1,333.52	6.55	.0140
Culture*Gender	2	136.69	0.67	.4170
DAP-Q/Woman				
Culture	1	5,250.08	26.42	.0001
Gender	1	494.08	2.49	.1220
Culture*Gender	2	161.33	.81	.3724
DAP-Q/Self				
Culture	1	3,763.02	18.55	.0001
Gender	1	1,291.69	6.37	.0153
Culture*Gender	2	204.19	1.01	.3212
Draw-A-House-Tree				
Culture	1	.33	.10	.7522
Gender	1	5.33	1.61	.2105
Culture*Gender	2	3.00	0.91	.3458

TABLE V

ANALYSIS OF VARIANCE RESULTS FOR NEWCAB/NT, NEWBAB/NR, NC, AND NNL)

Variable	df	Mean Square	F	p
NT[a]				
Culture	1	184.08	1.46	.2329
Gender	1	126.75	1.01	.3210
Culture*Gender	2	4.08	.03	.8578
NR[b]				
Culture	1	833.33	39.67	.0001
Gender	1	12.00	.57	.4538
Culture*Gender	2	40.33	1.92	.1728
NC[c]				
Culture	1	56.33	1.35	.2508
Gender	1	27.00	.65	.4247
Culture*Gender	2	21.33	.51	.4777
NNL[d]				
Culture	1	60.75	3.09	.0855
Gender	1	6.75	.34	.5651
Culture*Gender	2	3.42	.17	.8408

[a] NT: NEWCAB Total Score
[b] NR: NEWCAB Relations Score
[c] NC: NEWCAB Classification Score
[d] NNL: NEWCAB Number and Length Score.

Table VI

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=ALL

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.201	.443**	.039	-.170
DQM[b]	.192	.398***	.036	-.119
DQW[c]	.234	.476***	.046	-.144
DQS[d]	.118	.364*	.024	-.245
HT[e]	.523***	.350*	.368**	.29

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

For the sample of 24 Chinese children, no significant correlations were found between the scores of the drawing tests and the general cognitive tasks, except for those between the HT and the NEWCAB total scores (r=.443, p<.030), and between the HT and the NEWCAB Relations tasks (r=.453, p<.026) (Table VII). For the American children, HT showed significant correlations with the respective NEWCAB tasks (Table VIII).

There were significant correlations between the four DAP-Q scores, and the NEWCAB Relations task scores for all the 24 girls (Table VIII). NEWCAB Relations task scores correlated significantly only with the DAP-Q/Woman (r=.437, p<.033) and the HT scores (r=.471, p<.020) for the 24 boys (Table IX). NEWCAB total scores correlated significantly with the HT scores for both the boys (r=.594, p<.002), and the girls (r=.458, p<.025) (Tables IX & X).

No significant correlations emerged between the scores of the drawing tasks and the NEWCAB tasks either for the Chinese boys or Chinese girls, except for that between the HT scores and the NEWCAB Relations scores for the Chinese boys (r=.602, p<.039) (Tables XI & XII). In contrast, significant correlations were found between the HT scores, and the NEWCAB/RT, CT, and Total scores for the American boys (Table XIII). NEWCAB/NC, NNL, and Total scores correlated significantly with the HT scores for the American girls (Table XIV).

TABLE VII

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=CHINESE CHILDREN

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.248	.211	.256	-.184
DQM[b]	-.115	-.067	.076	-.235
DQW[c]	.052	.064	.187	-.139
DQS[d]	.007	-.001	.296	-.220
HT[e]	.443*	.453*	.212	.127

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE VIII

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE =AMERICAN CHILDREN

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.175	.098	.199	.056
DQM[b]	.218	.041	.220	.174
DQW[c]	.234	.191	.229	.089
DQS[d]	.048	.053	.121	-.109
HT[e]	.697***	.404*	.604**	.513*

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE IX

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=ALL GIRLS

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.166	.502*	.036	-.204
DQM[b]	.184	.459*	-.003	-.148
DQW[c]	.182	.500*	-.032	-.161
DQS[d]	.057	.413*	-.079	-.297
HT[e]	.458*	.245	.355	.300

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE X

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=ALL BOYS

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.175	.360	.076	-.201
DQM[b]	.118	.305	-.005	-.153
DQW[c]	.264	.437*	.125	-.165
DQS[d]	.110	.292	.091	-.270
HT[e]	.594**	.471*	.364	.255

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE XI

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=CHINESE BOYS

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.060	-.219	.385	.022
DQM[b]	-.306	-.457	.007	-.120
DQW[c]	.101	-0125	.500	.122
DQS[d]	-.092	-.135	.367	-.268
HT[e]	.543	.602*	.021	.194

