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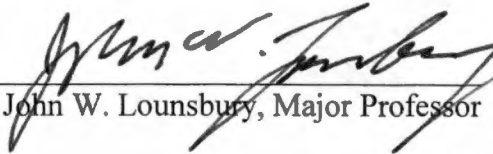
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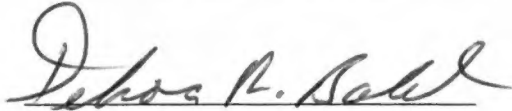
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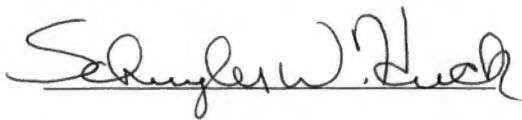
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John W. Lounsbury, Major Professor

We have read this dissertation
And recommend its acceptance:

Accepted for the Council

Dr. C.W. Minkel
Associate Vice Chancellor and
Dean of The Graduate School

DEVELOPMENT OF THE

ADOLESCENT BIG FIVE INVENTORY

A Dissertation
Presented for the
Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Holly Elizabeth Tatum
May 2000

DEDICATION

This dissertation is dedicated to my grandmother

Mrs. Wilma Dean Williams Flood

who instilled in me the value of education and life-long learning.

ACKNOWLEDGEMENTS

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ABSTRACT

Recent examinations of the Big Five in childhood and adolescence have indicated that these personality dimensions can be identified by early adolescence. Research in this domain has relied largely on adult ratings of personality, particularly by parents and teachers. These investigations have been hindered by the lack of an adequate self-report measure. The present research developed and validated a self-report instrument to measure the Big Five in adolescents. Ninety-one items measuring the Big Five were generated and administered to 204 middle school students in 6th though 8th grades. Based on reliability analyses, the items were revised and the resulting 85-item version of the Adolescent Big Five Inventory (ABFI), including a social desirability scale, was administered to 72 7th grade students. The ABFI scales demonstrated strong internal consistency with Cronbach alpha reliabilities ranging from alpha =.72 to alpha =.85. Extraversion, Openness, and Agreeableness on the ABFI were significantly correlated with teacher ratings on the same dimensions (r=.31 to r=.68). However, adolescents' scores on Conscientiousness or Neuroticism were not significantly correlated with teacher ratings. Using 107 college students, convergence of indicators was found for corresponding constructs on the ABFI and NEO Five-Factor Inventory (r=.60 to r=.83). Results were discussed in terms of gender differences, social desirability, rater bias, limitations, and need for future research.

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

Personality psychologists are reaching a general consensus that there are five major dimensions of personality. The five factors are generally labeled Neuroticism (Emotional Stability or Negative Affectivity), Extraversion (Positive Affectivity or Surgency), Openness to Experience (Culture or Intellect), Agreeableness, and Conscientiousness (Constraint). These five robust factors of personality, often referred to as the Big Five, have been consistently observed in adult samples, have strong relationships to actual behavior, and have been found to remain relatively stable throughout the life span (Costa & McCrae, 1994; McCrae & Costa, 1987a). Evidence suggests a strong genetic influence, with heritability estimates ranging between .22 and .48 (Loehlin, 1992). Bratko and Marusic (1997) found significant parent-child correlations between Neuroticism, Openness to Experience, and Conscientiousness. Furthermore, the Big Five have been found to exist in both natural languages and theoretically based questionnaires as well as among diverse age groups, languages, and cultures (John, 1990). Most recently, evolutionary psychologists are beginning to explore the Big Five in light of behavioral genetic and evolutionary concepts to assess the how these personality dimensions may serve an adaptive function in the human environment (see Segal & MacDonald, 1998).

The Big Five personality dimensions were identified through investigations of the Five Factor Model, which was developed primarily from empirical rather than *a priori* theoretical considerations. Most personality models are derived from a distinct theoretical perspective, which is evaluated and refined in light of subsequent research findings. However, the Five Factor Model was developed out of empirical research, particularly through two primary sources – the lexical tradition, where thousands of personality descriptors in natural language are selected from dictionaries and factor analyzed; and, secondly, the factor analysis of existing personality measures. For example, Costa & McCrae (see Digman, 1990) have demonstrated the existence of the Big Five in many of the dominant personality inventories, including the Eysenck Personality Inventory, the Jackson Personality Research Form, the California Psychological Inventory, the Myers-Briggs Type Indicator, the MMPI and the California Q-Set. Five factors have also been identified in the 16 PF (Gerbing & Tuley, 1991) and the Edwards Personal Preference Schedule (Piedmont et al, 1992). Wiggins and Trapnell (1997) describe the history of the Five Factor Model as a series of "interruptions" over time, a waxing and waning over a long period beginning in the 1930s with Thurstone (1934) and experiencing a major resurgence in the 1980s with the work of Lewis Goldberg and Costa and McCrae. The Five Factor Model has become one of the most widely researched models of adult personality in recent years. Although the Five Factor Model has been at the center of a fierce debate (Brand, 1994; Costa and McCrae, 1995; Goldberg & Saucier, 1995), it currently offers a preliminary taxonomy of personality traits as well as a common

language for personality researchers. Parker and Stumpf (1998) point out that while the five factors may not be the only major dimensions of personality, they act as useful concepts in the research of adult personality.

Recently, attention has been directed toward understanding the Big Five dimensions of personality during childhood and early adolescence (Graziano & Ward, 1992; Hakegull, 1994; John et al., 1994; Kohnstamm et al., 1995). Research that focuses on the developmental antecedents of the Big Five is currently underway, however, no research to date has devised a comprehensive theory of how these personality dimensions develop through infancy, childhood, and adolescence into the stable characteristics that they become in adulthood. There is strong evidence that the Big Five appear by early adolescence, and therefore, this topic deserves the attention of both developmental psychologists and personality researchers.

Temperament and the Big Five

In a review of the temperament literature, Shiner (1998) summarizes the many conceptualizations of temperament as "... behavioral consistencies that appear early in life, that are frequently but not exclusively emotional in nature, and that have a presumed neurobiological basis" (pg. 309). Strelau (1987) considered the early individual differences (i.e. temperament) distinct from personality, which encompasses characteristics influenced by social factors such as attitudes, interests, and values. Before

the recent focus on the Big Five personality dimensions, much of the research on

temperament was based on the work of Thomas and Chess (1977) who were interested in

the very early appearance of traits, which they refer to as primary reaction patterns.

Thomas and Chess proposed a nine dimensional model of childhood temperament. They

purported that these nine dimensions remained stable from infancy to late childhood and

produced three clusters of temperament: difficult, easy, and slow-to-warm-up. However,

Thomas and Chess used only the correlations among the nine scale scores, rather than

across items in all of the scales to produce the nine dimensions (Kohnstamm et al., 1995).

Furthermore, the multiple scales developed to measure this model have shown poor

internal consistency (Presley & Martin, 1994). When other researchers factor-analyzed

the individual items, they failed to replicate the nine scales (Hakegull, 1994; Martin,

Wisenbaker, and Huttunen, 1994; Presley & Martin, 1994). For example, when testing

the Temperament Battery for Children (TABC; Martin, 1988), one of the scales used to

measure the Thomas and Chess model, Presley and Martin (1994) found support for a

five factor solution of parental ratings of children ages 3 to 7 years. Presley and Martin

reported a conceptual similarity between their five factors and those found in adult

populations. They named the factors: Social Inhibition, Negative Emotionality

(Neuroticism), Adaptability (Agreeableness), Activity Level (Extraversion), and Task

Persistence (Conscientiousness). However, Presley and Martin failed to identify a

childhood temperament factor that corresponds to Openness. Interestingly, in the adult

research on the Big Five, Openness has been found to be significantly correlated with

measures of cognitive ability (McCrae, 1987). Kohnstamm, Mervielde, Besevegis, and Halverson (1995) point out that assessment of intelligence or cognitive ability and personality have always been separate entities and that only in the last 20 years has attention been focused on cognition as an aspect or component of personality. Cognitive capacity was not an area under consideration in the research of Thomas and Chess.. Nevertheless, Presley and Martin concluded that there appears to be a similar number of dimensions in early childhood as in adulthood, which may be less differentiated due to the limited cognitive and motor development at this age level.

Shiner (1998) notes that most studies of individual differences in school-age children have been based on temperament models, such as the primary reaction patterns of Thomas and Chess, rather than personality models, which has restricted the study of personality in childhood and early adolescence to those traits that appear in infancy. Studies of individual differences in temperament have been primarily studied independently of personality (Digman & Shmelyov, 1996). Many personality psychologists consider temperament to be only a part of personality, a subset or an undifferentiated set of traits that become more complex with age (Buss & Finn, 1987; Caspi, 1998; Rothbart & Adahi, 1994). Temperament is often considered the biological constituent accounting for early individual differences, and which later with age and environmental influences develops into adult personality. However, there is little research that focuses on children's personalities from infancy and early childhood to adolescence and adulthood. Mervielde, Buyst, and De Fruyt (1995) indicate that developmental

psychologists have always had a problem agreeing on the final stage of development, which makes the examination of personality development difficult. However, given the consensus that the Five Factor Model represents the basic dimensions of adult personality, Mervielde, Buyst, and De Fruyt (1995) suggest that the Big Five may be the "target structure" from which personality development can be studied (pg. 525).

