PERSONALITY AND CURIOSITY IN PRESCHOOL CHILDREN

A thesis presented to the faculty of the Graduate School of
Western Carolina University in partial fulfillment of the
requirements for degree of Master of Arts in School Psychology.

By

Charity Renaa Bumpass

Director: Dr. Bruce B. Henderson
Associate Professor of Psychology
Psychology Department

Committee Members: Dr. David M. McCord, Psychology
Dr. Lori Unruh, Psychology

October 2009

ACKNOWLEDGEMENTS

I would like to thank my thesis committee members and director for their
assistance, patience, and encouragement. I also extend sincere thanks to the
following people, without whom this thesis would not have been possible:
Sara Manring, Chris Burns, Anne Bowen, and Amy Scheck.
Lastly, I would like to offer my warmest regards and thanks to my family
and friends for their continued love and support.

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ABSTRACT

PERSONALITY AND CURIOSITY IN PRESCHOOL CHILDREN

Charity Renaa Bumpass

Western Carolina University (October 2009)

Director: Dr. Bruce B. Henderson

The purpose of this study was to examine the relationship between individual differences in Extraversion and Openness to Experience personality dimensions and Object and Social Curiosity in preschool children. Sixty eight preschoolers were rated by their parents and teachers on the Five Factor Model for Preschoolers (M5-PS). Curiosity was measured through observations of child behavior during exploration of novel objects and interactions with a stranger. It was hypothesized that Object Curiosity, or curiosity about things, would be positively correlated with Openness to Experience in preschool children, but not correlated with Extraversion in preschool children; and Social Curiosity, or curiosity about people, would be positively correlated with both Extraversion and Openness to Experience in preschool children. Results indicated there was a significant correlation between Object and Social Curiosity. There were not significant correlations between Object Curiosity and Extraversion, Object Curiosity and Openness to Experience, Social Curiosity and Extraversion, and Social Curiosity and Openness to Experience. Alternative explanations for these results and directions for future research are discussed.

PERSONALITY AND CURIOSITY IN PRESCHOOL CHILDREN

For many years, the focus of personality psychology has been on individual differences in people (McAdams, 1997). Researchers have constructed personality taxonomies, analyzed questionnaires, and conducted observations to gain a better understanding of how people differ in terms of personality (Goldberg, 1990; McCrae & John, 1992). As a result, psychologists have found there are fundamental dimensions of personality (McCrae & John, 1992). Personality can be described using continuums of multiple complex variables. Some psychologists believe there are only a couple fundamental dimensions of personality which adequately explain individual differences between people (Block & Block, 1980). Other psychologists believe there are many fundamental dimensions of personality which adequately explain individual differences between people (McCrae & John, 1992). Despite their differences, all models of personality help explain how individuals differ in their interactions with their environments.

The origins of personality psychology can be traced back to the late nineteenth century. Digman (1990) and John, Angleitner, and Ostendorf (1988) reviewed the literature and described the history of personality psychology. Psychologists and scientists began early efforts to gain an understanding of personality by analyzing language. Francis Galton, English scientist and writer, is thought to be the first who used the dictionary to put together a list of personality descriptors. In 1926, Ludwig Klages argued that this type of language analysis was useful in the understanding of personality. He believed the most important descriptors of individual differences between people

could be found in language. This perspective motivated Franziska Baumgarten to examine the personality terms in the German language. He conducted a systematic study and identified 941 trait adjectives and 688 nouns. His efforts had little significant effect on psychology in Germany; however, his work influenced Allport and Odbert to further examine language.

In the 1930s, Allport and Odbert constructed a list of personality terms from the English language (Digman, 1990; John et al., 1988). They identified approximately 18,000 terms that could distinguish the behavior of one individual from another. They placed the terms in four categories. In the first category, they placed terms that described general, stable, and consistent tendencies of individuals and the ways in which individuals adjust to their environments. The second category included terms that described temporary moods or activities of people. In the third category, they placed terms that described social conduct, character, and influence on others. The fourth category included miscellaneous terms that described physical qualities, talents, and other aspects of personality that did not fit into one of the other categories. This research triggered subsequent efforts to explore personality factors.

In the 1940s, Raymond B. Cattell further explored the concept of personality (Digman, 1990; John et al., 1988). He used Allport and Odbert's listing of personality terms as a basis for his development of a multi-dimensional model of personality. His early work involved modifying Allport and Odbert's list of personality terms and developing a more systematic method of analyzing the terms. In his study of personality, Cattell sorted out semantically similar terms, conducted factor-analytic studies of peer ratings of college students, identified opposites for the majority of terms on the list, and

conducted a literature review. He found 171 clusters of personality traits. Cattell later used empirical data to reduce his list of terms. He reduced the list several times and concluded that there were approximately 12 to 16 major factors of personality. Cattell inspired many others to explore personality; however, his work is often criticized for not being entirely replicable. Other researchers were not able to identify all 16 factors of personality he described in his work.

In 1947, Hans J. Eysenck studied personality using factor analyses (Digman, 1990). He identified two major factors of personality, which he referred to as Neuroticism and Extraversion. In 1970, Eysenck added a third major factor to his model of personality. He referred to this personality factor as Psychoticism. In 1949, Donald W. Fiske expanded upon Cattell's work (Digman, 1990; John et al., 1988). He constructed a simplified list of personality descriptors and used this list in several trait ratings. In his research, Fiske was able to find evidence for five factors of personality. Those five factors were Social Adaptability, Conformity, Will to Achieve, Emotional Control, and Inquiring Intellect.

Other researchers also found five major factors of personality. In 1961, Ernest C. Tupes and Raymond E. Christal (Digman, 1990; John et al., 1988) expanded upon Fiske's work by conducting further factor analyses on different samples. Similar to Fiske's work, they found five strong factors of personality. The five factors they identified were Surgency, Agreeableness, Dependability, Emotional Stability, and Culture. These factors were similar to the first five of Cattell's factors.

In 1967, Edgar F. Borgatta used five different methods of gathering data and found five stable factors of personality (Digman, 1990). He identified those traits as

Assertiveness, Likeability, Emotionality, Intelligence, and Responsibility. In 1967, Gene M. Smith used Cattell's scales to study peer ratings in college students and found support for only five major factors of personality. The five major factors supported were Agreeableness, Extraversion, Strength of Character, Emotionality, and Refinement. In 1963 and 1967, Norman expanded upon previous research by compiling a list of 2,800 trait terms (Digman, 1990; John et al., 1988). He built a hierarchical taxonomy of personality traits using a multi-tiered model. Levels 1, 2, and 3 of the multi-tiered model consisted of personality descriptors which describe the five major factors of personality. The five factors were identified by Norman as Surgency, Agreeableness, Conscientiousness, Emotional, and Culture. Norman's work had a significant influence on the subsequent research in personality psychology.

Block and Block (1980) designed a different model to explain how individuals interact with their environments. They conceptualized ego-control and ego-resiliency as characteristic features which explain the ways in which individuals interact with their social and physical environments. They examined individuals' control over impulses and individuals' ability to adapt to different situations. Ego-control refers to the degree to which individuals manage their impulses in different environments (Block & Block, 1980; Chuang, Lamb, & Hwang, 2006). Ego-resiliency is the degree to which individuals can adapt their behavior and emotions to different environments and situations (Block & Block, 1980; Chuang, Lamb, & Hwang, 2006). They reported that the degree to which an individual manages their impulses and adapts across situations provides important information about how an individual is likely to behave in different environments.

In the 1980s, Goldberg conducted research on personality by expanding upon Norman's work (Digman, 1990; John et al., 1988). Goldberg constructed a list of 1,710 personality trait terms and used them in studies with self and peer ratings of college students. He identified five major factors of personality. He referred to these five factors as Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Intellect. Following his extensive research, Goldberg proposed that the five factor model of personality could be the basis for personality theories. Digman and Takemoto-Chock (1981) reanalyzed six studies which used personality ratings. They found that five factors of personality were evident in studies with ratings by several different groups of people. They concluded that the five factors were strong and represented a strong theoretical structure.

Wiggins created a different taxonomy from those of Norman and Goldberg (John et al., 1988). He began with Goldberg's list of 1,710 personality traits and divided them into six subdomains. The subdomains were interpersonal traits, material traits, temperamental traits, social roles, character, and mental predicates. He built his taxonomy solely on the interpersonal traits. His hierarchical organization included 16 scales with were each made of eight adjectives.

In 1985, McCrae & Costa designed an inventory which assessed five factors of personality (Digman, 1990). They identified five major factors of personality which are known as Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The Neuroticism personality dimension measures anxiety, self-esteem, and emotional lability (Abe, 2005; Costa & McCrae, 1995; McCrae & Costa, 1987; McCrae & John, 1992). The facets under this personality dimension are anxiety, hostility, depression,

self-consciousness, impulsiveness, and vulnerability. Individuals who score high on the Neuroticism personality dimension can be described as anxious, self-pitying, tense, touchy, unstable, and worrying.

Extraversion is the personality dimension which measures sociability, enthusiasm, and pleasurable arousal (Abe, 2005; Costa & McCrae, 1995; Hagekull & Bohlin, 1998; McCrae & Costa, 1987; McCrae & John, 1992). The facets under this personality dimension are warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions. Individuals who have high Extraversion scores tend to be very active, outgoing, assertive, energetic, enthusiastic and talkative.

The Openness to Experience personality dimension measures curiosity, imagination, and creativity (Abe, 2005; Costa & McCrae, 1995; McCrae, 1994; McCrae & Costa, 1987; McCrae & John, 1992). The facets under this personality dimension are fantasy, aesthetics, feelings, actions, ideas, and values. Individuals who score high on the Openness to Experience personality dimension can be described as artistic, curious, imaginative, insightful, original, and having a wide variety of interests. Openness to Experience is the preference for the new and different in various aspects of life.

The Agreeableness personality dimension measures kindness, cooperativeness, and considerateness (Abe, 2005; Costa & McCrae, 1995; McCrae & Costa, 1987; McCrae & John, 1992). The facets under this personality dimension are trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness. Individuals who score high on the Agreeableness personality dimension can be described as appreciative, forgiving, generous, kind, sympathetic, and trusting.

Conscientiousness is the personality dimension which measures ability to plan ahead, persistence, and goal-directed behavior (Abe, 2005; Costa & McCrae, 1995; McCrae & Costa, 1987; McCrae & John, 1992). The facets under this personality dimension are competence, order, dutifulness, achievement striving, self-discipline, and deliberation. Individuals who have high Conscientiousness scores tend to be very efficient, organized, reliable, responsible and thorough.

In 1992, McCrae and John formally introduced this Five Factor Model of personality. It had become one of the most popular views in the field of personality psychology. It provided a unified theory of personality which could be used by psychologists from various backgrounds (Digman, 1990; McCrae & John, 1992). It is viewed as a better way of thinking about personality because of its validity. It has been found in self-reports, ratings, natural languages, and questionnaires. It has also been found among several demographic groups including children, college students, older adults, men, women, English, Dutch, German, and Japanese.

These five factors are the basis of most personality instruments and have been validated across numerous instruments and observers (Costa & McCrae, 1995; McCrae & Costa, 1987; McCrae & John, 1992). The combination of an individual's scores on each of these domains makes up a unique personality profile. This unique profile provides a wide array of information about how individuals are likely to interact with others and behave in different environments.