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE XII

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=CHINESE GIRLS

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	-.023	.131	.157	-.390
DQM[b]	-.137	.090	.118	-.559
DQW[c]	-.039	-.208	-.054	-.374
DQS[d]	-.015	-.019	.230	-.256
HT[e]	.259	.201	.372	-.005

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE XIII

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND NEWCAB TASKS, SAMPLE=AMERICAN BOYS

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.162	-.226	.215	.087
DQM[b]	.140	-.021	.143	.135
DQW[c]	.338	.250	.333	.108
DQS[d]	.051	-.214	.200	.002
HT[e]	.760**	.748**	.602*	.301

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

TABLE XIV

CORRELATION COEFFICIENTS FOR THE DRAWING TESTS AND THE NEWCAB TASKS, SAMPLE=AMERICAN GIRLS

Variable	NT[f]	NR[g]	NC[h]	NNL[i]
DQC[a]	.142	.271	.111	.005
DQM[b]	.220	.168	.174	.181
DQW[c]	.180	.261	.142	.061
DQS[d]	-.024	.312	-.022	-.246
HT[e]	.673*	.138	.621*	.672*

*P<.05; **P<.01; ***P< .001

[a] DQC: DAP-Q Composite Score
[b] DQM: DAP-Q Man Score
[c] DQW: DAP-Q Woman Score
[d] DQS: DAP-Q Self Score
[e] HT: Draw-A-House-Tree Score
[f] NT: NEWCAB Total Score
[g] NR: NEWCAB Relations Score
[h] NC: NEWCAB Classification Score
[i] NNL: NEWCAB Number and Length Score.

SUMMARY

Data did not support the hypotheses that there would be interactions between culture and gender on the scores of the drawing and general cognition tasks. As far as the main effects of culture and gender are concerned, a significant cultural effect in favor of the Chinese children was found on DAP-Q/Man, Woman, Self, and Total scores. However, no cultural differences were found on the Draw-A-House-Tree Task, and the Nebraska-Wisconsin Cognitive Assessment Battery tasks except for Relations tasks. Data showed a significant overall gender effect on the scores of the DAP-Q, HT, and the NEWCAB, with the girls performing better than the boys on all the accounts.

More significant correlations were found between the scores of the drawing tasks and all the NEWCAB tasks for the total sample of 48 children than for the sub-sample groups. No significant correlations were identified between the scores of the drawing tasks and the general cognitive tasks for the Chinese children except for two measures. All the NEWCAB tasks correlated significantly with the HT task for the American sample. The scores by the two genders demonstrated a similar magnitude of significant correlations among similar variables. Almost no significant correlations between the scores of the drawing tests and the cognitive tasks were identified either for the Chinese boys or the Chinese girls.

CHAPTER V

DISCUSSION

This project was designed to investigate the effect of culture and gender on children's drawing and general cognitive ability. Previous studies indicated cultural and gender differences on children's performances on various drawing and general cognitive tasks (Rubenstein, et al., 1987; Victoria, 1990; Steward et al., 1982; Boulding, 1977; Harris, 1963). Studies have also shown significant correlations between children's drawing level and their corresponding cognitive developmental stage (Kalyan-Masih, 1976, 1980, 1982). Yet, no studies have been conducted on the comparison of the Chinese and American cultural groups, and specifically with the 5-year-old groups.

Through the review of previous literature and the author's observations, it was hypothesized that there would be significant main effects of culture and gender and interactions of the two on the drawing and cognitive tasks. The overall DAP-Q, HT, and NEWCAB scores for the Chinese children were anticipated to be higher than those of the American peers. It was also predicted that the Chinese boys would perform better than their female counterparts, given the specific traditional Chinese practice in child-raising:

boys are preferred to girls. Based on the same reasons, no gender difference within the American group was anticipated on the individual tasks. Significant correlations between the scores on the same measures were also expected for the different combinations of the sample.

Twenty-four Chinese and 24 American children participated in this study. Their scores on the Draw-A-Man: A Quantitative Scoring System, Draw-A-House-Tree, and the Nebraska-Wisconsin Cognitive Assessment Battery were analyzed with two-way analyses of variance (2 cultures X 2 genders). The results showed a significant cultural main effect on the performance of all the DAP-Q tasks. Chinese children consistently scored higher on all the DAP-Q measures than the American children (Table I). Data did not support the hypotheses that culture would influence the scores on the HT and the NEWCAB tasks, except for the Relations tasks ($F(1,44)=39.25$, $p<.01$).