There is some preliminary evidence that bridges childhood temperament with the Big Five dimensions of adult personality. In a longitudinal study of Swedish children, Hagekull and Bohlin (1998) investigated the development of personality in middle childhood from preschool temperament. They found significant relationships between preschool emotionality and school age Neuroticism and between preschool activity level and sociability and middle childhood Extraversion. Even Openness was predicted by temperament in the preschool years. The temperamental antecedent to Openness was activity level, the same antecedent for Extraversion. The researchers also found stability in middle childhood personality characteristics over a 5-month period. Interestingly, Hagekull and Bohlin found that every Big Five dimension was related to some degree to environmental factors, such as negative life events, external day care, and maternal sensitivity.

Empirical Research on the Big Five in Children and Adolescents

Some early personality research has found support for the existence of the Big

Five in childhood and early adolescence. In a meta-analysis of six large-scale studies,

Digman and Takemoto-Chock (1981) found that the Five Factor Model to be a very

robust model of personality across age groups and that additional factors beyond the Big

Five could not be consistently replicated from study to study. Based on the finding of

Digman and Takemoto-Chock that the Big Five are useful descriptors of individual

differences among elementary school-aged children, Digman and Inouye (1986) set out to

examine personality traits among 6th grade students in Hawaii. Teacher ratings using

unipolar adjectives were collected for almost five hundred students. A seven-factor

solution was determined to be a neater solution than five based on the Scree Test and the

residuals. The following are the names given to the first five factors: Introversion-

Extraversion, Friendly Compliance, Conscientiousness, Emotional Stability, and

Openness to Experience. One of the extra factors appeared to denote a creativity factor

including such adjectives scales as Imaginative and Esthetically Sensitive. The second

extra factor contained three scales related to verbal expression (Verbally Fluent,

Outspoken, and Complains). Because they were deemed to be too narrow of constructs,

the two additional factors were not given names. Digman and Inouye consider these

factors to be due to error variance and suggest that they would probably not prove

reliable across studies. The authors propose that they could be due to sampling error, the

choice of variables in the assessment procedure, or due to teacher ratings, which rely on

memory and are often influenced by impressions rather than actual behavior. Regardless of the additional factors, the findings remain strong and have been replicated by others using similar techniques and populations. Later, using a different set of personality adjectives, in a reanalysis of teacher ratings, Digman (1994) found very similar results as in his original studies. In addition, the five factors have been found to remain moderately stable across a four-year period from childhood into early adolescence (Digman, 1989).

Several years later, Digman and Shmelyov (1996) attempted to replicate the previous findings of Digman and colleagues in a sample of Russian children aged 6 to 10 years in 1st through 3rd grades. Using twenty-eight scales selected as clear indicants of the Big Five (Digman & Inouye, 1986; Digman & Takemoto-Chock), approximately 480 students were rated by teachers. In addition, twenty-one newly developed scales based on temperament research were included. Separate analyses were performed for the temperament and personality scales. Four stable components were extracted from the twenty-one temperament scales: Sociability, Anger, Impulsivity, and Emotionality, which supported previous findings in temperament research (Ahadi & Rothbart, 1994). However, five components were extracted for the personality scales and were labeled: Extraversion, Agreeableness, Conscientiousness, Intellect, and Emotional Stability-Neuroticism. These components were determined to be strikingly similar to those found by Digman and Takemoto-Chock (1981) and Digman and Inouye (1986). They concluded that the Five Factor Model for the organization of personality appears to be

useful not only for adult populations in the United States, but also for children in the Russian culture and language.

Prior to 1990, Digman and his associates were the only researchers who had replicated the adult Big Five dimensions of personality in research with children. Since then, several others have been able to reproduce Digman's findings as well (Graziano & Ward, 1992; Victor, 1994). Using 40 bipolar items adapted from Digman and Inouye (1986), Graziano and Ward (1992) found high internal consistency for teachers' ratings of the Big Five in a study of 6th and 7th graders. Teachers evaluated the students using forty 9-point bipolar items adapted from Digman and Inouye that represent the Big Five. The internal consistency reliabilities were .91 (Extraversion), .91 (Agreeableness), .96 (Conscientiousness), .81 (Neuroticism), and .88 (Openness to Experience). They found that the Big Five dimensions explained 67% of the total variance. They concluded that teachers perceive individual differences among adolescent students that correspond to the Big Five categories. An interesting finding was that adolescents' self-report on school adjustment was not significantly related to teachers' evaluations on this same construct. The authors suggest that ratings by adult observers have greater validity than adolescent self-reports and that the self-concept of adolescents is less stable and more fluid due to puberty. However, the researchers did not investigate their assumptions about self-concept.

Kohnstamm, Mervielde, Besevegis, and Halverson (1995) critiqued the series of studies by Digman and his colleagues, pointing out that these studies used thirty-eight scales derived by Cattell, which were developed for adult populations. Although the use of Cattell's scales were useful with teacher ratings, Kohnstamm et al. (1995) questioned how well they represent the full range of individual differences among children. Kohnstamm et al. began their cross-cultural research with a taxonomy of personality descriptors for each of three cultures (the Netherlands, Belgium, and Greece) to test for the universality of the Five Factor Model. The first of a series of studies collected free descriptions from parents of children aged 3, 6, 9, and 12 years that were transcribed, coded and categorized. They presented the data only from the 3 year old and 9 year old groups. They found that between 72 and 83 percent of all of the descriptors were coded into the first five categories, representing the Big Five (Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Culture/Openness), with increasing proportions with age. In addition, as age increased, so did the number of descriptors falling in the Conscientiousness category. At age 3 only 3-4% of the parent expressions were placed in the Conscientiousness category. However, by age 9, the number of descriptor words in this category tripled. This is consistent with other studies that have found Conscientiousness becomes more salient to adult raters as the child's age increases (Mervielde et al., 1995).

Some interesting cross-cultural findings were that the Greek coders categorized significantly more descriptors in the Five Factor Model categories than the Dutch or

Belgian coders. Overall, there were very few significant differences found between the three cultures or between male and female children. Kohnstamm et al. (1995) concluded that there was great similarity between the three cultures. The results suggest strong support for the use of Five Factor Model to categorize parental descriptions of child characteristics across cultures and age groups.

Havill, Allen, Halverson, and Kohnstamm (1994) conducted the same study as Kohnstamm, Mervielde, Besevegis, and Halverson (1995) in the United States as part of the Georgia Longitudinal Study. One hundred fifty-eight children, ranging in age from 4 to 12 years, were described by their fathers and mothers during separate interviews. The free-response protocols were coded into categories. Of the over 5,000 descriptions, 80% were coded within the Big Five dimensions. Havill et al. (1994) also interviewed mothers of children aged 3 and younger attending daycare. They found that although parents had few descriptors for Conscientiousness and Emotional Stability in this young age group, the Big Five was still a useful taxonomy, accounting for 76% of all descriptors at even this young of an age.

More recently, researchers have focused on the Big Five in the adolescent years. Using mothers' descriptions on the common language version of the California Child Q-Sort (CCQ; J. Block & J. H. Block, 1980), John, Caspi, Robins, Moffitt, and Stouthamer-Loeber (1994) explored the Five Factor Model in a population of 430 twelve and thirteen year old boys participating in the Pittsburgh Youth Study. John et al. (1994) developed

Big Five scales using 48 items from the CCQ and utilized them to explore the

nomological network of the Big Five in early adolescence. They found reliabilities

ranging between .53 (Openness) and .83 (Agreeableness) for the Big Five scales. In

addition, John et al. (1994) conducted a factor analysis of all 100 items on the CCQ and

identified 'five plus two' factors, almost identical to the findings of Van Lieshout and

Haselager (1994). Agreeableness, Conscientiousness, and Openness differed very little

from other definitions of Big Five dimensions. However, Extraversion appeared to be

split between Factor 3 – Sociability, which resembled Extraversion without activity level

and Factor 6 – Positive Activity, which included energy, activity, and social presence.

Neuroticism was split between Factor 4 – Anxious Distress, which included a more

limited range of negative affect than typically found on Neuroticism and Factor 5 –

Irritability, which represented immaturity, age-inappropriate behaviors and sensitivity.