Table 1

Five Dimensions of Personality

Theorists	I	II	III	IV	V
Eysenck (1947)	Extraversion	Psychoticism	Psychoticism	Neuroticism	
Fiske (1949)	Social Adaptability	Conformity	Will to Achieve	Emotional Control	Inquiring Intellect
Tupes & Christal (1961)	Surgency	Agreeableness	Depend-ability	Emotionality	Culture
Borgatta (1967)	Assertiveness	Likeability	Responsibility	Emotionality	Intelligence
Smith (1967)	Extraversion	Agreeableness	Strength of Character	Emotionality	Refinement
Norman (1963, 1967)	Surgency	Agreeableness	Conscientious-ness	Emotional	Culture
Goldberg (1981, 1982)	Surgency	Agreeableness	Conscientious-ness	Emotional Stability	Intellect
McCrae & Costa (1985)	Extraversion	Agreeableness	Conscientious-ness	Neuroticism	Openness

Personality over Development

In the study of personality, researchers have examined the stability of personality over time. They have conducted longitudinal studies to explore whether personality in young children is a predictor of personality in adulthood. Is personality stable? Does personality change over time? Are the same personality factors present at each age? Can personality in early childhood predict personality in adulthood?

Hart, Keller, Edelstein, and Hofmann (1998) explored the stability of personality by examining the relationship between childhood personality and social-cognitive development over time. One hundred and seven children were interviewed at age 7 years on three different occasions. During the interviews, the children were administered personality measures, an IQ test, Piaget cognitive tasks, and measures of social understanding and friendship. At ages 9 and 12 years, the children were rated by their teachers on classroom behavior. At ages 9, 12, and 15 years, they were interviewed about their understandings of friendship. At ages 12 and 15 years, they were asked to respond to modified moral judgment dilemmas. At age 19 years, they were interviewed

about their lives, social issues, and friendship.   They also responded to moral judgment dilemmas at this age. The researchers found that ego-resiliency was predictive of social-cognitive development in adolescence. Highly ego-resilient children demonstrated a greater understanding of friendship and moral judgment in adolescence. These findings suggest that personality in early childhood can predict components of personality in adolescence.

Deal, Halverson, Havill, and Martin (2005) examined the relationship between temperament in early/middle childhood and the five factor model of personality in late adolescence/young adulthood. Parents and teachers completed questionnaires which assessed temperament in preschool children between the ages of 3 through 6 years. Mothers and fathers completed inventories to assess personality in adolescents and young adults who averaged 17.98 years. They found that temperament in early and middle childhood accounted for an average of 32% of the variance in personality at the facet level in late adolescence and young adulthood. Temperament in early and middle childhood accounted for 34% of the variance in personality at the domain level in late adolescence and young adulthood. This suggests that temperament in early and middle childhood accounts for some differences in personality in later years. However, these findings also indicate there are other factors which contribute to the development of personality over time.

Asendorpf and Denissen (2006) investigated the predictive validity of personality types and personality dimensions from early childhood to adulthood. The main teachers of 154 children, ages 4 through 6 years, provided descriptions of their students using the California Child Q-sort procedure over the course of three years. When the participants

were 17 and 22 years old, they were administered social relationships questionnaires and IQ tests. Their parents completed questionnaires that looked at the Big Five personality dimensions, personality types, and temperamental scales. Asendorpf and Denissen (2006) found that personality types (ego-control and ego-resiliency) and personality dimensions (five factor model) in early childhood are both long-term predictors of temperamental variables and social relationships. Personality types also predicted shyness, aggressiveness, IQ, agreeableness, and conscientiousness in adulthood. Personality dimensions also predicted aggressiveness, IQ, and neuroticism in adulthood. Personality in young children predicted personality in adulthood even when personality was measured using different models. These findings suggest personality is a relatively stable factor which changes slightly over time.

Hampson and Goldberg (2006) also examined the stability of personality traits over time. They had elementary school teachers rank their students from highest to lowest on multiple personality attributes. The childhood cohort was contacted approximately 40 years later to complete a series of questionnaires which included assessments of personality characteristics. They found that the Extraversion and Conscientiousness personality factors were the most stable over time. The stability of the Openness to Experience and Agreeableness personality factors was intermediate. The Neuroticism personality factor was not stable over time. These findings indicate that certain aspects of personality remain stable over time, while other factors are more variable. Thus, there must be additional factors besides early personality which contribute to the development of personality in adulthood.

Chaung, Lamb, and Hwang (2006) studied personality development by investigating the stability of ego-control and ego-resiliency over time. They had mothers describe their children using the California Child Q-Sort procedure when the children averaged 2.3 years, 3.3 years, 6.7 years, 8.4 years, and 15.2 years. They found that children became more ego-controlled over time, although individual levels of ego-control remained stable. Ego-resiliency in children increased from 2 to 3 years and declined when they were 7 and 8 years. Boys became less resilient in adolescence and girls became more resilient. Ego-control was stable over time, but there was some variability in ego-resiliency over time. These researchers found certain components of personality remain stable over time, while other factors are more likely to change over time. This suggests that some personality factors may be better predictors of personality in later years than other personality factors.

Asendorpf, Denissen, and van Aken (2008) explored the relationship between inhibition and aggression in young children and personality in young adulthood. Two hundred and six preschool children were described by their teachers, rated by their parents, observed in preschool, and confronted by a stranger to determine levels of inhibition and aggression. When the children were 23 years old, they were assessed through parent and self ratings of inhibition, aggression, and Big Five personality factors. The participants also completed self ratings of global and social self esteem, social network questionnaires, and life history interviews. They found that inhibited preschoolers were judged as inhibited by their parents when they were 23 years old. Aggressive children showed an externalizing personality pattern in adulthood. This suggests that early indications of inhibition and aggression may be predictors of

inhibition and aggression in later years. These are characteristics which appear to remain stable over time.

Overall, the research in the field of personality psychology suggests that there is some stability in personality over time. Personality in young children does predict certain aspects of personality in adolescence and adulthood. Personality in young children is predictive of certain behaviors, social relationships, and cognitive abilities in adolescence and adulthood. However, some personality traits are less predictable. Openness to Experience, Agreeableness, Neuroticism, and Ego-Resiliency appear to be personality factors which change more over time. Thus, it appears some personality traits are more innate and other personality traits are more subject to environmental influences and an individual's life experiences. Although there are differences in the stability of personality factors, the study of personality in young preschoolers is beneficial. It provides valuable information about individuals' current and future interactions with their environments.

Personality in Preschoolers

The study of personality in preschoolers has involved the examination of temperament, behaviors, and interests of young children. Researchers have administered personality and behavior rating scales to parents and teachers, conducted field and laboratory observations, and examined environmental factors to assess personality in preschoolers. They have found that the behavior ratings scales which assess the Big Five model of personality are valid means of measuring individual differences in young children (Conrad, 1932; Mervielde, Buyst, & Fruyt, 1995).

Temperament is one factor that has been studied to help gain a better understanding of personality in young children. It can be defined as the way an individual normally thinks, behaves, and reacts (McCrae, Costa, Ostendorf, Angleitner, Hrebickova, Avia, Sanz, Sanchez-Bernardos, Kusdil, Woodfield, Saunders, & Smith, 2000; McDevitt & Carey, 1977). It is a concept very similar to personality, but it is best described as a factor which contributes to personality development (Hagekull & Bohlin, 1998; McCrae et al., 2000; McDevitt & Carey, 1977; Rothbart, 2007). Researchers who have examined temperament in preschoolers have found that temperament along with preschoolers' interactions with their environment are good indicators of personality differences in later years (Deal et al., 2005; Digman & Shmelyov, 1996; Hagekull & Bohlin, 1998; McCrae et al., 2000; McDevitt & Carey, 1977; Rothbart, 2007).

Digman and Shmelyov (1996) analyzed temperament scales and identified temperament dimensions which were very similar to four of the five factors of personality. They had teachers rate their students on 60 different characteristics. The researchers identified 21 temperament scales and 4 stable components. The four stable components were Sociability, Anger, Impulsivity, and Fear. Factor loadings for these four temperament dimensions were found to be similar to Extraversion, Agreeableness, Conscientiousness, and Neuroticism personality dimensions, respectively. These findings suggest that certain components of adult personality can be observed in the temperament of young children. It provides additional support for the stability of some personality factors over time.

Hagekull and Bohlin (1998) explored the similarities between temperament and personality. They gave questionnaires to parents and conducted observations to assess

temperament and environmental factors in preschoolers. The temperament factors

measured were emotionality, activity, sociability, shyness, and impulsivity. The

environmental factors measured were maternal sensitivity, maternal locus of control,

maternal stress, external care, and negative life events. When the preschoolers reached

middle childhood, the researchers had parents and teachers complete personality

questionnaires. They also had parents report on the children's life events. The

researchers found that temperament in preschoolers was related to personality in middle

childhood. Emotionality in preschoolers was positively related to Neuroticism in school

aged children. Activity level in preschoolers was positively related to Extraversion and

Openness to Experience in school aged children, but negatively related to Agreeableness

in school aged children. Sociability in preschoolers was positively related to

Extraversion and Openness to Experience in middle childhood. Shyness in preschoolers

was positively related to Agreeableness and Conscientiousness in school aged children,

but negatively related to Extraversion and Openness to Experience in school aged

children. High levels of impulsivity in preschoolers were positively related to

Neuroticism and inversely related to Agreeableness in middle childhood. The researchers

also found that environmental factors in preschoolers were related to personality in

middle childhood. Maternal sensitivity was positively related to Agreeableness and

Conscientiousness in middle childhood. Maternal locus of control was positively related

with Agreeableness and Openness to Experience in school aged children. Maternal stress

was positively related to Neuroticism in middle childhood. External day care in

preschoolers was positively related to Extraversion and negatively related to Neuroticism

in school aged children. Preschoolers who experienced more negative life events were

higher in Neuroticism. These results suggest that temperament and environmental factors in young children are predictive of personality in later years. It appears some personality traits are more innate and remain stable over time. Then, there are other personality traits which are more heavily influenced by environmental factors and change over time.

Rothbart (2007) described the structure of temperament, its relationship with the big five traits of personality, and its links to development. She reported that the emergence of temperament in humans is similar to the structure of temperament in other animals. Temperament characteristics can be seen as early as infancy and develop over time as individuals gain new experiences. The three broad dimensions of temperament that emerged in research using the Children's Behavior Questionnaire were effortful control, negative affectivity, and extraversion/surgency. The effortful control temperament dimension is related to the Conscientiousness personality dimension (Evans & Rothbart, 2007). The negative affectivity temperament dimension is related to the Neuroticism personality dimension. Extraversion/surgency temperament dimension is related to the Extraversion personality dimension. Temperament in early childhood is related to the big five personality dimensions. Temperament develops into the personality dimensions over time as individuals gain new experiences through their interactions with the environments.

Individual differences in child behaviors are also related to personality (Abe, 2005; Markey, Markey, & Tinsley, 2004). Abe (2005) explored the relationship between personality in preschoolers, behavior in preschoolers, and psychological functioning in adolescence. Mothers rated their children on the five factors of personality when the children were averaged 3.5 years. At 5 years old, the children's behaviors were observed

in a laboratory setting. Approximately 7 years later, mothers completed behavior rating scales and their children completed self-ratings of their psychological functioning. Abe (2005) found that parent ratings of their preschoolers on the five fundamental dimensions of personality were correlated with behavior and psychological functioning in later years. Children who were rated high in Agreeableness and Conscientiousness as preschoolers were more likely to exhibit pro-social behaviors and high internal locus of control. Children who were rated high in Conscientiousness as preschoolers were more likely to have high academic performance during adolescence. Children who were rated high in Neuroticism as preschoolers were more likely to seek proximity to their mothers at 5 years old and demonstrate anxiety and psychosomatic problems in adolescence. Children who were rated high in Extraversion as preschoolers were reported as having difficulty inhibiting behaviors at 5 years old and adolescence. Children who were rated high in Conscientiousness as preschoolers were more likely to report positive self-perceptions. Parents who rated their preschoolers high on Extraversion had children who engaged in more verbal interactions with them and children who had more difficulty inhibiting behaviors. The researchers also found parent reports of high Openness to Experience were positively correlated with sophisticated play behavior at 5 years and self-confidence in adolescence. These findings further suggest that individual differences in personality can be seen as early as the preschool years. Also, behaviors of preschool children are good predictors of future personality and individual differences.