Gender influence was another independent variable that was looked at both cross-culturally and within each culture. Significant gender effects were found only on the DAP-Q/Total, and Man, and Self scores. Contrary to what was anticipated, Chinese girls earned a much higher mean on all the accounts of the drawing and cognitive tasks than the Chinese boys (Tables III & IV). The same is true with the American sample, except that the American boys had a higher mean on the NEWCAB Relations tasks ($m=7.25$ for boys, $m=6.42$ for girls).

The results concerning the cultural effect on the DAP-Q tasks supported the previous research findings. Cultural learning experience is seen as one of the factors that influence the results of children's drawings (Gottling, 1990). As explored in the section of literature review, the social and parental practices in the Chinese and American societies are different in many ways. Traditionally, Chinese people believe that early intervention with young children produces knowledgeable, and competitive adults. Drawing skills, for example, are considered as one ingredient of intelligence. Early art education, along with piano lessons, swimming classes, and so on, is one of the most common practices. That is, at a very young age, children are taught drawing skills. Some children go to special art training school, some learn at home from their parents. Usually, parents spend a large portion of their time and finance, trying to bring about good artists. During the learning process, great attention is given to the basic drawing skills. Attention to details when drawing is also encouraged (Tomes & Fan, 1993). This could be one of the reasons that the Chinese children performed overwhelmingly better on the DAP-Q tasks, since criteria for scoring the psychometric DAP-Q tasks rely much on the details of the drawings.

The Piagetian Draw-A-House-Tree Task tests young children's spatial conception. It requires the child to resolve the width-length-depth conflict on a two dimensional flat sheet of paper. According to Piaget, drawing is one of

the five semiotic functions of the preoperational period (Piaget, & Inhelder, 1969). Piaget (1969) proposed that children's drawing abilities, like their overall cognitive functioning, developed through systematic stages with quanlitative changes. It is believed that children at age 5 to 9 are at the intellectual realism developmental stage when they can only draw what is in their mind about an object (Piaget & Inhelder, 1969). Piaget (Piaget & Inhelder, 1969) also believed that the development of children's cognitive and drawing abilities was universal. That is, children from various cultural or ethnic backgrounds should evolve cognitively at the same sequence. The results of the current study supported such a statement. The mean of the Chinese sample on the HT is 7.58, and the mean of the American children on the same measure is 7.42. This indicates that both these Chinese and American 5-year-olds are at the intellectual realism stage. Most of them ignored the instructions to draw the tree behind the house, rather, the tree was mostly drawn to the left or the right side of the house.

As far as gender is concerned, American girls' drawings demonstrated a small but statistically significant overall superiority over the American boys' drawings. This result supports the findings in the DAP-Q manual where female children scored higher than male children on the DAP-Q (Naglieri, 1988).

Data did not support the hypothesis that the Chinese

psychometric DAP-Q, but a similar mean on the Piagetian HT and NEWCAB in comparison to the American sample brings one to think: the Chinese five-year-olds' overwhelming drawing skill might be just a taught skill rather than an indicator of their real cognitive development.

The second one is that significant correlations were identified between the HT task and the NEWCAB tasks scores for the American sample, while significant correlations were found only between the HT and NEWCAB Relations tasks and the total scores for the Chinese sample. This may also be explained by the overall social and parental practice of the two cultures. As a side effect of being taught drawing skills at a very young age, Chinese children might have lost the flexibility of problem solving in some ways.

Still another finding worthy of notice is the consistent emergence of significant correlations between the HT task and the NEWCAB Relations task. No other measure within the NEWCAB task showed as great a relationship with the HT as the NEWCAB Relations tasks. This could be explained by the fact that Draw-A-House-Tree, too, requires the understanding of relations among depth, length, and width. Besides, the Relations tasks could be the easiest of all the three, and it indeed is the first task that appears among the three. Using the three-dimensional toy trees in the Relations task could have made the task easier than a two-dimensional wooden stick or plastic chip task.

Conclusions and Future Directions

Findings from the present study show a significant cultural influence on children's drawing ability on a psychometric test. However, no cultural effect was identified on the Piagetian drawing test, or the general cognitive tasks. Future studies should take effort to further investigate the aspects of cultural influence such as parental and school practices and social desirability. Also, in order to obtain more reliable data, research on children's drawing ability should be extended to other cross-cultural comparisons with even larger sample sizes.

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APPENDIXES

APPENDIX A

LETTER

Oklahoma State University

COLLEGE OF HUMAN ENVIRONMENTAL SCIENCES

Department of Family Relations and Child Development
243 Human Environmental Sciences
Stillwater, Oklahoma 74078-0337
405-744-5057 FAX 405-744-7113

January 3, 1994

Dear Parents:

I am a graduate student in the Department of Family Relations and Child Development at Oklahoma State University. I am conducting a cross-cultural comparison study on the drawings between the Chinese and American children. I am sending you this letter to request your permission for your child to participate in this research.