John, Caspi, Robins, Moffitt, and Stouthamer-Loeber (1994) proposed several

explanations for the two additional factors (Positive Activity and Irritability) that they

identified, which included: 1) They were error factors; 2) They were instrument-specific

factors produced by overrepresentation of activity and irritability; 3) They were facets or

components of the broad Big Five; or 4) They were age-specific personality dimensions

present in adolescence that are independent of the Big Five. The authors suggest that

there may be two distinct aspects of negative affect in adolescence, which may combine

at a later time into the adult dimension of Neuroticism. Moreover, Sociability and

Activity may also be distinct traits that become integrated into the adult trait of

Extraversion. It is important to note that their population under study consisted of only inner city boys rated by their mothers and did not include female adolescents or other adult observers, such as fathers and teachers. Some of their findings may be population-specific. Therefore, the authors suggest that before accepting the two extra factors, other research should replicate their findings in other samples with different instruments.

Mervielde, Buyst, and De Fruyt (1995) explored the Five Factor Model in a cross-sectional group of children aged 4 to 12 years using teacher ratings on a bipolar adjective checklist. The children were broken into four age categories: 4 to 6 years, 6 to 8 years, 8 to 10 years, and 10 to 12 years. Factor analyses were run separately for each age group. Their results showed that as age increased, so did the number of factors and amount of variance accounted for by a five-factor solution. The 4 to 6 year olds yielded a four-factor solution including Extraversion, Agreeableness, and Emotional Stability and a factor that appeared to be a combination of Conscientiousness and Openness/Intellect. By 6 to 8 years, a five-factor solution explained over 75% of the variance representing the typical Big Five dimensions. The emergence of the five factors coincides with the start of elementary school in the 6 to 8 year range, which may contribute to the separation of the Conscientiousness-Intellect factor found prior to formal educational experiences. Most likely, Conscientiousness becomes more salient to adults when children enter school. However, a six-factor solution explained almost 80% of the variance splitting Openness and Intellect. The 8 to 10 year old group produced a five-factor solution accounting for 77% of the total variance. Interestingly, the order of importance changed in this age

group with Conscientiousness explaining more variance than Extraversion. Again, a six-factor solution also explained almost 80% of the variance splitting Openness and Intellect. In the 10 to 12 year old group, five factors alone accounted for almost 75% of the variance. There was evidence that Openness becomes more important or salient with age. Mervielde et al. (1995) concluded that their study confirmed and extended the evidence for the utility of the Big Five in representing individual differences among children. Three of the five factors, Extraversion, Agreeableness, and Emotional Stability appear to be stable, independent factors across all of the age groups and Conscientiousness appears to explain the most variance.

Using California Child Q-Sort (CCQ) self-descriptions and ratings by best friend, van Lieshout and Haselager (1994) found Agreeableness, Emotional Stability and Conscientiousness in both self- and peer ratings. Openness appeared in peer descriptions and aspects of Extraversion were identifiable in self-ratings. These results suggest that adolescents may not use the same descriptions of personality as adults. Prior to this study, no one had examined the Big Five factors in self- and peer-ratings in adolescence, and therefore, little was known about the structure of personality in adolescents' use of personality descriptors.

Based on the findings of van Lieshout and Haselager (1994), Scholte, van Aken, and van Lieshout (1997) conducted research in the Netherlands to determine if the Big Five would emerge from adolescent's peer- and self-ratings. In addition, they wanted to

explore the nature of peer descriptions of personality in adolescence and how they related to self-descriptions. Using twenty-five Dutch bipolar adjectives (5 for each of the Big Five dimensions), self-report data were collected from 2001 students in secondary school ranging in age from 12 to 18 years with a mean of 14.5 years. The self-ratings yielded a five-factor oblique solution, accounting for almost 50% of the total variance, that was almost identical to the Big Five found in adult literature using self-ratings. In addition, using confirmatory factor analyses, the five-factor model produced a satisfactory fit. Scholte et al. (1997) used a peer nomination system to gather data on peer ratings of personality. An exploratory factor analysis yielded a five-factor solution accounting for 59% of the total variance. However, the five factors did not represent the Big Five factors and Cronbach's alphas were lower for the five resulting scales than for the self-descriptions. The authors suggest this finding may be a function of the peer nomination methodology, which allows for multiple nominations of individual students and involves an evaluative component relative to norms established by the group. In addition, peer nominations measure dimensions related to group reputation rather than individual personality or characteristics. They concluded that self-ratings by adolescents are similar to those used by expert adults (i.e. teachers and parents) and may well produce the full Big Five factor structure better than the use of more complicated procedures, such as the Q-sorting method. Although their study provides evidence that the Big Five can be found in adolescent populations, this study has yet to be replicated in the United States.

Parker and Stumpf (1998) used the NEO Five-Factor Inventory (Costa & McCrae, 1992), a measure of the Big Five for adults, and the modified version of the California Child Q-Set (CCQ) developed by John, Caspi, Robins, Moffitt, and Stouthamer-Loeber (1994), to study the factor structure of self-ratings of personality in a population of academically talented youth (i.e. subjects scoring at or above the 97th percentile on a standardized test of academic ability). They collected data, which included 870 self-reports completed by adolescents and 147 parental ratings of adolescents. The mean age of participants was almost 14 years. An exploratory principle components factor analysis of the self-report NEO-FFI yielded five factors that accounted for approximately 37% of the variance. The majority of items loaded with their corresponding scale, however, the items belonging to the Openness scale demonstrated the weakest alignment. When parental ratings on the NEO-FFI were factor analyzed, five factors accounted for almost 44% of the total variance with Openness and Agreeableness being the weakest factors. To check for factor replicability across instruments, a factor analysis of the parental ratings on the CCQ was performed which yielded a five-factor solution accounting for 49% of the variance.

The Parker and Stumpf data are consistent with other findings (i.e. Havill et al., 1994; Victor, 1994) that the Five Factor Model accounts for a substantial amount of variance in parents' descriptions of their children. The finding that adult ratings of personality account for more total variance than the adolescent self-reports on the same instrument may be a function of the instrument itself, which was designed for adult

populations. The students were atypical of a normal adolescent population in that they were academically talented and possessed advanced vocabularies and concepts, which could have influenced how they responded to the questions and conceptualized their tendencies and characteristics. The majority of middle school-aged students do not have the cognitive ability or vocabulary to take an adult measure of personality. The sample is an obvious limitation of the study, which may reduce its applicability to the study of childhood and adolescent personality.

Summary of Empirical Research

With the exception of the Presley and Martin (1994) study, the order of factors in all of the studies utilizing parent and self-ratings was Extraversion, Agreeableness, Conscientiousness, Emotional Stability (or Neuroticism), and Openness or Intellect. In almost every study, regardless of age group, rater, or instrument, Extraversion, Agreeableness, and Conscientiousness were the first three factors to emerge. Extraversion dominated as the first factor in studies where parent ratings were used and in half of the studies utilizing teacher ratings. In a review of early personality development, Eder and Mangelsdorf (1997) note that some important behaviors associated with Extraversion are activity level, facial expressiveness, and emotional expressiveness. Other behaviors such as being talkative and outgoing, are readily observable traits, especially in a social setting like school. Everyone, including teachers, parents, and even children themselves can

easily identify the characteristics associated with Extraversion. In the temperament literature, one characteristic that appears to have a strong hereditary component due to its early emergence and long-term stability is Sociability (see Kagan & Moss, 1962), a large component of Extraversion. It is not surprising that Extraversion dominates as the first or sometimes second factor of the Big Five in children and adolescence, particularly with regard to ratings by parents, who are very cognizant of early appearing temperamental traits. In the case that Extraversion was not the first factor, it usually followed Conscientiousness.

Conscientiousness emerged as the first factor in half of the studies that were based on teacher ratings of personality. Conscientious children are responsible, hardworking, and achievement-oriented. Conscientiousness may be more salient for teachers who view children's personalities in the context of school. Agreeableness is another dimension of personality that emerged predominantly as the second or third factor in teacher, parent, and self-ratings. Agreeableness is the interpersonal dimension of the Big Five and includes behaviors such as being trusting as well as getting along and being empathetic towards others. Both Conscientiousness and Agreeableness are easily discernable in a school environment, which requires the completion of tasks as well as social interaction with peers.

In almost every study, the Openness dimension emerged as the last factor. This is not surprising when one notes that Openness is the least well defined and most

controversial of the Big Five dimensions. This dimension of personality has been

conceptualized as Intellect, which denotes cognitive ability, Culture, which is acquired

through education, and Openness, a need to actively seek out new and varied experiences

(see McCrae & Costa, 1997). Digman (1990) points out that although there appears to be

agreement on the number of factors, there is not agreement on the meanings of these

dimensions, which produces inconsistencies among investigators. The disagreement on

construct conceptualizations is most apparent in the Openness dimension (see McCrae &

Costa, 1997).

With the exception of two studies based on teacher ratings (i.e. Mervielde et al.,

1995; Presley & Martin, 1994), the findings have been almost invariant across age group.