Other researchers have found that parental reports of child personality are significantly correlated with a variety of different behaviors (Markey, Markey, & Tinsley, 2004; Zupancic & Kavcic, 2003). Markey, Markey, and Tinsley (2004) investigated the

relationship between personality and behavior in children. Mothers rated their children's

personality using the NEO-Five Factor Personality Inventory (NEO-FFI) and researchers

observed the children's behavior during parent-child interactions. They found mothers'

reports of their children's personalities were correlated with 64 different behaviors

including acts irritated, talkative, seeks reassurance from parents, smiles frequently, and

offers advice. Children who were rated high on Neuroticism were self-critical, expressed

guilt, manifested self-pity, were insecure, and showed sign of physical tension. Children

who were rated high on Extraversion were dominant and controlling, offered advice,

interviewed their parents, and talked about themselves. Children who were rated high on

Openness to Experience behaved in stereotypical masculine and feminine manners while

seeking reassurance from parents. They also were unlikely to show a variety of interests.

Children who were rated high in Agreeableness sought agreement from their parents,

engaged in eye contact and physical contact, and seemed to like their parents. Children

who were rated high in Conscientiousness were warm and sympathetic toward their

parents, exhibited social skills, were intelligent, and were ambitious. These findings

indicate there is a relationship between personality and behavior in young children.

Children who displayed certain personality characteristics were found to engage in

certain behaviors. Therefore, behavioral observations provide valuable information about

differences in personality.

        Zupancic and Kavcic (2003) examined the relationship between personality

dimensions and social behavior in preschoolers. Preschool teachers rated their students'

personality and social behavior. The personality dimensions examined were Emotional

Stability, Extraversion, Agreeableness, and a combined Conscientiousness-

Intellect/Openness. The behavioral scales included Depressive-Joyful, Anxious-Secure, Angry-Tolerant, Isolated-Integrated, Aggressive-Calm, Egotistical-Prosocial, Oppositional-Cooperative, and Dependent-Autonomous. They found teachers' ratings of Emotional Stability, Extraversion, Agreeableness, and Conscientiousness-Intellect/Openness in preschool children were positively related to social competence, absence of internalizing problems, and adaptation to the preschool setting. Teachers' ratings of Extraversion in preschoolers were positively related to externalizing problems. Personality in young preschoolers accounted for 57% to 75% of the variance in social behavior. These findings also suggest that personality is related to preschoolers' social behavior.

DeFruyt and Mervielde (1997) found that interests are also associated with personality. In personality research, interests are viewed as motivators for individuals' interactions with certain aspects of their environment (Krapp, Hidi, & Renninger, 1992; Silvia, 2001). Thus, the study of interests helps further explain individual differences in how one interacts with their environment. Silvia (2008) described interest as a curious emotion. He indicated that curiosity is a factor which contributes to the development of interests (Silvia, 2001; Silvia, 2008). However, he noted that individuals also consider the comprehensiveness of new and unexpected events before interest is developed. If individuals view events as novel and understandable, then they will find it interesting. If individuals view events as novel and too difficult to understand, then individuals are less likely to become interested in the event.

The research on interests in adults indicates that the five factors of personality are related to Holland's six types of vocational interests: Realistic, Investigative, Artistic,

Social, Enterprising, and Conventional (DeFruyt & Mervielde, 1997). Neuroticism is negatively correlated with the Enterprising and Conventional scales; Extraversion is positively correlated with the Social and Enterprising scales; Openness to Experience is positively correlated with the Artistic and Social scales and negatively correlated with the Conventional scale; Agreeableness is positively correlated with the Social scale and negatively correlated with the Enterprising scale; and Conscientiousness is positively correlated with the Enterprising and Conventional scales (Ackerman & Heggestad, 1997; Barrick, Mount, & Gupta, 2003; DeFruyt & Mervielde, 1997; Sullivan & Hansen, 2004). These findings indicate there is some overlap between personality and interests in adults. Similarly, one might expect the interests of children to be related to personality differences.

Olson and Weber (2004) explored the relationship between the big five traits and motives in adults. Traits were described as how a person behaves. Motives were described as a person's wishes and desires, which research suggests are based upon individual interests (Krapp, Hidi, & Renninger, 1992; Olson & Weber, 2004; Silvia, 2001). It was argued that both concepts reflect different components of personality. Thus, they expected there to be a relationship between the two concepts. They measured traits using the NEO-PI-R and motives using the Reiss Profile of Fundamental Goals and Motivation Sensitivities (Olson & Weber, 2004). The 16 motives examined were social contact, curiosity, honor, power, saving, order, idealism, independence, status, vengeance, eating, romance, family, activity, acceptance, and tranquility. They found that 15 of the 16 motives were significantly correlated with one of the big five traits. Saving, order, status, vengeance, eating, acceptance, and tranquility motives were

positively correlated with Neuroticism. Social contact, power, and status motives were positively correlated with Extraversion. The curiosity motive was positively correlated with Openness to Experience. Idealism and family motives were positively correlated with Agreeableness. Independence, status, vengeance, and romance motives were negatively correlated with Agreeableness. Honor, order, idealism, and vengeance motives were positively correlated with Conscientiousness. These findings indicate there is a significant relationship between motives and personality. Since research suggests that interests are the motives for behavior, then these findings provide further support for the relationship between interests and personality in adults.

Researchers have not directly explored the relationship between interests and personality in young children. However, they have explored children's interests. Tracey and Ward (1998) described the structure of children's interests. They found that interests in young children are more concrete than those found in older children, adolescents, and young adults (Tracey, 2001; Tracey & Ward, 1998). The interests of young children can be described using sex-typing and locus of activity. Sex-typing was referred to as stereotypical boys' activities versus stereotypical girls' activities. Locus of activity was defined as in-school activities versus out of school activities. The descriptions of interests were more abstract in older children, adolescents, and young adults. College students described their interests using Prediger's (1982) People/Things and Data/Ideas dimensions. Their descriptions of interests were also better fit to the RIASEC interest types. Based on these findings, it appears that examinations of type and location of activities are better indicators of interests in young children. The research indicates there is a relationship between interests and personality in adults. One might expect to find a

similar relationship between interests and personality in young children since interests are motives for behavior. These findings indicate that the examination of young children's concrete interests may provide valuable information about personality in young children.

In Abe's (2005) study, she examined personality in preschoolers. One of the measures used to assess personality was laboratory observations of children at play. The children were observed during a free play activity, prosocial activity, and a toy pick-up activity. The examiners measured verbal interaction with mother, proximity seeking towards mother, and mean level of play. Mean level of play was comprised of children's exploratory behavior, curiosity, and imagination during play activities. Openness to Experience was the only personality trait related to mean level of play at age 5 years. Children who scored high on the Openness to Experience dimension were very curious, creative, and imaginative. They engaged in sophisticated play and did not seek close proximity to their mothers during play sessions. As Silvia (2001) noted, interest is a motivator for how individuals interact with their environments. Thus, the children's interactions in the laboratory play setting were probably influenced by their interests.

The research on personality in preschoolers has involved the examination of temperament, behavior, and interests. Several researchers have found there is a significant relationship between personality and each of these factors. These studies have also indicated that temperament, behavior, and interests are good early indicators of personality in later years. Children who exhibit certain temperaments, behaviors, and interests may demonstrate certain personality characteristics in later years.

For the present study, the personality dimensions of interest were Extraversion and Openness to Experience. The studies described above indicate both factors are

present in young children. Preschoolers who scored high on the Extraversion dimension were very active and sociable (Hagekull & Bohlin, 1998). They had difficulty inhibiting behaviors (Abe, 2005; Zupancic & Kavcic, 2003)). They were also dominant and controlling (Markey, et al., 2004). Extraversion was related to positive mood, reward seeking/sensitivity, and sociability (Olino, Klein, Durbin, Hayden, & Buckley, 2005). Extraversion was a strong predictor of social contact, power, and status motives (Olson & Weber, 2004). Extraversion was also associated with externalizing behaviors in preschoolers (Abe, 2005; Zupancic & Kavcic, 2003). Preschoolers who score high on Extraversion were also found to be more impulsive and display more aggressive behaviors than their peers (Abe, 2005; Zupancic & Kavcic, 2003).

Openness to Experience was the second personality dimension of interest in the present study. Preschoolers who scored high on the Openness to Experience dimension were more active and sociable (Hagekull & Bohlin, 1998). They engaged in more sophisticated play at age 5 years and were more self-confident in adolescence (Abe, 2005). They behaved in stereotypical masculine and feminine manners (Markey, et al., 2004). Openness to Experience was a strong predictor of curiosity (Olson & Weber, 2004). Preschoolers who scored high on Openness to Experience were not reported as displaying internalizing and externalizing behaviors (Zupancic & Kavcic, 2003).

Extraversion and Openness to Experience are personality characteristics present in young children. They help explain individual differences in how individuals interact with their environments. The purpose of the present study was to explore the relationship between these personality dimensions and curiosity in young children.

Curiosity

Curiosity is the desire to acquire new knowledge and experiences (Arasteh, 1968; Keller, Schneider, & Henderson, 1994; Litman & Silvia, 2006; Reio, Petrosko, Wiswell, & Thongsukmag, 2006). It has also been described as a motivation for exploratory behavior (Litman, 2005; Litman & Silvia, 2006; Reio, et al., 2006). Researchers have conducted several factor analyses to gain a better understanding of curiosity. They have used curiosity inventories, curiosity rating scales, and behavioral observations to explore curiosity in adults and children. A major focus of their research has been on defining curiosity, identifying the cause of curiosity, and assessing various dimensions of curiosity.

History and Theory

In Loewenstein's (1994) review of the literature, he described the history of curiosity and the emergence of curiosity theories. The history of curiosity research can be traced back to the late eighteenth century. Philosophers and religious thinkers were some of the first to engage in discussions about curiosity and attempt to define curiosity. In the early years, curiosity was viewed as an intrinsically motivated desire for knowledge or information. Later, it was described as a passion for learning. Other early philosophers and psychologists defined it as a thirst or appetite for knowledge. These early definitions of curiosity were generally consistent and indicated curiosity was an intrinsically motivated desire for knowledge or information.

In the early twentieth century, psychologists began to expand upon the existing views of curiosity. According to Loewenstein (1994), James (1890/1950) suggested there were two types of curiosity. The first type was described as a desire for novelty, or

uniqueness, in the environment. The second type was described as a desire for specific types of information. This differentiation of curiosity was later integrated into subsequent definitions of curiosity. James (1890/1950) agreed with earlier thoughts that curiosity was an intrinsically motivated desire; however, he believed that desire could be for things other than information.

In the 1920s, behavioral psychologists examined curiosity using a different framework (Loewenstein, 1994). They referred to curiosity as an exploratory behavior and focused on extrinsically motivated interest. In the 1950s, Berlyne began his study of curiosity and proposed that curiosity is an internal drive motivated by external stimuli, such as novel, complex, or surprising things and occurrences in the environment. He examined curiosity on two dimensions and explored different types of curiosity. The first dimension extended from perceptual to epistemic curiosity. Perceptual curiosity was defined as a drive aroused by novel stimuli and reduced by continual exposure to the stimuli. Epistemic curiosity was referred to a desire for knowledge about people. The second dimension extended from specific to diversive curiosity. Specific curiosity addressed the desire for a particular type of information. Diversive curiosity was referred to as general seeking of stimulation. Berlyne's work involved providing a comprehensive definition of curiosity that reflected his viewpoints.