The research will be conducted individually in a quiet place at your home. Your child can play some games with me before he/she voluntarily proceeds to the actual research. There are three measures that I am going to use for the study:

(1) Draw-A-Person: A Quantitative Scoring System (Naglieri, 1988). Your child will be provided test materials including a response form and a 2B pencil. Your child will be asked to draw three pictures: a man, a woman, and him/herself.

(2) The Piagetian House-Tree Drawing Task. Your child will be provided a sheet of 11×8 white paper , a 2B pencil, and an eraser, and asked to draw a picture of a house with a tree behind it.

(3) The Nebraska-Wisconsin Cognitive Assessment Battery (Kalyan-Masih, et al., 1980). Your child will be asked to perform some tasks with toy type materials.

The approximate length of time for completing the three measures will be 20 minutes for each child.

I would like to assure you that all the information gathered for the study will remain confidential and your child will not be personally identified. A subject number will be assigned to your child and recording and reporting of the study will be according to the subject number.

Should you have any questions concerning this research, please feel free to contact me at (405)744-3180 or my advisor, Dr. Ruth Tomes, at (405)744-8349. For information regarding legal rights of research subjects, you may contact Beth McTernan in the Office of University Research Services at (405)744-5700.

Please return the form to me by _____ at 29 North University Place #1, Stillwater, OK 74075. Your cooperation is greatly appreciated.

Sincerely,

Chunming Fan

Chunming Fan
Graduate student
Department of Family Relations and Child Development

Ruth Tomes

Ruth Tomes, Ph. D., Advisor
Department of Family Relations and Child Development

APPENDIX B

INFORMED CONSENT FORM

Oklahoma State University

COLLEGE OF HUMAN ENVIRONMENTAL SCIENCES

Department of Family Relations and Child Development
243 Human Environmental Sciences
Stillwater, Oklahoma 74078-0337
405-744-5057 FAX 405-744-7113

INFORMED CONSENT FORM

I,_____, hereby authorize my child_____ ____, to participate in the research project conducted by Chunming Fan, on the drawings between the Chinese and American children.

I understand that my child will be:

(1) asked to draw three pictures, those of a man, a woman, and self;
(2) asked to draw a picture of a house with a tree behind it;
(3) asked to perform tasks in NEWCAB.

I understand that all of the information gathered on my child will remain confidential and my child will not be personally identified in the study. A subject number will be assigned to my child and this subject number will not be used for identification purposes. I understand that the findings of the study will be reported for the group and not for the individual.

I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this study at any time without penalty after notifying the project conductor. I may contact Chunming Fan at (405)744-3180 or Dr. Ruth Tomes at (405)744-8349 for further information about this research project. I may also contact Beth McTernan, University Research Services, at (405)744-5700.

I have read and fully understood the consent form. I sign it freely and voluntarily. I understand that I will be given a copy of this consent form.

Signed: _____
(signature of subject's parent)

Child's name: _____

Date: _____

VITA 2

Chunming Fan

Candidate for the Degree of

Master of Science

Thesis: A CROSS-CULTURAL COMPARISON OF DRAW-A-PERSON, DRAW-A-HOUSE-TREE TASK, AND PIAGETIAN COGNITIVE TASKS(NEWCAB) FOR CHINESE AND AMERICAN CHILDREN

Major Field: Family Relations and Child Development

Biographical:

Personal Data: Born in Huanggang, Hubei, China on April 3, 1964, the first child of Lianqian Fan and Juhua Cheng.

Education: Graduated from Huanggang High School, Hubei, China, in July 1980; received Bachelor of Arts Degree in English Literature and Language from Wuhan University, Hubei, China, in July 1984; Received Bachelor of Arts Degree in Law from Foreign Affairs College, Beijing, China, in July 1986; Completed requirements for the Master of Science Degree at Oklahoma State University in May 1994.

Professional Experience: Attache, Ministry of Foreign Affairs of People's Republic of China, September 1986 to May 1989; Teaching Assistant, Child Development Labs, Department of Family Relations and Child Development, Oklahoma State University, January 1992 to May 1993; Research Assistant, Department of Family Relations and Child Development, Oklahoma State University, July 1993 to present.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Date: 12-07-93 **IRB#:** HES-94-014

Proposal Title: A CROSS-CULTURAL COMPARISON OF DRAW-A-PERSON, DRAW-A-HOUSE-TREE TASK AND PIAGETIAN COGNITIVE TASKS (NEWCAB) FOR CHINESE AND AMERICAN CHILDREN

Principal Investigator(s): Ruth Tomes, Chunming Fan

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature: _____ **Date:** December 8, 1993
Chair of Institutional Review Board