In the younger ages, approximately 3 to 7 years, two of the studies reviewed found only 3

or 4 factors. Both of these studies utilized teacher ratings. At such young ages, teachers

may not view children's personalities as complex as parents. Kohnstamm, Mervielde,

Besevegis, and Halverson (1995) found that parents described their three-year-old

children using the same Big Five taxonomy as those parents of older children. The age

differences may be due to developmental stage, rater, or instrument.

Validity of the Big Five in Childhood and Adolescence

In addition to the growing evidence for the usefulness of the Big Five in

describing childhood and adolescent personality, there is also emerging support for their

validity. Digman (1989) found a strong stability of the Big Five in children over a four-year period of time. In addition, Digman and Inouye (1986) found teacher ratings of Conscientiousness in childhood to be significantly correlated with high school GPA. Conscientiousness has also been significantly positively related to academic performance (Graziano & Ward, 1992; John et al., 1994) and IQ (John et al., 1994) and negatively correlated with attention problems (Victor, 1994) and juvenile delinquency (John et al., 1994). In a study of children in third through fifth grades, Lay, Kovacs, and Danto (1998) reported significant negative correlations between both self-rated and teacher-rated Conscientiousness and trait procrastination. Graziano and Ward (1992) demonstrated a significant relationship between Extraversion and social competence. Adolescents low in Agreeableness have been found to report more day to day conflicts and poorer relationships with teachers and peers (Graziano, Jensen-Campbell & Finch, 1997; Jensen-Campbell, Graziano, & Hair, 1996). Furthermore, Openness has also been linked to overall IQ and school performance (John et al., 1994; Parker & Stumpf, 1998).

Hakegull and Bohlin (1998) conducted a prospective study of 93 Swedish children from infancy to middle childhood using parental temperament ratings and teacher ratings of the Big Five. They found that negative emotionality during preschool years was associated with more Neuroticism at school age and activity level was associated with Extraversion later in childhood. Also, high impulsivity predicted low scores on Agreeableness and higher scores on Neuroticism. In addition, more negative life events occurred in the lives of children who were high in Neuroticism. Overall,

Hakegull and Bohlin found personality in middle childhood to be systematically related to preschool temperament, particularly for the Extraversion dimension. Extraversion appeared to be derived from high activity, low shyness, and sociability, a finding supported both theoretically and empirically by other researchers (Eder & Mangelsdorf, 1997; Kagan & Moss, 1962). Some other interesting relationships established in this study were the finding that maternal sensitivity was a significant predictor of childhood Agreeableness and to a less degree, childhood Conscientiousness. Also, extraverted and outgoing behaviors were associated with the experience of external day care. All of these findings provide a substantial contribution to the nomological network of the Big Five in the preschool and childhood years.

Interestingly, Medvedova (1998) found similar relationships between the Big Five and coping strategies utilized by early adolescents as have been identified in the adult coping literature. Medvedova (1998) found that Neuroticism was positively related to avoidance strategies and negatively related to direct problem solving. In addition, Extraversion was related to support seeking and direct problem solving and Conscientiousness was significantly correlated with the use of active coping strategies.

Robins, John, and Caspi (1994) demonstrated the predictive validity of several of the Big Five dimensions in a population of adolescent boys. They found that Conscientiousness and Agreeableness independently predicted juvenile delinquency and that those boys who had committed more severe delinquent behaviors were almost a half

of a standard deviation lower on both Agreeableness and Conscientiousness. Moreover,

Parker and Stumpf (1998) demonstrated the convergent validity of Extraversion,

Conscientiousness, and Agreeableness in the parental ratings on the California Child Q-

Set and self-ratings on the Five Factor Inventory in a sample of adolescents. However,

Neuroticism and Openness demonstrated only modest convergence. Although the validity

of the Big Five is just emerging, it is clear that the Big Five provide an effective way to

describe individual differences among children and adolescents.

Methodological Issues in Personality Assessment

The measurement of personality is a hot topic of debate among personality

researchers. Often one method is preferred over another because it is thought to be

inherently better, more reliable, or more valid than another. However, no one method has

proven to be the best method for measuring and studying personality. Different

perspectives and research on personality require different methods of collecting data on

individual differences. Those studying personality will differ from those assessing

personality for clinical diagnoses or personnel selection. Furthermore, each method of

assessing personality is embedded in the instrument, and therefore, the two cannot be

divided.

The methodology involved in measuring normal personality traits, such as the Big

Five personality dimensions, can be divided into three general categories. These

categories are self-report methods, ratings by others, and interviews (or those carried out by trained researchers or clinicians). The following is a description of each general category of assessment methodology including the strengths and weakness of each approach to measuring personality.

<div align="center">Self-Report Methods</div>

In the trait approach to personality, self-report methodology is often utilized to study individual differences. McCrae and Costa (1987a) have found that traits can be accurately measured by self-report as well as ratings by others. There are multiple forms that self-report measures of personality traits can take. Two forms of self-rating scales that are frequently employed by researchers are adjective checklists (such as the ACL and Goldberg's Markers), and personality inventories (such as the NEO-PI-R). The basis for self-report methodology is that the individual has observed his or her own behavior across situations and therefore, can accurately rate or judge his or her personality.

Adjective checklists contain a list of adjectives that represent a natural descriptive language that is relevant and useful for both lay raters (i.e. non-trained professionals) as well as scientists and practitioners (Domino, 2000). In trait inventories, individuals are asked to endorse a list of statements and the degree to which the statement represents him or her. These types of scales usually measure responses on a 5-, 7-, or 9-point Likert scale. However, a true-false format or a forced-choice format can be used as well.

Overall, there are many strengths of the self-report methodology that greatly influence their use by personality researchers. Self-report questionnaires and checklists

can be easily administered to large groups of individuals, which makes them very convenient and affordable to use. In addition, they are easily and objectively scored, which allows for the development of normative data. Widiger and Costa (1994) purport that they are inherently more reliable in their administration and scoring.

However, there are some potential drawbacks to using self-report methodology. Graziano, Jensen-Campbell, Steele, and Hair (1998) provided evidence that many of the standard adjectives used in adjective checklists are unfamiliar to college students. Graziano et al. (1998) suggest that if you add elaboration on single-word descriptors to define and clarify its meaning, then internal consistency and validity of ratings increase. However, this is often not the case. Block (1995) found that personality descriptors have a better chance to be valid if the individual who utilizes them is smart, conscientious, and generally adjusted and suggests that lay use of adjectives is inconsistent and unreflective.

Widiger and Sanderson (1995) have found that self-report measures are potentially susceptible to mood-state effects. In addition, using self-report methodology always reduces the accuracy and objectivity of any data. Derlega, Winstead, and Jones (1991) outline five ways in which respondents on self-report inventories may reduce the reliability and validity of the data, which include misunderstanding the questions, hurrying to complete questionnaires, deliberately distorting answers, lacking insight into their own behavior and emotions, and presenting themselves in a positive light. Furthermore, answers are susceptible to self-deception, impression management, social

desirability, acquiescence, and random responding. However, there are ways to reduce the inherent biases and issues, such as impression management and social desirability, by including social desirability items, checking for random responding, using forced-choice responses, and balancing positive and negative statements.

Ratings by Others

Often personality researchers rely on those individuals who are close to or spend considerable time with an individual. Spouses, parents or other family members, teachers, peers, and best friends, as well as supervisors, managers, and co-workers can complete personality ratings. The job of the rater is to decide whether a statement or adjective describes a target individual. Ratings by others can take several forms. For example, there are inventories similar to self-report measures, such as the version of the NEO created for spouses, which are often utilized to gather data from significant others. In addition, there are several techniques that are often utilized in research on children and adolescents, such as Q-sorts and checklists.

An alternative to an individual rating by a significant other is the use of a peer-nomination system, sometimes referred to as sociometric rating, which is often utilized in research on children and adolescents. A peer nomination system usually involves having each member of a group (or class) nominate 1/3 of the other members of the group to the positive pole and 1/3 to the negative pole of a personality adjective. This creates a forced choice nomination method. Scholte, van Aken, and van Lieshout (1997) point out that the peer nomination method allows for multiple ratings on each personality item. In addition,

this method forces raters to compare the target person with others, which creates a reference group for the description of an individual. This may allow for the controlling of biased information. In the case of adolescents, classmates usually know each other over a long period of time, in multiple settings that include a wide range of behaviors to which adult raters may not have access. However, the use of peer nominations often leaves many individuals in the group with few or no nominations. This results in a skewed distribution of nominations received by individuals in the group. In addition, Scholte et al. (1997) concluded that the peer nomination system utilized in their study measured reputation rather than personality. Therefore, the peer nomination system may not be the most accurate and efficient way to measure personality.