During the 1960s, researchers expanded upon the early work of behavioral psychologists and further examined the psychological foundations of curiosity (Loewenstein, 1994). The focus of their research was on the underlying cause of curiosity, why do people seek out curious situations, and how situations influence curiosity. Researchers who explored the underlying cause of curiosity continued to

debate whether curiosity was a primary or secondary drive or motive. The assumption of curiosity drive theories is that a curiosity drive exists and the curious desire is reduced through exploratory behavior. People seek out novel situations to fulfill their curious desires and their curious desires decrease as they explore and learn more about the novel situation.

Loewenstein (1994) found in his review of literature that Fowler disagreed with Berlyne's theory of curiosity. He did not believe the curiosity drive could be motivated and satisfied by the same stimuli. Therefore, he proposed curiosity is a drive stimulated by boredom. In his experiments, he found that animals displayed an interest and exploration response before being exposed to novel or complex stimuli. Contrary to Berlyne's views, the animals were not motivated by external stimuli prior to engagement in exploratory behavior. Hunt proposed a different theory of motivation (Loewenstein, 1994). He suggested that curiosity was motivated by violated expectations. Individuals show interest and explore contradictions that occur in their environments.

According to Loewenstein (1994), Kagan expanded upon Hunt's work. In his research on motivation, he argued there are four basic human motives, one of which is the motive to resolve uncertainty. He felt this motive was similar to curiosity. He agreed curiosity was motivated by violated expectations in behaviors; however, he also believed curiosity could be motivated by incongruity between ideas and incongruity between ideas and behavior.

In the 1970s and 1980s, researchers further examined various dimensions of curiosity (Loewenstein, 1994). They investigated his specific-diversive curiosity dimension. In 1971, Day developed the Ontario Test of Intrinsic Motivation (OTIM),

which measured various areas of interests and included specific and diverse curiosity subscales. Factor analyses of these scales confirmed the validity of these curiosity subscales. However, Day was not convinced the diversive curiosity subscale truly measured curiosity. He believed it was more related to sensation seeking provoked by boredom. In 1984, Olson and Camp conducted further factor analyses of the OTIM and other scales. They found the specific curiosity subscale loaded on a general curiosity factor and the diversive curiosity subscale loaded on a sensation-seeking factor. These findings supported Day's thoughts about diversive curiosity.

Leherissey-McCombs (1971) and Naylor (1981; as cited in Loewenstein, 1994) explored another dimension of curiosity, which is referred to as the state to trait curiosity dimension. State curiosity refers to curiosity in a particular situation. Trait curiosity describes the general capacity to experience curiosity. Leherissey-McCombs (1971) and Naylor (1981; as cited in Loewenstein, 1994) developed curiosity scales which assessed these dimensions. Leherissey-McCombs (1971) developed the State Epistemic Curiosity Scale (SCS), which measured a desire for specific type of knowledge. She found the SCS was a valid measure of state curiosity (Leherissey-McCombs, 1971). Naylor (1981; as cited in Loewenstein, 1994) developed the Melbourne Curiosity Inventory (MCI), which included state and trait curiosity subscales. He found state and trait curiosity were two distinctive forms of curiosity. In 1989, Boyle conducted further factor analyses of this scale and also found state and trait curiosity were two separate factors (Loewenstein, 1994). Other researchers have attempted to measure trait curiosity using teacher, peer, and self-ratings; however, the results have been inconsistent.

Litman and Spielberger (2003) also constructed a questionnaire to measure epistemic curiosity along with perceptual curiosity. Seven hundred and thirty nine college students responded to selected subscales from the State-Trait Personality Inventory, Sensation Seeking Scale, and Novelty Experiencing Scale. The results of factor analyses indicated epistemic curiosity and perceptual curiosity are both measures of curiosity that can be differentiated. They also found epistemic curiosity could be further divided into diversive and specific curiosity subscales. Epistemic diversive curiosity was described as a desire for knowledge about a broad range of new information. Epistemic specific curiosity was described as a desire for knowledge about a specific topic. These findings provided additional support for the epistemic/perceptual curiosity dimension and its subscales.

Kashdan, Rose, and Fincham (2004) expanded upon the research on curiosity and exploration. They defined curiosity as, "a positive emotional-motivational system associated with the recognition, pursuit, and self-regulation of novel and challenging opportunities" (Kashdan, Rose, & Fincham, 2004, p. 291). They developed the Curiosity and Exploration Inventory (CEI), which included exploration and absorption dimensions of curiosity. The exploration dimension is similar to Berlyne's diversive curiosity dimension and described as intrinsic motivation to explore novelty and challenge. The absorption dimension is similar to Berlyne's specific curiosity dimension and described as full engagement in specific activities of interest. Analyses revealed the CEI has good psychometric properties and supports their views of curiosity.

Litman and Jimerson (2004) also identified different types of curiosity. They introduced the interest/deprivation theory of curiosity. They proposed that people seek

out information because of feelings of interest or feelings of deprivation. People who seek out information because of feelings of interest feel it will be enjoyable to discover something new. People who seek out information because of feelings of deprivation are individuals who lack information and seek out information to enhance their competence or improve their understanding of something. Litman and Silvia (2006) evaluated this theory by running factor analyses of multiple curiosity scales. They found the Curiosity/Interest in the World scale, Curiosity and Exploration Inventory, Perceptual Curiosity scale, and Epistemic Curiosity scale loaded on the Interest curiosity factor. The Curiosity as a Feeling of Deprivation scale loaded on a Deprivation curiosity factor. These findings indicated that Interest and Deprivation curiosity are related but different curiosity dimensions. They also provided support for the interest/deprivation theory of curiosity.

Litman, Hutchins, and Russon (2005) examined epistemic curiosity, feeling of knowing, and exploratory behavior in adults. Two hundred and sixty five university students read 12 general knowledge questions and indicated whether they knew the answer, the answer was on the tip of their tongue, or the answer was unknown. After responding to each general knowledge question, the participants rated their degree of confidence in their answers. The participants also completed Epistemic Curiosity and Curiosity as a Feeling of Deprivation rating scales and were exposed to exploratory behavior materials. The researchers found the participants who reported knowing the answers exhibited the least curiosity and exploration. The participants who reported the answers were on the tip of their tongues demonstrated the most curiosity and exploration.

The participants who reported not knowing the answer displayed less curiosity and exploration.

Reio, Petrosko, Wiswell, and Thongsukmag (2006) also used questionnaires and rating scales to measure and conceptualize curiosity. In their study, they had college students complete five paper and pencil curiosity questionnaires in one of their classes. The researchers analyzed their responses using confirmatory factor analysis and found a three factor model of curiosity. The three factors included in their curiosity model were cognitive curiosity, physical thrill seeking, and social thrill seeking. Cognitive curiosity was described as information seeking curiosity. Physical thrill seeking involves seeking sensations and experiences that involve physical risks and willingly taking those risks. Social thrill seeking involves seeking sensations and experiences that involve taking social or interpersonal risks and willingly taking those risks. These findings further suggest there are several different curiosity types.

Silvia (2008) explored interest and curiosity. He described interest as a curious emotion that motivates people to learn. He indicated there are two factors, which help determine whether something will be of interest to a person. The first factor is novelty and complexity. Interest can be caused by new, complex, and unexpected situations. The second factor is comprehensibility. This involves a person feeling that he/she is capable of understanding or dealing with a situation. These viewpoints are consistent with prior curiosity research that indicates individuals are curious about new, unexpected, and complex situations that they feel they can understand.

Over the years, researchers have explored different aspects of curiosity. They have engaged in discussions, administered rating scales, and conducted behavioral

observations to gain a better understanding of curiosity. They have found curiosity appears to be a multi-dimensional factor, which varies based on individual differences and interests.

Curiosity in Preschoolers

People begin to show signs of curiosity during the early years of life. Piaget believed curiosity was linked to a child's need to make sense of the world (Loewenstein, 1994). Infants manipulate objects and explore their environments to learn more about the world around them (Powers, 2000). They engage in behaviors such as holding, carrying, touching, pressing, looking, twisting, tearing, rubbing, hitting, waving, and shaking to gain a better understanding of their environments (Powers, 2000).

During the preschool years, children continue to show interest in how the world around them works. They show interest in new toys, games, people, and concepts. This interest in novel ideas, objects, and people is known as curiosity. Researchers have used assessment measures that consider several curiosity theories. They have found preschoolers are drawn to novel and unfamiliar events, which motivate them to explore and ask questions (Miller, 2006). Hence, we know preschoolers are curious. However, it is still unclear how children differ in terms of curiosity.

The question remains whether there is an overall "g" of curiosity, general curiosity factor, or separate kinds of curiosity. In 1966, Berlyne predicted there was a general curiosity factor. Theorists supporting this viewpoint argue that individuals either score high or low on different types of curiosity measures. If there is a "g" of curiosity, then individuals should perform similarly on different curiosity dimensions. Individuals should not display isolated curious interests.   Henderson and Moore (1980) found

children display different levels of curiosity. They found some children consistently demonstrate high levels of curiosity on different measures of curiosity while other children consistently demonstrate low levels of curiosity on different measures of curiosity (Henderson & Moore, 1980).

However, if there is not a "g" of curiosity, then individuals should perform differently on different curiosity dimensions. Individuals may perform high on some curiosity dimensions and perform low on other curiosity dimensions. This view captures the ideas presented by psychologists who have defined and studied various dimensions of curiosity. Jennings (1975/1977) also found there are different kinds of curiosity with some children showing more interest in things and objects, while other children show more interest in people and social interactions. The research is unclear on how these differences in curiosity go together. Therefore, a goal of this study was to determine if individual differences in curiosity could be best explained by level of curiosity, type of curiosity, or both.

Object Curiosity

Curiosity about things, or object curiosity, is often what we think about when individuals refer to curiosity. It is the desire to know and explore how things work and function as well as the desire to acquire new information about things (Arasteh, 1968; Callanan & Oakes, 1992; Maw & Maw, 1966; Renner, 2006). Researchers have measured this concept in children by administering parent and teacher rating scales and observing children at play and examining what toys they choose during free play and how they interact with novel toys (Henderson & Moore, 1980; Inagaki, 1978; Jennings, 1975; Switzky, Haywood, & Isett, 1974).

Switzky, Haywood, and Isett (1974) examined exploration, curiosity, and play in young children. They presented three-dimensional random polygon objects with between four and forty turns to eight two-year-olds and 32 four to seven-year olds. The researchers observed the amount of time the children spent in various exploratory and play activities. Exploratory behaviors included touch alone, holding, holding and mouthing, slow exploration, fast exploration, and looking alone. Play behaviors were defined as sensorimotor play, or play that involves manipulation of the object, and symbolic play, or play in which the object represents something else. They found older children spent more time investigating objects than younger children. Older children also spent more time exploring more complex polygon objects than simple polygon objects.

Henderson and Moore (1980) examined children's level of curiosity and their responses to objects differing in novelty. They used a battery of four tasks to assess level of curiosity in children. The children were asked to state a preference for two-dimensional figures in 20 sets of four designs containing various numbers of components, make a choice of playing with a hidden or visible toy, explore a curiosity box with 18 novel toys in separate drawers, and explore a highly novel puzzle box. The researchers determined level of curiosity by assessing preference for complexity with figures, preference for unknown toy, number of questions asked while playing with the curiosity box and puzzle box, number of different manipulations with curiosity box and puzzle box, median time spent with curiosity box toys, and total time exploring the curiosity box and puzzle box. They found highly curious children consistently made more different manipulations, spent more time with the toys, and asked more questions than low curiosity children.

Kauser (1986) explored the development of curiosity in children. She indicated that curiosity in children is expressed in different forms. Children express curiosity by asking questions, manipulating toys and objects in the environment, and investigating the environments around them. Based on these views of curiosity in children, she adapted the three tests of curiosity identified by Medinnus and Love (1963; as cited by Kauser, 1986) to measure curiosity in children. Curiosity Test-I assessed manual exploration, visual exploration, and spontaneous comments relating to curiosity about toys. Curiosity Test-II measured response to familiar and novel toys. Curiosity Test-III assessed choice to explore or not explore in given situations. These measures evaluated the different expressions of curiosity observed in children.