Ratings by observers are bound by many of the same constraints and biases as self-reports. As the degree of intimacy between the rater and target individual increases, the more a favorable description is elicited (Derlega, et al., 1991). Furthermore, the method of using raters can be tainted by two rather basic rater biases, the halo effect and leniency. The halo effect refers to a generally favorable or unfavorable rating of an individual that is based on a single, prominent personality trait (Derlega et al., 1991). Therefore, an individual who is strongly positive, outgoing, and cheerful may also be rated as highly conscientious, even if they are not. On the other hand, a highly negative, hostile person may be rated as low on conscientiousness, because their disagreeableness is so salient to the rater. Leniency is the tendency to give generally positive ratings across

personality traits (Derlega et al., 1991). For example, a rater may rate an individual as above average on several, unrelated personality traits or dimensions.

Some research suggests that adolescents do not use the same constructs when rating themselves as adults do when rating them (Graziano & Ward, 1992). In addition, multiple adult raters may not rate children or adolescents on the same constructs. This may add another dimension of difficulty into personality assessment that relies on just one judge or rater. In addition, raters may also demonstrate the central tendency error, which results in the use of only the middle category (i.e. on a 5-, 7-, or 9-point scale), ignoring the high and low categories (McIntire & Miller, 2000). However, these biases can possibly be minimized or avoided if rater training is provided.

Interviews

The interview is often utilized in a clinical setting as well as in personnel selection. Interviews can take several different forms, such as semi-structured interviews as well as the unstructured free description protocol, which is often utilized in research on temperament and personality development. The use of free descriptions of personality has been conducted primarily with parents who are given the task to describe the personalities of their children. Kohnstamm, Mervielde, Besevegis, and Halverson (1995) used a free description protocol in which interviews were tape recorded, transcribed verbatim, and then broken down into codable units. Kohnstamm et al. (1995) used units of analysis, which were defined as an adjective, verb, noun, or phrase referring to a description of behavior, personality characteristics, or ability, to determine if the Five

Factor Model was an appropriate categorization or heuristic for describing childhood personality. Free description protocols are not often used for research or assessment, because of the lack of structure inherent in the process. In addition, they are very time consuming and expensive to carry out. This methodology is utilized more often in generating theories, developing categorization systems, and creating personality instruments.

Semi-structured interviews usually have a fairly structured and predetermined list of questions, however, there is some flexibility available for clarification purposes. Clinical researchers often prefer a semi-structured interview to self-report inventories (Rogers, 1995) because the interview format allows for observational data and clinical judgment in interpreting the subject's scores (Perry, 1992) rather than the subjective data acquired through self-reports. Zimmerman (1994) purports that interviews are intuitively more valid than self-administered questionnaires. He states that questions can be clarified and examples of responses can be elicited. Also, follow-up questions can be asked and the demeanor of the participant is available to the researcher.

Trull and Widiger (1997) developed a 120-item semi-structured interview for the Five-Factor model (SIFFM) for use with clinical populations. This measure of the Big Five showed acceptable levels of internal consistency, stability across time, and correlations with corresponding scores on NEO-PI-R, a self-report measure of the Big Five. Trull, Widiger, Useda, Holcomb, Doan, and Axelrod (1998) propose that the

interview method serves as a validity check of itself, rather than having to rely on multiple methods to extract reliable data.

Although interviewers can offer more objectivity than a known rater, there is also a problem with the amount of time available to assess the individual. The interviewer has to make a rather hasty summary impression of the individual, deriving inferences and utilizing context-specific cues of behavior that may not be valid. These impressions can be based on superficial and insufficient observations (Derlega et al., 1991). Unfortunately, the use of any interviewing technique to collect large amounts of data is very time-consuming on the part of both the interviewer and the participants. Each interview is carried out individually, requiring a face-to-face interaction. In addition, these techniques are inherently more expensive because of the training necessary for interviewers. Furthermore, the semi-structured interview of the Big Five developed by Trull, Widiger, Useda, Holcomb, Doan, and Axelrod (1998) is criterion referenced rather than norm referenced due to the extensive data collection necessary for establishing norms. Criterion-referenced measures do not allow raw scores to be directly compared with normative or other reference groups. A semi-structured interview may be best suited for use in a clinical population where the information acquired will be used to assess and treat an individual rather than to gather large amounts of data for research purposes. In addition, clinical use of interviews may be appropriate because of the susceptibility of self-report measures to the influence of mood-state effects (Zimmerman, 1994).

Measurement of personality traits remains an important issue because, as Mooradian and Nezlek (1996) point out, personality structure is inextricable from personality measurement. Many researchers support the principle that gathering information from multiple perspectives provides convergent validity for any measurement system. Many personality researchers suggest gathering data from multiple perspectives, using multiple methods, which may reduce biases and errors inherent in each method of personality assessment.

<u>Measurement of The Big Five in Adolescents</u>

John, Caspi, Robins, Moffitt, and Stouthamer-Loeber (1994) suggest that although there are multiple ways to measure the Big Five dimensions, they are not "instrument bound" (pg. 175). However, there are some methodological issues specific to the study of the Big Five in adolescent populations. John et al. (1994) note that research in the past has been hindered by the lack of an adequate measure of the Big Five designed specifically for use with children and adolescents. Much of the research that has explored the Big Five in childhood or adolescence has relied solely on ratings by adults, more specifically teachers and parents. The majority of empirical research demonstrates that adults rate both children and adults in terms of conceptually similar dimensions of personality (Shiner, 1998). However, very few studies use self-report methods leading to almost no research assessing adolescents' perceptions of their own personality. Lanthier (1993) suggests, "there is little evidence to show that the Big Five dimensions in children are based on anything other than adult schemas for personality" (pg. 8). Research is

needed to confirm that children and adolescents rate themselves in the same dimensions that adults rate them.

Graziano and Ward (1992) provide evidence that relying on just one adult, as many of the current studies do, may not provide a clear picture of the structure of personality of a child. Often there are substantial differences between parent and teacher ratings. Presley and Martin (1994) suggest that teachers may not be able to observe a child's behavior across multiple contexts and may be biased due to the focus on task-oriented behavior and the constraints of the school environment. Presley and Martin found that when comparing ratings on child personality, teacher ratings produced only three factors as opposed to the five-factor solution for parental ratings. Despite these findings, previous research suggests that teacher ratings of adolescents have produced five dimensions of personality (Graziano & Ward, 1992). It may be beneficial to collect self-ratings from adolescents and compare these to both parent and teacher ratings.

Self-report measures designed specifically for older children and adolescents are needed to gather the perspectives of this age group rather than always relying on adult schemas. This may make a significant methodological contribution to the study of children and their own perceptions of personality and make the study of personality in this age group much more convenient (Lanthier, 1993). Moreover, there are some formats that may be more appropriate for the study of self-reported personality dimensions in adolescence. In two studies, Graziano, Jensen-Campbell, Steele, and Hair (1998)

explored if unknown adjective words affected self-reports in college students and

adolescents using Goldberg's markers. Graziano et al. (1998) speculated that children are

probably less knowledgeable about words used to describe behavior and, therefore, this

unfamiliarity would affect the factor structure of personality ratings. Surprisingly, they

found no evidence that the presence of unknown words in measures of the Big Five

influenced the five-factor structure in either first year college students or adolescents in

5th through 8th grades. However, their methodology allowed for both the college students

and adolescents to request definitional help for unfamiliar words. This is not always

possible, especially when collecting large amounts of data without the use of computer

programs as in the aforementioned study. Without the availability of technology,

adjective checklists may not be the most advantageous method to use.

Summary

Researchers are building strong evidence that the Five Factor Model can be

reproduced in child and adolescent populations (Digman & Takemoto-Chock, 1981,

Graziano & Ward, 1992; John et al., 1994; Mervielde et al., 1995; Scholte et al., 1997;

Van Lieshout & Haselager, 1994). The currently reviewed studies provide support for the

existence of the Big Five in parents' natural language descriptions, teacher ratings,

dominant temperament instruments, adolescent self-reports, and descriptions by best

friends. Results for children aged 3 to 7 years are less representative of the Big Five

structure than older children and adolescents (Van Lieshout & Haselager, 1994). By the age of 11, it appears that the Big Five become robust factors of personality. In addition, it has been established that the Big Five are significantly related to adolescent behaviors such as juvenile delinquency, academic performance, behavior problems, and other personality traits such as procrastination.

Digman and Inouye (1986) state, "The Big Five robust factors, then, are not necessarily the verities of personality description. They represent the degree of complexity, the dimensionality, of the personality rating process" (pg. 120). However, it is apparent that new measures of the Big Five designed specifically for use with children and adolescents may shed more light on the presence of the Big Five in these populations. An important goal for future research is the examination of the relationship between self-report data and personality ratings collected from adult raters.