Mohanty and Mishra (1991) explored epistemic curiosity in preschool children. They used the curiosity scale of Dash and Jena (1989, as cited by Mohanty & Mishra, 1991) to assess curiosity. An experimenter entered a room with papers that had pictures on them. One of the papers was placed face down in front of the child. The child was told not to turn over the paper until told to do so and they would later receive a test related to the paper. Then, the researcher pretended to look for something and told the child she forgot something needed for test administration. The experimenter left the room for five minutes and returned with plain paper. She told the child she had given the wrong paper and took away the paper with pictures. Then, she gave the child a piece of plain paper and told the child she must have seen the pictures. She asked the child to tell her the names of pictures remembered within a two minutes time limit. This procedure provided children the opportunity to express their curiosity, or desire for knowledge, about the pictures on the paper.

In a review of the literature on object play, Powers (2000) found that children who engaged in a unique exploration of objects during play were later described as curious. These children investigated the function of the object and then figured out additional ways they could play with the object (Powers, 2000). Other researchers have found that children who have high scores on object curiosity acquire more information through exploration (Henderson & Moore, 1980; Inagaki, 1978). They spend more time playing with objects and they were better able to organize and classify physical objects (Jennings, 1975). Children who are low in object curiosity do not explore or show interest in physical objects or acquire new information about things. These children are likely to investigate novel objects but only make limited attempts to figure out how the object works or what creative things they can do with the object (Powers, 2000).

Social Curiosity

Curiosity about people, or social curiosity, is the desire to acquire new information about how people think, behave, and feel (Renner, 2006). Renner (2006) developed a questionnaire to assess social curiosity in adults. Three hundred and twelve participants completed a questionnaire, which included 12 different scales. They provided information about their curiosity, exploration, anxiety, social interactions, and personality. The researchers found there were two social curiosity factors: General Social Curiosity and Covert Social Curiosity. General Social Curiosity was defined as interest in other people's habits, feelings, and thinking. Covert Social Curiosity was identified as a sneaky interest in others such as eavesdropping and gossip. This study conceptualized social curiosity and provided evidence that there are individuals who are interested in the social world.

Individuals who are high in social curiosity desire to know more about other people. For example, a preschooler who meets a new person and begins to ask questions related to people such as, "What's your name?", "Do you have any pets?", and "Where do you live?" would be considered high in social curiosity. Individuals high in social curiosity also seek out social interactions. Jennings (1975) found that children who had high levels of social orientation spent more time in play with people. They preferred to play with their peers rather than objects and they spent more time engaging in social interactions (Jennings, 1975).

On the other hand, a child who shows less interest in the lives, thoughts, and feelings of other people are considered low in social curiosity. These children are not as interested in people and are sometimes described as behaviorally inhibited. They respond to unfamiliar situations by showing anxiety, distress, or disorganization (Rubin, Hastings, Stewart, Henderson, & Chen, 1997). Also, they are described by their parents as shy and they are more withdrawn from peers and adults in laboratory and school settings (Reznick, Kagan, Snidman, Gersten, Baak, & Rosenberg, 1986).

Statement of Problem

The research on interests suggests that personality and curiosity are both factors which describe individual differences in young children (Abe, 2005; Digman & Shmelyov, 1996; Jennings, 1975; Markey, Markey, & Tinsley, 2004; McCrae et al., 2000; Power, 2000; Renner, 2006). We know preschoolers often express their interests during play activities and their interests often influence what and whom they choose to play with (Leibham, Alexander, Johnson, Neitzel, & Reis-Henrie, 2005). However, we do not know how these interests are related to personality. Therefore, in this study we

wanted to explore what children were interested in and how this is related to individual differences in personality. More specifically, we wanted to focus on curiosity in preschool children and examine how it is related to the Extraversion and Openness to Experience dimensions of personality. There are several ways in which Extraversion, Openness to Experience, Object Curiosity, and Social Curiosity could be related.

If there is a "g" of curiosity, or overall general curiosity factor, then there should not be a difference between Object Curiosity and Social Curiosity. Instead Object Curiosity and Social Curiosity should be highly correlated with each other and children should be either high or low on curiosity. In a study where they compared the type of questions children asked their mothers, the researchers found that children either asked a lot of questions about both physical and social domains or they asked very few questions at all (Callanan & Oakes, 1992). Therefore, we would expect to find that highly curious children will score high on both the Extraversion and Openness to Experience dimensions of personality. There would be a positive correlation between Object Curiosity and Extraversion, Object Curiosity and Openness to Experience, Social Curiosity and Extraversion, and Social Curiosity and Openness to Experience.

However, if there is not a "g" of curiosity then there should be a low correlation between object curiosity and social curiosity. The two types of curiosity should reflect separate interests and their relationships with the personality dimensions should be more complex. Individual differences in object curiosity should be related to Openness to Experience but not Extraversion. One thing the Openness to Experience personality dimension measures is curiosity (Abe, 2005; McCrae & Costa, 1987). Therefore, we would expect children who are curious about objects to score high on this dimension.

Extraversion, on the other hand, does not measure curiosity or interest in novel things. Hence, we would not expect children who are curious about objects to score high on this dimension. There should be a positive correlation between Object Curiosity and Openness to Experience, but there should not be a correlation between Object Curiosity and Extraversion.

Individual differences in Social Curiosity should be related to both Openness to Experience and Extraversion. As mentioned earlier, one of the things the Openness to Experience personality dimension measures is curiosity (Abe, 2005; McCrae & Costa, 1987). Therefore, we would also expect children who are curious about people to score high on this dimension. Extraversion, on the other hand, measures sociability, enthusiasm, and pleasurable arousal (Abe, 2005; Hagekull & Bohlin, 1998; McCrae & Costa, 1987). It is related to social interests and children who score high on this dimension are interested in social interactions (Sullivan & Hansen, 2004). Therefore, we expect children who are curious about people and the social world to also score high on the Extraversion dimension. Social curiosity should be positively correlated with Extraversion and Openness to Experience.

I expected to find two types of curiosity, which reflect separate interests and have complex relationships with the personality dimensions. Four hypotheses were tested. First, it was hypothesized that preschoolers who demonstrated higher levels of Object Curiosity would not have higher Extraversion scores than those who demonstrated lower levels of Object Curiosity. Second, it was hypothesized that preschoolers who demonstrated higher levels of Object Curiosity would have higher Openness to Experience scores than those who demonstrated lower levels of Object Curiosity. Third,

it was hypothesized that preschoolers who demonstrated higher levels of Social Curiosity would have higher Extraversion scores than those who demonstrated lower levels of Social Curiosity. Fourth, it was hypothesized that preschoolers who demonstrated higher levels of Social Curiosity would have higher Openness to Experience scores than those who demonstrated lower levels of Social Curiosity.

A secondary goal of this study was the validation of the preschool measure of personality. We wanted to determine if the M5-PS questionnaire truly reflects the construct of personality in preschoolers. Construct validation is a research process where one collects observable evidence that a test measures a theoretical construct (Arvey, 1992). In this study, we were collecting evidence that the M5-PS questionnaire measures the construct of personality in preschoolers. Historically, personality has been measured in two ways. Researchers have administered self and observer rating scales and conducted behavioral observations of individuals. Both methods provide valuable information about personality differences; however, they are not always consistent due to the different perspectives of raters and differences in the behaviors displayed in different environments. Therefore, we chose to use both methods in our data collection process to obtain information about personality in preschoolers.

The research suggests that personality and curious interests are related factors. One of the descriptions of individuals who score high on the Openness to Experience personality dimension is curious. Hence, Object Curiosity and Social Curiosity should be correlated with the M5-PS Openness to Experience dimension. Since Social Curiosity reflects interest in the social world, then it should be related to the Extraversion dimension. Therefore, we chose to observe the behavior of preschool children during

play and compare their behavior to parent and teacher reports of preschoolers'

personality. More specifically, we wanted to examine the exploratory behaviors and

social interactions of preschoolers during play and compare them to parent and teacher

ratings of Extraversion and Openness to Experience. Quartier and Rossier (2008) found

that parent ratings of their children's personality were significantly correlated with

children's self-ratings of their personality. We expected to provide supporting evidence

that the M5-PS is a valid instrument which measures personality in preschoolers.

METHOD

Participants

The participants in this study were 68 children enrolled at one of three preschools in the southwestern region of North Carolina. Parental consent was obtained for each child to participate (see Appendix A). The children ranged in age from 42 to 66 months.

Measures

Five Factor Model for Preschoolers (M5-PS Questionnaire). The M5-PS Questionnaire was first developed by Grist and McCord (2006) and is available from the first author upon request (clgrist@wcu.edu). This instrument has been shown to have good internal reliability as well as convergent and discriminant validity (Grist & McCord, in press). It is a shortened version of the Revised NEO Personality Inventory used with adults (see Appendix B). It contains 90 items which assess personality in preschool children. There are 18 items which correspond with each of the five personality dimensions: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Parents were asked to complete the entire personality inventory on their children. Teachers were asked to complete the 36 items from the inventory which correspond with the Extraversion and Openness to Experience dimensions of personality on their students. The Extraversion items were the following: takes charge, makes friends easily, is always busy, radiates joy, is always on the go, has a lot of fun, tries to lead others, likes to take his/her time, seeks adventure, does not like crowded events, loves action, feels comfortable around other people, acts comfortably with others, enjoys being part of a group, tries to influence others, involves others in what he/she is doing,

laughs aloud, and amuses his/her friends. The Openness to Experience items were the following: is demanding, respects others, sympathizes with others' feelings, likes to begin new things, experiences very few emotional highs and lows, is interested in many things, has a rich vocabulary, is a creature of habit, does not like the idea of change, is not easily affected by his/her emotions, loves to daydream, dislikes changes, likes to solve complex problems, prefers to stick with things he/she knows, experiences emotions intensely, likes music, seldom gets emotional, and has a vivid imagination. They indicated whether each item was inaccurate, moderately inaccurate, neither, moderately accurate, or accurate for the child.

Puzzle Box. The Puzzle Box was originally developed by Banta (1970) and later modified by Henderson and Moore (1979) to assess exploratory behavior in children. Interobserver reliabilities have been consistently high (.80-.99) in previous studies (e.g., Henderson, 1984). It is a painted wooden box with 20 features that can be manipulated. The children were given 10 minutes to play with the Puzzle Box while an experimenter recorded verbal and nonverbal behavior. The experimenter recorded amount of time spent playing with the box, the number of different items played with on the box, and the questions and comments made by the child during the session.

Curiosity Drawer Box. The Curiosity Drawer Box was developed by Henderson and Moore (1979) to assess object exploration in children. Interobserver reliabilities have been consistently high (.80-.99) in previous studies (e.g., Henderson, 1984). It contains 18 drawers which each have a small toy inside. The children were allowed a maximum of 20 minutes to play with the Curiosity Drawer Box while an experimenter recorded verbal and nonverbal behavior. The experimenter recorded amount of time

spent playing with the different items in the drawers and the questions and comments made by the child during the session.

  Stranger Situation. After the administration of all other tasks, each child was brought in for a separate session where their reaction to a stranger was recorded. The stranger was seated in the room when the child and experimenter entered and the stranger greeted the child by name as the child entered. The child was asked to complete a drawing task. At two predetermined points in the session, the stranger praised the child for doing a good job on the drawing task. During the session, the stranger recorded child behaviors, questions and comments made to the stranger, and physical approaches to stranger. The stranger also said "goodbye" to the child when the child completed the drawing task and was about to exit the room.