The Present Research

The primary goal of the present research is to develop a self-report measure of the Big Five personality dimensions for use with early adolescents, with the target age range of 12 to 14 years. Currently, there are no self-report questionnaires designed specifically to study the Big Five in adolescent populations. This portion of the research will make a substantial methodological contribution to the study of personality in early adolescence. Part I of the research comprises the scale development phase, including the generation

and selection of items and the internal consistency reliability of each scale. The second

goal of the present research is to determine if the scale is a valid measure of the Big Five

for use with adolescents. Part II of the research is made up of two studies to establish the

validity of the Adolescent Big Five Inventory. Messick (1989) suggests using construct

scores based on different measurement methods to avoid shared method variance.

Therefore, convergent validity of the Adolescent Big Five Inventory will be assessed

using personality ratings provided by teachers to determine if significant relationships

exist between the adolescent scores on the ABFI and ratings by teachers on the Big Five

personality dimensions. Messick (1989) also indicates that one should expect a

convergence of indicators, suggesting that a person should exhibit similar scores on two

measures of the same construct under consideration. Thus, to further establish construct

validity using a convergence of indicators approach, college students completed the

Adolescent Big Five Inventory along with the NEO Five-Factor Inventory (Costa &

McCrae, 1992), a well-established adult measure of the Big Five, to determine if scores

on the ABFI were significantly related to those same constructs on the NEO-FFI. Social

desirability was also assessed in the second part of the current research.

CHAPTER II

PART I: DEVELOPMENT OF THE INSTRUMENT

Overview of the Research

The purpose of this study is to develop a self-report inventory to measure the Big Five personality dimensions for use with adolescent populations. The Big Five scales were developed using *a priori* definitions established by researchers in the area of adult personality. Data was collected from over two hundred middle school students, ranging in age from 11 to 14 years. In the initial investigation, all of the Big Five scales demonstrated strong internal consistency reliability with the exception of Openness. Substantial item changes were made to the Openness scale. No significant age or grade differences were found on the Big Five dimensions. However, several significant gender differences were found. Results and modifications made to the Adolescent Big Five Inventory are discussed.

Method

Participants

Two hundred and four middle school students in the 6th through 8th grades participated in the first part of the present research. The total sample included 37% males ($\underline{n}$=76) and 63% females ($\underline{n}$=128). The ethnicity of the sample was 85% white ($\underline{n}$=173), 6% black ($\underline{n}$=12), 1.5% Hispanic ($\underline{n}$=3), and 6% Indian or Asian ($\underline{n}$=12). Three

participants marked the category of Other and one participant failed to report ethnicity. Twenty-nine percent of the participants were in the 6th grade ($\underline{n}$=59), 25% of the participants were in the 7th grade ($\underline{n}$=51), and 46% of the participants were in 8th grade ($\underline{n}$=94). At the time of data collection, the majority of the students were between the ages of 12 and 14 (92%). Seven percent of the students were 11 years old ($\underline{n}$=14) and 1.5% of the students were 15 years old ($\underline{n}$=3). The mean age of all participants was 12.8 years.

As an incentive for their participation, students were offered a brief feedback letter on the personality dimensions examined in the present study. All participants who acknowledged that they would like the feedback letter received a one-page description within two months of their participation. The description included a paragraph based on whether they were generally high, medium, or low on the following dimensions of personality: Neuroticism (labeled Emotion-Resilient), Introversion-Extraversion, Openness to Experience (labeled Stability-Change), Agreeableness (labeled Straightforward-Agreeable), and Conscientiousness (labeled Flexible-Structured). A sample feedback letter can be found in Appendix C.

<div align="center">Measures</div>

The Adolescent Big Five Inventory (ABFI) was developed to obtain self-reports of the Big Five dimensions of personality, Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The instrument was designed specifically for use with adolescents, ranging from ages 11 to 18 years of age, and focuses primarily on those aged 11 to 14 years. Responses are scored on a 3-point scale

where $\underline{1}$ represents True, $\underline{2}$ represents In-Between, and $\underline{3}$ represents False. The following is a description of the development of the Adolescent Big Five Inventory.

After a review of the literature and Big Five instruments, ninety-one items were written to reflect the following dimensions of personality: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. With the exception of Openness to Experience, the definitions of the five dimensions were based on those of Costa and McCrae and their colleagues (McCrae & Costa, 1987a), due to their extensive investigation of the Big Five in adult populations. Costa and McCrae (1997) conceptualize Openness as a need for new and varied experiences, including trying new foods, engaging in philosophical arguments, endorsing liberal political and social values, questioning authority, and rejecting convention. However, these activities may not be relevant to the study of adolescents, who lack the cognitive maturity and life experiences to have an understanding, appreciation, and need for aesthetics, values, and ideas. Some of these concepts were retained and translated into adolescent terms, which mostly focus on an openness to learning about new and different things and a preference for routine. Between 16 and 20 items were created for each dimension and the order of items was counterbalanced to control for acquiescence.

Neuroticism is the tendency to experience unpleasant, negative emotions and emotional distress. Neurotic individuals tend to be anxious, depressed, self-conscious, impulsive, and sometimes hostile. The Neuroticism scale includes sixteen items with

such statements as <u>I worry about things a lot</u>; <u>I feel good about myself most of the time</u> (Reversed item); and <u>When something bad happens, it's usually my fault</u>.

Extraversion is the tendency to be socially outgoing and active, and to experience positive affect. Extraverted individuals become emotionally attached to others, enjoy taking on leadership roles, like to experience "thrills", and tend to be optimistic and generally happy. The Extraversion scale includes eighteen items with sample items such as <u>I like meeting new people</u>; <u>I am a friendly person</u>; and <u>Doing stuff with other people makes me feel good</u>.

Openness is a tendency to be open to new things and ideas, and to be imaginative and curious. Open adolescents are those who like to try new things, enjoy learning about other cultures, languages, and places and who are not too rigid in their thinking and activities. The Openness scale includes twenty items with sample statements such as <u>I like to try new things</u>; <u>I would like to keep going to school just to learn new things</u>; <u>Other people say I am curious</u>.

Agreeableness is a dimension of interpersonal behavior that represents a trust of and concern for other people. Agreeable individuals tend to be helpful, courteous, willing to cooperate, modest, and empathetic. In addition, they value relationships with others and generally do not act antagonistically or deceptively towards others. The Agreeableness scale includes eighteen items such as <u>I think most people are honest</u>; <u>People get on my nerves a lot of the time</u> (Reversed); and <u>I sometimes trick other people into doing what I want them to do</u> (Reversed).

Conscientiousness is the propensity to be persistent, goal-oriented, careful, responsible, reliable, achievement-oriented and hardworking. Costa, McCrae, and Dye (1991) conceptualize Conscientiousness as having two major components. The first aspect is motivation, which manifests itself in behaviors like a need for achievement and commitment to work. The second aspect is restraint, which manifests itself in ethical and prudent behaviors. Conscientious individuals maintain a high level of competence, order, dutifulness, and self-discipline. A few examples of the nineteen items on the Conscientiousness scale include I always do what I say I will do; I only miss school when I am very sick; I don't like to follow every rule when I am playing a game (Reversed).

After the items were written, they were subjected to critical review by both experts in the area of personality assessment for content validation (Messick, 1989) as well as by middle school teachers who reviewed the items for appropriate comprehension level. The average number of words per sentence is 9.5 and the average number of characters per word is 3.7. Readability statistics were run using the Microsoft Word (Office 2000) software program on the ABFI to determine the grade level and reading ease of the items on the instrument. The Flesh-Kincaid grade level is 3.2 and the Flesch reading ease is 88.9.[1] Five choices for responses (i.e. Yes, No, In-Between and Always, Sometimes, Never) were presented to a group of middle school students who voted on the choices they thought were easiest to understand based on a set of sample items. The

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[1] The Flesch Reading Ease is based on a 100-point scale on which the higher the score, the easier the text is to read. In addition, the Flesch-Kincaid Grade Level rates text on a U.S. grade school level based on the average syllables per word and the average sentence length.

students chose the <u>True</u>, <u>False</u>, <u>In-Between</u> as the best response choice based on the type of statements presented in the Adolescent Big Five Inventory.

Procedure

Data were collected at a public middle school located in a medium-size city in the Southeastern United States. The middle school has close to 1000 students in 6th through 8th grades. The overall middle school population was similar to those participants in the current study with 82% White, 13.5% Black, 3% Indian or Asian, and 1.5% Hispanic. Permission to conduct research in the public schools was granted first through the school system's supervisor of research, and then the middle school principal. After receiving written notice of approval from both the school system and the principal, permission to conduct the research was granted by the Institutional Review Board (IRB) for human subjects review at the University of Tennessee. After IRB approval, teachers were recruited during a faculty meeting. Teachers were encouraged to sign up if they wanted their students to participate in the project. Teachers were told that participating students would receive a one-page feedback letter describing the personality dimensions, derived from scores on the instrument being developed and validated. The teachers who agreed to participate announced the research project to their participating class or classes.