Table 2
Measures of Curiosity in Preschoolers

Curiosity Measures	Object Curiosity	Social Curiosity
Puzzle Box		
Number of Questions Asked about Objects	X	
Number of Social Questions Asked		X
Number of Comments Made about Objects	X	
Number of Social Comments Made		X
Amount of Time Spent Exploring	X	
Number of Different Types of Manipulations Made	X	
Curiosity Drawer Box		
Number of Questions Asked about Objects	X	
Number of Social Questions Asked		X
Number of Comment Made about Objects	X	
Number of Social Comments Made		X
Amount of Time Spent Exploring Curiosity Drawers	X	
Number of Different Objects Explored	X	
Stranger Situation		
Number of Questions Asked to Stranger		X
Number of Comments Made to Stranger		X
Number of Attempts to Approach Stranger		X

Procedure

The M5-PS was given to the parents and teachers of the children. Prior to data collection, the experimenters spent at least 10 hours in the children's classrooms becoming familiar with the children. The curiosity measures were administered to each child individually in a private classroom at the child's school. The child was given a maximum of 20 minutes to play with the Curiosity Drawer Box and 10 minutes to play with the Puzzle Box. The experimenter recorded the amount of time spent playing with the Curiosity Drawer Box and Puzzle Box, the number of different objects played with on the Curiosity Drawer Box and Puzzle Box, and the number of questions asked and comments made about the Curiosity Drawer Box and the Puzzle Box.

During a second session, the experimenter met with each child in a private room at the child's school. The experimenter took the child to a room where a stranger was waiting to greet the child by name upon entering the room. The child was instructed to sit and complete a drawing task. At two predetermined points in the session, the stranger praised the child for doing a good job on the drawing task. The stranger said "goodbye" to the child when the child completed the drawing task and was about to exit the room. Throughout the session, the stranger recorded child behaviors, questions and comments made to the stranger, and physical approaches to stranger.

RESULTS

Basic descriptive statistics for the personality factors and raw scores for the curiosity variables are presented in Table 3. The Object Curiosity variable was computed by generating z-scores for each measure of Object Curiosity and adding them together. The measures of Object Curiosity were the number of questions asked about objects on the puzzle box, number of comments made about objects on the puzzle box, amount time spent exploring the puzzle box, number of different types of manipulations made on the puzzle box, number of questions asked about objects in the curiosity drawers, number of comments made about objects in the curiosity drawers, amount of time spent exploring the curiosity drawers, and the number of different objects explored. The Social Curiosity variable was computed by generating z-scores for each measure of Social Curiosity and adding them together. The measures of Social Curiosity were the number of social questions asked about the puzzle box, number of social comments made about the puzzle box, number of social questions asked about curiosity drawer box, number of social comments made about the curiosity drawer box, and number of interactions with stranger.

Table 3

Means and Standard Deviations on Personality and Curiosity Measures

Measures	Mean	Standard Deviation
M5-PS Questionnaire		
Parent-Neuroticism	*46.91*	*11.81*
Parent-Openness to Experience	*66.33*	*5.27*
Parent-Agreeableness	*62.67*	*7.63*
Parent-Conscientiousness	*67.13*	*9.08*
Parent-Extraversion	*74.14*	*9.00*
Teacher-Openness to Experience	*60.44*	*6.76*
Teacher-Extraversion	*67.79*	*10.81*
Puzzle Box		
Total Manipulations	*41.86*	*28.25*
Total Different Manipulations	*12.27*	*5.39*
Total Time (Mins.)	*09:52*	*01:26*
Total Questions about Objects	*2.78*	*3.44*
Total Social Questions	*0.02*	*0.13*
Total Comments about Objects	*4.54*	*6.20*
Total Social Comments	*0.05*	*0.29*
Curiosity Drawer Box		
Total Manipulations	*61.71*	*13.71*
Total Time (Secs.)	*455.61*	*252.24*
Total Questions about Objects	*2.73*	*4.17*
Total Social Questions	*0.03*	*0.26*
Total Comments about Objects	*9.97*	*10.91*
Total Social Comments	*0.31*	*1.56*
Stranger Situation		
Total Stranger Interactions	7.33	3.80

The hypotheses in this study were that individual differences in personality, specifically the Extraversion and Openness to Experience factors, and individual differences in curiosity would be correlated. It was expected Object Curiosity and Extraversion in preschoolers would not be correlated. This hypothesis was supported. There was not a significant relationship between Object Curiosity and Extraversion in preschoolers, $r = .15$ (parent), $r = -.02$ (teacher), $p > .10$. It was expected Object Curiosity and Openness to Experience in preschoolers would be correlated. This

hypothesis was not supported. There was not a significant relationship between Object Curiosity and Openness to Experience in preschoolers, $r = .12$ (parent), $r = -.03$ (teacher), $p > .10$.

It was expected there would be a positive correlation between Social Curiosity and Extraversion in preschoolers. This hypothesis was not supported. There was not a significant relationship between Social Curiosity and Extraversion in preschoolers, $r = -.01$ (parent), $r = -.05$ (teacher), $p > .10$. It was also expected there would be a positive correlation between Social Curiosity and Openness to Experience. This hypothesis was not supported. There was not a significant relationship between Social Curiosity and Openness to Experience in preschoolers, $r = -.06$ (parent), $r = .06$ (teacher), $p > .10$.

It was also expected there would not be a "g" of curiosity and there would be a low correlation between object curiosity and social curiosity. This hypothesis was not supported. Object Curiosity and Social Curiosity were highly correlated, $r = .46$, $p < .001$. Preschoolers were either high or low on curiosity. Object Curiosity and Social Curiosity did not reflect separate interests in preschoolers.

Stranger Data

All students were not exposed to the stranger situation. The data from the stranger situation is only based on a small group of students who participated in this study. A *z*-score was generated for the stranger data. The stranger data included the number of questions asked, number of comments made, and number of approaches made to the stranger. The overall measure of Social Curiosity was calculated with and without the data from the stranger situation. The inclusion of the stranger data in the overall Social Curiosity measure did not have a significant effect on the results. It was not

significantly correlated with the Extraversion and Openness to Experience personality

factors.

Table 4
Correlations between Personality Ratings and Curiosity Variables

Variables	Object Curiosity	Social Curiosity	Social Curiosity-Stranger
Personality			
Parent-Neuroticism	*-.10*	*-.09*	*-.16*
Parent-Openness to Experience	*.12*	*-.06*	*-.07*
Parent-Agreeableness	*.22*	*-.02*	*.10*
Parent-Conscientiousness	*.02*	*-.23*	*-.21*
Parent-Extraversion	*.15*	*-.01*	*.00*
Teacher-Openness to Experience	*-.03*	*.06*	*.12*
Teacher-Extraversion	*-.02*	*-.05*	*.02*
Curiosity			
Object Curiosity		*.46**	*.49*
Social Curiosity	*.46**		*.96**
Social Curiosity-Stranger	*.49*	*.96**	

* p < .001

DISCUSSION

There were two main goals of the current study. The first goal was to examine the relationship between curiosity and personality in preschool children. The second goal was to validate the M5-PS personality questionnaire. It was expected there would not be a "g" of curiosity and there would be a low correlation between object curiosity and social curiosity. The inclusion of the stranger data did not have a significant effect on the results. This view was not supported. The preschoolers did not differ in object and social curiosity.

The findings indicate there is a "g" of curiosity and a significant correlation between object curiosity and social curiosity. Children either scored consistently high or low on different curiosity measures. In this study, the preschoolers who asked the most questions about objects, made the most comments about objects, spent the most time exploring objects, made the most different types of manipulations, and explored the most curiosity drawers were the same preschoolers who asked the most social questions and made the most social comments. The children who were shy and hesitant to explore the puzzle box and curiosity drawer box were also the children who asked fewer questions and made fewer comments. This was consistent with previous findings which indicated children who are curious about objects are also curious about people and social situations (Callanan & Oakes, 1992; Henderson & Moore, 1980). It did not provide support for theories suggesting that curiosity is a multi-dimensional factor. Object Curiosity and Social Curiosity did not reflect separate interests in the preschoolers in this study.

Hypothesis 1

The results also indicated there was not a significant relationship between curiosity and personality. First, it was hypothesized that Object Curiosity would not be positively correlated with Extraversion in preschool children. Curiosity is not a factor which loads on the Extraversion dimension of personality (McCrae & Costa, 1987). Therefore, it was expected there would not be a correlation between behavioral observations of Object Curiosity and ratings of Extraversion in preschool children. This hypothesis was supported. Extraversion was not a predictive factor of curious behaviors displayed during observations.

Hypothesis 2

Second, it was hypothesized that Object Curiosity would be positively correlated with Openness to Experience in preschool children. McCrae and Costa (1987) found that curiosity was a factor which loaded on the Openness to Experience dimension of personality. Abe (2005) found curiosity displayed during preschoolers' play was related to Openness to Experience. Therefore, it was expected there would be a correlation between behavioral observations of Object Curiosity and ratings of Openness to Experience in preschool children. This hypothesis was not supported. Parent and teacher ratings of Openness to Experience were not reflective of preschoolers' behaviors and conversations during the observed play sessions. One possible explanation for why this hypothesis was not supported is that preschool personality was rated by individuals who observe the child in different settings. Children display different behaviors in different environments. A child may behave one way at home and act differently in the classroom.

This was evident in the differences between parent and teacher ratings of preschoolers' personality.

Hypothesis 3

Thirdly, it was hypothesized that Social Curiosity would be positively correlated with Extraversion in preschool children. Sociability is a factor which loads on the Extraversion dimension of personality (McCrae & Costa, 1987). It is related to social interests and children who score high on this dimension are interested in social interactions (Sullivan & Hansen, 2004). Therefore, it was expected there would be a correlation between behavioral observations of Social Curiosity and ratings of Extraversion in preschoolers. This hypothesis was not supported. Parent and teacher ratings of Extraversion were not reflective of preschoolers' behaviors and conversations during the observed play sessions. One possible explanation for why this hypothesis was not supported is that most of the preschoolers found the puzzle box and curiosity drawer box more interesting than the examiner. They preferred to play with the objects at hand than talk with an adult about socially related topics.

Hypothesis 4

Lastly, it was hypothesized that Social Curiosity would be positively correlated with Openness to Experience in preschool children. Curiosity is a factor which loads on the Openness to Experience dimension of personality (McCrae & Costa, 1987). Abe (2005) found that curious behaviors displayed during play are related to Openness to Experience. Therefore, it was expected there would be a correlation between behavioral observations of Social Curiosity and ratings of Openness to Experience in preschoolers. This hypothesis was not supported. Parent and teacher ratings of Openness to Experience

were not reflective of preschoolers' behaviors and conversations during the observed play sessions. This hypothesis may not have been supported because some children behave differently in an unfamiliar setting (i.e., private room at preschool) than they would in a more familiar setting (i.e., their homes or regular classrooms). In our study, curiosity was observed in an unfamiliar setting. It is possible the children may have responded differently on the curiosity measures, if they were observed in more familiar setting.

Limitations and Future Research

One limitation of this study was the inconsistencies between rater responses on the M5-PS questionnaire. Parents rated their preschoolers on all five dimensions of personality on the M5-PS questionnaire. Teachers rated their students on the Extraversion and Openness to Experience dimensions of personality on the M5-PS questionnaire. There was not a significant correlation between parent and teacher ratings of Extraversion and Openness to Experience. This may be related to differences in parent and teacher perspectives of preschoolers' personality. In the future, it may be useful to incorporate reliability and validity indices into the personality rating scale. This would provide information about any unusual rater response patterns.

Another limitation of this study was that child exploratory, or curious, behavior was observed in a single unfamiliar setting. Preschoolers' curiosity was observed in unfamiliar private rooms at their preschools. The children appeared to behave and interact differently in the unfamiliar setting than they did when observed in the regular classroom setting. They spoke more freely and engaged in more make-believe activities when observed in the regular classroom. Their behavior was more inhibited in the unfamiliar setting. In future research, it may be beneficial to observe children in their

natural environments on multiple occasions. This type of observation would provide more information about individual differences in child behavior across settings. It would also add to our understanding of how personality and curiosity are displayed by preschoolers in different settings. Are preschoolers more exploratory in familiar or unfamiliar settings? Do preschoolers display different personality characteristics in different settings? These are the types of information we could gather by observing preschoolers in multiple familiar settings.