Teachers were responsible for distributing and collecting parental informed consent forms. In addition to parental informed consent, the adolescent participants were asked to give their assent to participate. See Appendix A for all of the Informed Consent forms, including the Assent Form. Approximately 600 students were initially presented

with the opportunity to participate in the research project. Of those 600 students, approximately one-third (N=204) returned a signed parental informed consent form and were subsequently present on the day data was collected. Because the middle school teachers are divided into teams, they coordinated among themselves how to administer the questionnaires to students (e.g., either one teacher gave it to all classes or every teacher gave it during the same period). At the beginning of the administration, teachers read the following instructions to the student participants:

"Your parents have given permission for you to participate in a research project about personality. You will be asked questions about the way you act and about things you like and do not like. Read each sentence carefully. Circle the word that describes you the best. For example, if a sentence sounds exactly like you, you should circle True. If it describes you pretty well, you should circle In-Between. If a sentence does not sound like you, you should circle False.

Answer each question as honestly as you can. Your answers will be kept private. At the end you will be asked if you want the results of this questionnaire. Circle YES if you want a copy of your results. When you are finished, put your questionnaire in the folder so no one will see your answers. You will receive your results by the end of the school year. Your results will be based on the way you answer the questions – so answer honestly."

The directions were repeated at the top of the questionnaire. When the participating

students had completed the questionnaires, they placed them in a sealed envelope. One

teacher acted as the liaison between the participating teachers and the researcher. The

liaison returned the parental informed consent forms and the completed questionnaires to

the researcher.

Results

Internal consistency reliability for each of the Big Five dimensions was assessed

by running Cronbach's alpha reliability tests using the SPSS statistical package (SPSS

version 9.0.1, 1999). Table 1 represents the Cronbach's coefficient alpha reliabilities and

descriptive statistics for the Big Five dimensions on the Adolescent Big Five Inventory.

Four of the Big Five scales demonstrate strong internal consistency reliability with

coefficient alphas ranging from .76 for Extraversion to .86 for Neuroticism. Openness

yielded the lowest internal consistency with a Cronbach's alpha coefficient of .59.

A series of t tests were computed to detect any significant gender or age

differences on the ABFI. Table 2 presents the means and standard deviations for male

and female adolescent participants. No significant gender differences were found on the

Neuroticism ($t = -.85$, $p > .05$) or Conscientiousness ($t = -1.73$, $p > .05$) scales. However,

there were significant gender differences on the Extraversion ($t = -3.23$, $p < .01$),

Agreeableness ($t = -2.79$, $p < .01$), and Openness ($t = -2.57$, $p < .05$) scales with female

Table 1

Reliability estimates for the Adolescent Big Five Inventory.

Dimension	Number of Items	Scale Mean	Cronbach's Coefficient Alpha	Mean inter-item correlation
Neuroticism	16	28.12	.86	.28
Extraversion	18	40.69	.76	.17
Openness	20	48.18	.59	.07
Agreeableness	18	39.82	.78	.16
Conscientiousness	19	42.08	.82	.19

Note. $N = 204$.

Table 2

Participants' Scores on the ABFI: Means of male and female adolescents.

ABFI Dimension	Means			t
	All	Males	Females	
Neuroticism	28.12	27.58	28.43	-.85
	(6.86)	(6.33)	(7.16)	
Extraversion	45.36	43.89	46.22	-3.23**
	(5.05)	(5.80)	(4.37)	
Openness	48.18	47.10	48.82	-2.57*
	(4.66)	(4.63)	(4.57)	
Agreeableness	39.21	38.39	40.66	-2.79**
	(5.69)	(5.63)	(5.57)	
Conscientiousness	42.08	41.05	42.69	-1.73
	(6.55)	(6.49)	(6.54)	

Note. N=204. All numbers in parentheses represent the standard deviation of the corresponding mean.

**p ≤ .01

*p ≤ .05

participants scoring significantly higher than male participants on all three scales. Pearson's product moment correlations were run between age and each of the Big Five dimensions. No significant correlations emerged between age of participants and any of the ABFI scales, Neuroticism (r=.08, p>.05), Extraversion (r=.10, p>.05), Openness (r=.07, p>.05), Agreeableness (r=-.06, p>.05), and Conscientiousness (r=-.06, p>.05).

Response frequencies were run for each individual item on the Adolescent Big Five Inventory. It was noted that several items were marked either True or False by fewer than 1% of participants. For example, the Extraversion item I like to laugh with other people was marked False by only one participant. Furthermore, not one participant marked False for the item I like to do well in school, an item on the Conscientiousness scale. The content of these questions was reviewed and it was determined that several items should be removed from subsequent versions of the instrument. Twenty-four items were removed from the scale due to low item-total correlation coefficients or based on response frequencies for the item. Eleven of these items removed were on the Openness scale, five were from the Extraversion scale, five were from the Agreeableness scale, and three were removed from the Conscientiousness scale. No items were removed from the Neuroticism scale. The response choices were increased from three choices (True, In-between, False) to five choices (Strongly Disagree, Disagree, In-between, Agree, Strongly Agree) to increase the overall variance in the responses. Six items to assess social desirability were also be added to the next version of the instrument.

Summary of Results

The internal consistency reliabilities were satisfactory for all scales except

Openness, which had a Cronbach alpha reliability coefficient of .59. In addition, the

mean inter-item correlation for Openness scale was .07. This demonstrates that the items

were not related enough to one another to be measuring one common construct. Although

this finding is not surprising, owing to the ambiguous nature of the dimension of

Openness to Experience, the scale was revised for Part II of the research. The following

is a description of changes that were made to the ABFI for the second phase of the

research.

All of the Neuroticism items were retained for the next phase of research because

they demonstrated high internal consistency. Five items were removed and four items

were added to the Extraversion scale. Only seven of the original 20 items on the

Openness scale were retained. Eleven new items were generated for the Openness scale.

The new Openness items attempt to assess an adolescent's desire to learn about new

things, respect for other peoples' ideas, creativity, and how easily one gets bored. Five

items were removed from the Agreeableness dimension. Sixteen of the original 19

Conscientiousness items were retained. A total of twenty-four items were removed and

eighteen new items were added to the instrument, resulting in the new 85-item version of

the ABFI to be tested on a second group of middle school students.

CHAPTER III

PART II: VALIDATION OF THE ADOLESCENT BIG FIVE INVENTORY

Overview of the Research

The purpose of Part II of the research was to determine if the Adolescent Big Five Inventory is a valid measure of the Big Five. Therefore, two separate studies were conducted to establish convergent and construct validity of the instrument. Study 1 assesses the convergent validity of the ABFI by investigating the relationship between adolescents' scores on the ABFI and teacher ratings of the Big Five personality dimensions using the Personality Rating Scale for Teachers. Study 2 assesses the construct validity by correlating Big Five scores on the ABFI with the same dimensions on the NEO-FFI using college student participants. The ABFI scales demonstrated strong internal consistency reliability. Extraversion, Openness, and Agreeableness, were significantly correlated with teacher ratings on the same dimensions. A convergence of indicators was established with significant correlations between the Big Five dimensions of the ABFI and NEO-FFI.

Methods

Participants

Group 1

Seventy-two 7th grade middle school students (33 males and 39 females) served as participants in convergent validity study of the Adolescent Big Five Inventory. These students attended the same middle school as the participants in Part I of the research. Thirty percent of the students were 12 years of age (n=22) and 70% were 13 years of age (n=50) with a mean of 12.7 years. Approximately 90% of the participating students were White (n=65), 4% were Black (n=3), and 6% were Asian or Indian (n=4).

Group 2

One hundred seven undergraduate students (45 males, 60 females, 2 missing data) enrolled in a 200-level psychology course at the University of Tennessee participated in the construct validation of the Adolescent Big Five Inventory. Eighty-eight percent of the participants fell between 18 and 22 years of age with the majority of participants between the ages of 18 and 26 years. Seventy-eight percent of the participating college students were white (n=84), 13% were black (n=14), 1% were Native American (n=1), and 2% were Indian or Asian (n=2). Three percent failed to report race (n=5) or marked the Other (n=4) category. Twenty-eight percent of the participants were freshmen (n=30), 29% were sophomores (n=31), twenty-eight percent were juniors (n=30), and 7.5 % were seniors (n=8). Three participants were non-traditional students and five failed to report year in school.

Measures

Adolescent Big Five Inventory

The Adolescent Big Five Inventory is an 85-item, self-report assessment that measures the Big Five personality dimensions using a 5-point likert scale with the following response options: 1 (Strongly Disagree), 2 (Disagree), 3 (In-Between), 4 (Agree), and 5 (Strongly Agree). Six of the items were included specifically to measure social desirability and are adapted to this study from the Marlowe-Crowne scales (Crowne-Marlowe, 1960). The ABFI is designed specifically for use with adolescent populations, ranging in age from 11 to 18 years. In Part I of the research, a version of the ABFI was distributed and evaluated for internal consistency reliability. A description of the development of the scale as well as modifications made to the original version of the scale can be found in Chapter 2. A copy of the items for 2 of the ABFI can be found in Appendix B.