Another limitation of this study was the way in which object and social curiosity measures were presented. All of the curiosity measures have been used in previous studies and have good reliability and validity. However, object curiosity materials were the main attraction in both sessions. In the first session, each preschooler was given the opportunity to play with the puzzle box and curiosity drawer box. The measures of social curiosity during that session were the number of social questions asked and social comments made to the examiner. The children often preferred to talk about the novel box and toys instead of engaging in social conversations with an adult. The objects in the session were the more attractive and interesting stimuli. Thus, our research methods may have contributed to children displaying less social curiosity, which resulted in little difference between object and social curiosity. The weaknesses in our measures of social curiosity may have also accounted for the lack of relationship between Social Curiosity and the Extraversion and Openness to Experience dimensions of personality. In future research, it would be beneficial for researchers to present comparable object and social curiosity situations. For example, allow preschoolers to choose between playing with novel toys or unfamiliar peers. This will help researchers better determine whether a

child is more curious about objects or people. This may provide a better picture of

differences in curious interests, which in turn may provide additional information about

the relationship between personality and curiosity in preschoolers.

REFERENCES

Abe, J. A. (2005). The predictive validity of the five-factor model of personality with preschool age children: A nine year follow-up study. *Journal of Research in Personality, 39*, 423-442.

Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin, 121*, 219-245.

Arasteh, J. D. (1968). Creativity and related processes in the young child: A review of the literature. *Journal of Genetic Psychology, 112*, 77-108.

Arvey, R. D. (1992). Constructs and construct validation: Definitions and issues. *Human Performance, 5*, 59-69.

Asendorpf, J. B., & Denissen, J. J. A. (2006). Predictive validity of personality types versus personality dimensions from early childhood to adulthood: Implications for the distinction between core and surface traits. *Merrill-Palmer Quarterly, 52*, 486-513.

Asendorpf, J. B., Denissen, J. J. A., & van Aken, M. A. G. (2008). Inhibited and aggressive preschool children at 23 years of age: Personality and social transitions into adulthood. *Developmental Psychology, 44*, 997-1011.

Banta, T. J. (1970). Tests for the evaluation of early childhood education: The Cincinnati Autonomy Test Battery (CATB). In J. Hellmuth (Ed.), *Cognitive studies* (pp. 424-490). New York: Brunner/Mazel.

Barrick, M. R., Mount, M. K., & Gupta, R. (2003). Meta-analysis of the relationship between the five-factor model of personality and Holland's occupational types. *Personnel Psychology, 56*, 45-74.

Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization of behavior. In W. Collins (Ed.), *Development of cognition, affect, and social relations: The Minnesota symposia on child psychology volume 13* (pp. 39-101). New Jersey: Lawrence Erlbaum Associates.

Callanan, M. A., & Oakes, L. M. (1992). Preschoolers' questions and parents' explanations: Causal thinking in everyday activity. *Cognitive Development, 7*, 213-233.

Chaung, S. S., Lamb, M. E., & Hwang, C. P. (2006). Personality development from childhood to adolescence: A longitudinal study of ego-control and ego-resiliency in Sweden. *International Journal of Behavioral Development, 30*, 338-343.

Conrad, H. S. (1932). The validity of personality ratings of preschool children. *Journal of Educational Psychology, 23*, 671-680.

Costa, P. T., Jr., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. *Journal of Personality Assessment, 64*, 21-50.

Deal, J. E., Halverson, C. F., Jr., Havill, V., & Martin, R. P. (2005). Temperament factors as longitudinal predictors of young adult personality. *Merrill-Palmer Quarterly, 51*, 315-334.

DeFruyt, F., & Mervielde, I. (1997). The Five-Factor Model of personality and Holland's RIASEC interest types. *Personality and Individual Differences, 23*, 87-103.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41*, 417-440.

Digman, J. M., & Shmelyov, A. G. (1996). The structure of temperament and personality in Russian children. *Journal of Personality and Social Psychology, 71*, 341-351.

Digman, J. M., & Takemoto-Chock (1981). Factors in the natural language of personality: Re-analysis, comparison, and interpretation of six major studies. *Multivariate Behavioral Research, 16*, 149-170.

Evans, D., & Rothbart, M. K. (2007). Developing a model for adult temperament. *Journal of Research in Personality, 41*, 868-888.

Goldberg, L. R. (1990). An alternative "description of personality": The big-five factor structure. *Journal of Personality and Social Psychology, 59*, 1216-1229.

Grist, C. L., & McCord, D. M. (in press). Individual differences in preschool children: Temperament or personality? *Infant and Child Development.*

Hagekull, B., & Bohlin, G. (1998). Preschool temperament and environmental factors related to the five-factor model of personality in middle childhood. *Merrill-Palmer Quarterly, 44*, 194-215.

Hampson, S. E., & Goldberg L. R. (2006). A first large cohort study of personality trait stability over the 40 years between elementary school and midlife. *Journal of Personality and Social Psychology, 91*, 763-779.

Hart, D., Keller, M., Edelstein, W., & Hofmann, V. (1998). Childhood personality influences on social-cognitive development: A longitudinal study. *Journal of Personality and Social Psychology, 74*, 1278-1289.

Henderson, B. (1984). Parents and exploration: The effect of context on individual differences in exploratory behavior. *Child Development, 55*, 1237-1245.

Henderson, B., & Moore, S. G. (1979). Measuring exploratory behavior in young children: A factor-analytic study. *Developmental Psychology*, *11*, 511-519.

Henderson, B., & Moore, S. G. (1980). Children's responses to objects differing in novelty in relation to level of curiosity and adult behavior. *Child Development, 51*, 457-465.

Inagaki, K. (1978). Effects of object curiosity on exploratory learning in young children. *Psychological Reports, 42*, 899-908.

Jennings, K. D. (1975). People versus object orientation, social behavior, and intellectual abilities in preschool children. *Developmental Psychology, 11*, 511-519.

Jennings, K. D. (1977). People versus object orientation in preschool children: Do sex differences really occur? *Journal of Genetic Psychology, 131*, 65-73.

John, O. P., Angleitner, A., & Ostendorf, F. (1988). The lexical approach to personality: A historical review of trait taxonomic research. *European Journal of Personality, 2*, 171-203.

Kashdan, T. B., Rose, P., & Fincham, F. D. (2004). Curiosity and exploration: Facilitating positive subjective experiences and personal growth opportunities. *Journal of Personality Assessment, 82*, 291-305.

Kauser, F. (1986). The influence of age, sex and economic status on the development of curiosity in children. *Journal of the Indian Academy of Applied Psychology, 12*, 64-68.

Keller, H., Schneider, K., & Henderson, B. (1994). Preface: The study of exploration. In H. Keller, K. Schneider, & B. Henderson (Eds.), *Curiosity and exploration* (pp.1-13). Berlin: Springer-Verlag.

Krapp, A., Hidi, S., & Renninger, K. A. (1992). Interest, learning, and development. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 3-25). Hillsdale, NJ: Erlbaum.

Leibham, M. E., Alexander, J. M, Johnson, K. E., Neitzel, C. L., & Reis-Henrie, F. P. (2005). Parenting behaviors associated with the maintenance of preschoolers' interests: A prospective longitudinal study. *Applied Developmental Psychology, 26*, 397-414.

Litman, J. A. (2005). Curiosity and the pleasures of learning: Wanting and liking new information. *Cognition and Emotion, 19*, 793-814.

Litman, J. A., Hutchins, T. L., & Russon, R. K. (2005). Epistemic curiosity, feeling-of-knowing, and exploratory behaviour. *Cognition and Emotion, 19*, 559-582.

Litman, J. A., & Jimerson, T. L. (2004). The measurement of curiosity as a feeling of deprivation. *Journal of Personality Assessment, 82*, 147-157.

Litman, J. A., & Silvia, P. J. (2006). The latent structure of trait curiosity: evidence for interest and deprivation curiosity dimensions. *Journal of Personality Assessment, 86*, 318-328.

Litman, J. A., & Spielberger, C. D. (2003). Measuring epistemic curiosity and its diversive and specific components. *Journal of Personality Assessment, 80*, 76-86.

Loewenstein, G. (1994). The psychology of curiosity: A review and reinterpretation. *Psychological Bulletin, 116*, 75-98.

Markey, P. M., Markey, C. N., & Tinsley, B. J. (2004). Children's behavioral manifestations of the Five-Factor Model of personality. *Personality and Social Psychology, 30*, 423-432.

Maw, W. H., & Maw, E. W. (1966). An attempt to measure curiosity in elementary school children. *American Educational Research Journal, 3*, 147-156.

McAdams, D. P. (1997). A conceptual history of personality psychology. In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 3-39). San Diego, CA: Academic Press.

McCrae, R. R. (1994). Openness to experience: Expanding the boundaries of factor V. *European Journal of Personality, 8*, 251-272.

McCrae, R. R., & Costa, P. T., Jr. (1987). Validation of the Five-Factor Model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*, 81-90.

McCrae, R. R., Costa, P. T., Jr., Ostendorf, F., Angleitner, A., Hrebickova, M., Avia, M. D., Sanz, J., Sanchez-Bernardos, M. L., Kusdil, M. E., Woodfield, R., Saunders, P. R., & Smith, P. B. (2000). Nature over nurture: Temperament, personality, and life span development. *Journal of Personality and Social Psychology, 78*, 173-186.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 60*, 175-215.

McDevitt, S. C., & Carey, W. B. (1977). The measurement of temperament in 3-7 year old children. *Journal of Child Psychology and Psychiatry, 19*, 245-253.

Mervielde, I., Buyst, V., & De Fruyt, F. (1995). The validity of the big-five as a model for teachers' ratings of individual differences among children aged 4-12 years. *Personality and Individual Differences, 18*, 525-534.

Miller, S. A. (2006). In search of answers: By asking questions, you can extend your preschooler's investigations. *Scholastic Parent and Child*, 62.

Mohanty, B., & Mishra, S. (1991). Effect of cognitive intervention training on mental ability and epistemic curiosity. *Psycho-Lingua, 21*, 91-98.

Olino, T. M., Klein, D. N., Durbin, C. E., Hayden, E. P., & Buckley, M. E. (2005). The structure of extraversion in preschool aged children. *Personality and Individual Differences, 39*, 481-492.

Olson, K. R., & Weber, D. A. (2004). Relations between big five traits and fundamental motives. *Psychological Reports, 95*, 795-802.

Power, T. G. (2000). Play and exploration in children and animals. New Jersey: Lawrence Erlbaum Associates.

Quartier, V., & Rossier, J. (2008). A study of personality in children aged 8 to 12 years: Comparing self and parents' ratings. *European Journal of Personality, 22*, 575-588.

Reio, T. G., Jr., Petrosko, J. M., Wiswell, A. K., & Thongsukmag, J. (2006). The measurement and conceptualization of curiosity. *Journal of Genetic Psychology, 167*, 117-135.

Renner, B. (2006). Curiosity about people: The development of a social curiosity measure in adults. *Journal of Personality Assessment, 87*, 305-316.

Reznick, J. S., Kagan, J., Snidman, N., Gersten, M., Baak, K., & Rosenberg, A. (1986). Inhibited and uninhibited children: A follow-up study. *Child Development, 57*, 660-680.

Rothbart, M. K. (2007). Temperament, development, and personality. *Current Directions in Psychological Science, 16*, 207-212.

Rubin, K. H., Hastings, P. D., Stewart, S. L., Henderson, H. A., & Chen, X. (1997). The consistency and concomitants of inhibition: Some of the children, all of the time. *Child Development, 68*, 467-483.

Silvia, P. J. (2001). Interest and interests: The psychology of constructive capriciousness. *Review of General Psychology, 5*, 270-290.

Silvia, P. J. (2008). Interest-the curious emotion. *Current Directions in Psychological Science, 17*, 57-60.

Sullivan, B. A., & Hansen, J. C. (2004). Mapping associations between interests and personality: Toward a conceptual understanding of individual differences in vocational behavior. *Journal of Counseling Psychology, 51*, 287-298.

Switzky, H. N., Haywood, H. C., & Isett, R. (1974). Exploration, curiosity, and play in young children: Effects of stimulus complexity. *Developmental Psychology, 10*, 321-329.

Tracey, T. J. G. (2001). The development of structure of interests in children: Setting the stage. *Journal of Vocational Behavior, 59*, 89-104.

Tracey, T. J. G., & Ward, C. C. (1998). The structure of children's interests and competence perceptions. *Journal of Counseling Psychology, 45*, 290-303.

Zupancic, M., & Kavcic, T. (2003). Contemporaneous prediction of social behavior in preschool children from a set of personality dimensions. *Studia Psychologica, 45*, 187-202.

APPENDIX A

Informed Consent Forms

Informed Consent Form (Parent)
Curiosity and Personality Traits in Preschool Children

What is the purpose of this research?
      We are investigating the relationship between curiosity characteristics and personality traits in children between the ages of 3 and 5. While there is much research regarding such relationships in older children, adolescents, and adults, little research has been done regarding the preschool population.

What will be expected of me?
      You will be asked to complete two short questionnaires that explore personality traits and curiosity presented by your child.

How long will the research take?
      The questionnaire takes approximately 10-15 minutes to complete.

Will my answers be anonymous?
      Yes. The research data are entirely confidential, and neither your identity nor the identities of the children will be revealed.

Who should I contact if I have questions or concerns about the research?

Dr. Bruce Henderson
WCU Department of Psychology
Cullowhee, NC 28723
Phone (828) 227-3784
Email: Henderson@wcu.edu

Charity Bumpass
WCU School Psychology Program
Cullowhee, NC 28723
Phone (336) 503-7426
Email: crbumpass@catamount.wcu.edu

Dr. Meagan Karvonen
WCU Institutional Review Board
Cullowhee, NC
Phone (828) 227-3323
Email: kavonen@wcu.edu

Participant Name_____   Date_____

Parent Signature_____

If you would like to receive a summary of the results, once the study has been completed, please write your mailing address or email address (as legibly as possible) here:

_____

Informed Consent Form (Teacher)
Curiosity and Personality Traits in Preschool Children

What is the purpose of this research?

We are investigating the relationship between curiosity characteristics and personality traits in children between the ages of 3 and 5. While there is much research regarding such relationships in older children, adolescents, and adults, little research has been done regarding the preschool population.

What will be expected of me?

You will be asked to complete two short questionnaires that explore personality traits and curiosity presented by the children in your classroom.

How long will the research take?

The questionnaires will take approximately 10-15 minutes per child to complete.

Will my answers be anonymous?

Yes. The research data are entirely confidential, and neither your identity nor the identities of the children will be revealed.

Who should I contact if I have questions or concerns about the research?

Dr. Bruce Henderson
WCU Department of Psychology
Cullowhee, NC 28723
Phone (828) 227-3784
Email: Henderson@wcu.edu

Charity Bumpass
WCU School Psychology Program
Cullowhee, NC 28723
Phone (336) 503-7426
Email: crbumpass@catamount.wcu.edu

Dr. Meagan Karvonen
WCU Institutional Review Board
Cullowhee, NC
Phone (828) 227-3323
Email: kavonen@wcu.edu

Participant Name_____   Date_____

Teacher Signature_____

If you would like to receive a summary of the results, once the study has been completed, please write your email address (as legibly as possible) here:

_____

Informed Consent Form (Child)
Curiosity and Personality Traits in Preschool Children

What is the purpose of this research?

Psychologists know a good deal about personality in adults. However, we know little about personality in young children and how it develops into adult personality. We are interested in finding a way to assess individual personality differences in young children. We are particularly interested in two aspects of personality in young children. One, which has been called "Openness to Experience", has to do with how much children like new things and experiences. We want to see if differences in this trait are related to differences in children's curiosity about objects and people. The other personality trait is "Extraversion", the tendency to be outgoing or shy. We want to see if differences in this trait are related to differences in curiosity about children.

What will be expected of my child?

We will ask your child to play with some toys and answer some questions about pictures of different play activities. As your child plays with these toys and answers questions about the pictures, data will be collected regarding their behavior, speech, and interest in different items. Researchers will also watch each child's response to an unfamiliar adult while they are with an adult they know well. These play sessions will take place at your child's daycare facility. The children tend to enjoy these sessions; they take pleasure in the newness of the toys and investigating ways to manipulate them. The session is meant to be fun and exciting for the children, and an overall positive experience!

Will my child's response be kept confidential?

Although none of the responses from children in this research are sensitive or personal in nature, we do take care to keep all of their responses confidential.

May my child withdraw form the study if he or she decides to?

Participation is voluntary. We only ask children to play with out materials if they want to. We spend time with the children in their regular classrooms before we do any individual testing with them. We are sensitive to the signals that they want to stop playing and part of the instructions indicate that the children may stop whenever they are ready.

Is there any harm that my child might experience from taking part in the study?

No, there is no foreseeable harm for the children.

How will my child benefit from taking part in this research?

Children enjoy playing with the novel toys and receiving one-on-one attention from the experimenter. We will provide all interested parents with a summary of our results when they become available.

Who should I contact if I have questions or concerns about the research?

Charity Bumpass is the primary individual conducting research with your child. Dr. Bruce Henderson is supervising her work. Dr. Christopher Cooper is chair of the board at Western Carolina University that approves research projects.

Dr. Bruce Henderson	Charity Bumpass	Dr. Meagan Karvonen
WCU Department of Psychology	WCU School Psychology Program	WCU Institutional Review Board
Cullowhee, NC 28723	Cullowhee, NC 28723	Cullowhee, NC 28723
Phone (828) 227-3784	Phone (336) 503-7426	Phone (828) 227-3323
Email: Henderson@wcu.edu	Email: crbumpass@catamount.wcu.edu	Email: kavonen@wcu.edu

I give permission for my child, _____, to participate in this study.

<div align="center">(Child's Name)</div>

_____   _____

        Child's Birth Date   Child's Classroom

_____   _____

        Parent's Signature   Date

APPENDIX B

M5-PS Questionnaire
Cathy L. Grist and David M. McCord
Western Carolina University

M5-PS Questionnaire		Innacurate	Moderately Innacurate	Neither	Moderately Accurate	Accurate
1	Worries about things	O	O	O	O	O
2	Has a vivid imagination	O	O	O	O	O
3	Distrusts people	O	O	O	O	O
4	Completes tasks successfully	O	O	O	O	O
5	Gets angry easily	O	O	O	O	O
6	Takes charge	O	O	O	O	O
7	Seldom gets emotional	O	O	O	O	O
8	Breaks rules	O	O	O	O	O
9	Is easily intimidated	O	O	O	O	O
10	Makes friends easily	O	O	O	O	O
11	Trusts others	O	O	O	O	O
12	Gets irritated easily	O	O	O	O	O
13	Likes music	O	O	O	O	O
14	Experiences emotions intensely	O	O	O	O	O
15	Tries to follow the rules	O	O	O	O	O
16	Is always busy	O	O	O	O	O
17	Prefers to stick with things that he/she knows	O	O	O	O	O
18	Is easy to satisfy	O	O	O	O	O
19	Likes to solve complex problems	O	O	O	O	O
20	Radiates joy	O	O	O	O	O
21	Jumps into things without thinking	O	O	O	O	O
22	Tries to excel at what they do	O	O	O	O	O
23	Is indifferent to the feelings of others	O	O	O	O	O
24	Is comfortable in unfamiliar situations	O	O	O	O	O
25	Is always on the go	O	O	O	O	O
26	Dislikes changes	O	O	O	O	O
27	Can't stand confrontations	O	O	O	O	O
28	Has a lot of fun	O	O	O	O	O
29	Is afraid of many things	O	O	O	O	O
30	Loves to daydream	O	O	O	O	O
31	Is wary of others	O	O	O	O	O
32	Sticks to the rules	O	O	O	O	O
33	Feels comfortable with him/herself	O	O	O	O	O
34	Tries to lead others	O	O	O	O	O
35	Is not easily affected by his/her emotions	O	O	O	O	O
36	Likes to take his/her time	O	O	O	O	O
37	Works hard	O	O	O	O	O
38	Seeks adventure	O	O	O	O	O
39	Becomes overwhelmed by events	O	O	O	O	O
40	Is relaxed most of the time	O	O	O	O	O
		Innacurate	Moderately Innacurate	Neither	Moderately Accurate	Accurate

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		Moderately Innacurate	Neither	Moderately Accurate	Accurate
		Innacurate			
41	Does not understand things	O	O	O	O	O
42	Gets upset easily	O	O	O	O	O
43	Does not like crowded events	O	O	O	O	O
44	Knows how to get around the rules	O	O	O	O	O
45	Wants everything to be "just right"	O	O	O	O	O
46	Does not like the idea of change	O	O	O	O	O
47	Loves action	O	O	O	O	O
48	Feels comfortable around other people	O	O	O	O	O
49	Trust what people say	O	O	O	O	O
50	Loves order and regularity	O	O	O	O	O
51	Loves to help others	O	O	O	O	O
52	Is a creature of habit	O	O	O	O	O
53	Yells at people	O	O	O	O	O
54	Plunges into tasks with all their heart	O	O	O	O	O
55	Has a rich vocabulary	O	O	O	O	O
56	Knows the answers to many questions	O	O	O	O	O
57	Knows how to cope	O	O	O	O	O
58	Gets stressed out easily	O	O	O	O	O
59	Acts comfortably with others	O	O	O	O	O
60	Enjoys being part of a group	O	O	O	O	O
61	Leaves his/her belongings around	O	O	O	O	O
62	Tries to influence others	O	O	O	O	O
63	Is concerned about others	O	O	O	O	O
64	Tells the truth	O	O	O	O	O
65	Is interested in many things	O	O	O	O	O
66	Involve others in what he/she is doing	O	O	O	O	O
67	Has frequent mood swings	O	O	O	O	O
68	Experiences very few emotional highs and lows	O	O	O	O	O
69	Does the opposite of what is asked	O	O	O	O	O
70	Insults people	O	O	O	O	O
71	Has difficulty starting tasks	O	O	O	O	O
72	Loses his/her temper	O	O	O	O	O
73	Likes to begin new things	O	O	O	O	O
74	Gets back at others	O	O	O	O	O
75	Gets overwhelmed by emotions	O	O	O	O	O
76	Laughs aloud	O	O	O	O	O
77	Suffers from others' sorrows	O	O	O	O	O
78	Acts without thinking	O	O	O	O	O
79	Adapts easily to new situations	O	O	O	O	O
80	Does't see the consequences of things	O	O	O	O	O
81	Is able to stand up for his/herself	O	O	O	O	O
82	Makes him/herself the center of attention	O	O	O	O	O
83	Amuses his/her friends	O	O	O	O	O
84	Sympathizes with others' feelings	O	O	O	O	O
85	Is easily frustrated	O	O	O	O	O
86	Respects others	O	O	O	O	O
87	Messes things up	O	O	O	O	O
88	Is demanding	O	O	O	O	O
89	Starts conversations	O	O	O	O	O
90	Finishes what he/she starts	O	O	O	O	O
		Innacurate	Moderately Innacurate	Neither	Moderately Accurate	Accurate