Personality Rating Scale for Teachers

The Personality Rating Scale for Teachers is a 36-item questionnaire developed specifically for the current research project. The rating questionnaire is utilized to assess teacher ratings of the Big Five personality dimensions in adolescent students. Items were designed to evaluate typical behaviors associated with each of the Big Five dimensions, such as Seems sad and depressed (Neuroticism), Talks a lot (Extraversion), Starts fights with other students (Agreeableness), Is very curious (Openness), and Strives to perform well in school (Conscientiousness). The items were designed to reflect behaviors and

characteristics that teachers can easily assess in students within the school environment. The frame of reference used in the rating process is thought to provide a more valid context of evaluation (Schmit, Ryan, Stierwalt, & Powell, 1995).

There are between 6 and 8 items for each scale. Behaviors are rated on a five point Likert scale with the following response options: 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), and 5 (Always). The Personality Rating Scale for Teachers was used to assess the personalities of the 72 middle school students who participated in Study 1 of Part II of the research. Coefficient alphas in the present study were found to be .79 for Neuroticism, .82 for Extraversion, .81 for Openness to Experience, .91 for Agreeableness, and .93 for Conscientiousness. A copy of the items as well as statistical information for the Personality Rating Scale for Teachers can be found in Appendix C.

NEO Five-Factor Inventory

The NEO Five-Factor Inventory (Costa & McCrae, 1992) is a 60-item, shortened form of the NEO-PI-R (Costa & McCrae, 1992), a 240-item self-report questionnaire that assesses the Big Five dimensions of personality in adult populations. The NEO-FFI consists of the 12 items of each factor of the NEO-PI-R that have the highest positive or negative loading. Statements are rated on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The NEO-FFI has shown strong internal consistency reliability, test-retest reliability, and interrater agreement. Costa & McCrae (1992) have reported coefficient alphas for each of the 12-item scales as .86 for Neuroticism, .77 for Extraversion, .73 for Openness to Experience, .68 for

Agreeableness, and .81 for Conscientiousness. Coefficient alphas for college students in

the present study were .84 for Neuroticism, .76 for Extraversion, .72 for Openness to

Experience, .74 for Agreeableness, and .78 for Conscientiousness.

<div align="center">Procedure</div>

Study 1

Data collection took place at the same public middle school where Part I of the

research was conducted. Students were offered feedback an incentive for their

participation. Teachers were responsible for distributing and collecting parental informed

consent forms. The middle school participants for Part II were presented with the

opportunity to participate at the same time as those students in Part I. The 7th grade team

was chosen to participate in Part II based on the teacher willingness to dedicate the extra

time to rate student personalities. The group of teachers was comprised of a 30 year-old

female teacher in her 4th year of teaching, a 30 year-old male teacher in his 3rd year of

teaching, and a 52 year-old female teacher in her 15th year of teaching.

The seventh grade is made up of two teams with approximately 160 students on

each team. One 7th grade team participated in Part I and the other team participated the

current study. Three of teachers that make up the six-teacher team provided teacher

ratings, which were collected about two thirds of the way through the school year. The

participating teachers, therefore, had had approximately 7 months of daily contact with

the students whose personalities they were rating. A list of participating students was

generated and then divided among the three participating teachers. The raters were given

a set of guidelines (See Appendix C) for rating their students' behavior. The teachers rated approximately 25 students each, using the Personality Rating Scale for Teachers. The raters were offered an incentive for their participation, which included a gift certificate to a local restaurant.

Study 2

Approximately 150 students enrolled in an upper division psychology course at the University of Tennessee were recruited to participate in the study. The study was announced during class time and students were offered extra credit for their participation. Informed consent forms and the questionnaires were distributed in class. Participants were allowed to take the questionnaire packet home and return it to the researcher one week later at the beginning of class. Of those students recruited to participate in the study, 107 individuals completed the questionnaires and subsequently returned them to the researcher, for a response rate of 71%.

Results

All statistics were run using the SPSS statistical package using Version 9.0.1. (SPSS Base 9.0 User's Guide, 1999). Descriptive statistics and internal consistency reliability for the Adolescent Big Five Inventory (ABFI) are presented together for the adolescent and college student participants. Relationships between the ABFI scales and demographic variables and social desirability are presented separately for each group. The validity studies are then presented individually.

Descriptive Statistics and Internal Consistency Reliability

Cronbach's alpha reliability analyses were conducted on each of the ABFI scales. The ABFI scales showed high internal consistency reliability, with coefficients ranging between .72 and .93. Combined Cronbach's alpha reliability coefficients and mean inter-item correlations for Groups 1 and 2 can be found in Table 3.

Further analyses were run to determine if there were any significant relationships between the Big Five dimensions on the ABFI and demographic variables. T tests were run to determine if gender differences would emerge. Means, standard deviations, and t values on the ABFI scales for males and females can be found in Table 4. No significant gender differences were found on any of the dimension scales of the ABFI for the adolescent participants (Group 1). Significant gender differences among college students (Group 2) were observed for two of the ABFI dimensions with female participants scoring significantly higher on Agreeableness (t=-2.12; p<.05) and Conscientiousness (t=-2.05; p<.05) than the male participants.

Correlations between age of participants and ABFI scores were computed for both groups of participants. Table 5 presents the Pearson product moment correlation coefficients for each group. There were no significant correlations found between age and the ABFI Big Five dimensions for the adolescent group. However, for Group 2 significant positive correlations emerged between age and the dimensions of Agreeableness (r=.22; p<.05) and Conscientiousness (r=.25; p<.05). A significant negative correlation was found between age and Neuroticism (r=-22; p<.05).

Table 3

Combined descriptive statistics and reliability estimates for the Adolescent Big Five

Inventory for groups 1 and 2.

Dimension	Number of Items	Scale Mean	Cronbach's Coefficient Alpha	Mean inter-item correlation
Neuroticism	16	41.55	.85	.26
Extraversion	16	59.73	.85	.27
Openness	18	64.49	.75	.14
Agreeableness	12	42.70	.72	.17
Conscientiousness	17	56.44	.76	.18
Social Desirability	6	18.34	.67	.23

Note. N=179.

Table 4

Adolescent Big Five Inventory: Means and standard deviations of male and female

participants for adolescent and college student participants.

ABFI Dimension

	Adolescents N=72			College Student N=105		
	Males	Females	t	Males	Females	t
Neuroticism	37.94	41.29	-1.55	41.29	43.75	-1.33
	(8.50)	(9.67)		(9.50)	(9.34)	
Extraversion	60.18	63.80	-1.79	56.27	59.28	-1.92
	(9.18)	(7.96)		(8.86)	(7.15)	
Openness	64.07	63.73	.18	64.11	65.58	-.96
	(7.00)	(9.26)		(8.29)	(7.06)	
Agreeableness	41.93	44.92	-1.73	40.80	43.17	-2.12*
	(7.30)	(7.27)		(5.81)	(5.57)	
Conscientiousness	57.42	55.80	.73	54.72	57.59	-2.05*
	(8.99)	(9.55)		(7.22)	(6.80)	

Note. All numbers in parentheses represent the standard deviation of the corresponding

mean.

** p<.01

*p < .05

Table 5

Correlation coefficients for age and scores on the Adolescent Big Five Inventory.

ABFI Dimension	Age of Participants	
	Adolescents	College Students
Neuroticism	.06	-.22*
Extraversion	.12	.02
Openness	.15	.07
Agreeableness	-.11	.22*
Conscientiousness	-.03	.25*

Note. N = 72 for adolescents and N = 107 for college students.

** p<.01

* p < .05

The Adolescent Big Five Inventory and Social Desirability

A series of Pearson product-moment correlation analyses were computed to determine which, if any, of the Big Five dimensions on the Adolescent Big Five Inventory were significantly related to social desirability. The analyses were run separately for Groups 1 and 2. The correlation coefficients can be seen in Table 6. Very different patterns emerged for the adolescent and college-aged groups. In the adolescent group, social desirability items were significantly correlated with Openness (r=.24, p<.05), Agreeableness (r=.42, p<.01), and Conscientiousness (r=.40, p<.01) in the positive direction and Neuroticism (r=-.47, p<.01) in the negative direction.

With the exception of Openness, the college student population showed the direct opposite relationship of social desirability to personality traits. College student participants demonstrated a significant positive correlation between social desirability and Neuroticism (r=.30, p<.01) and significant negative correlations between social desirability and Agreeableness (r=-.30, p<.01) and Conscientiousness (r=-.25, p<.05). Correlation analyses were run between social desirability items and the college student participants' scores on the NEO-FFI to determine if a similar relationship existed between social desirability and the Big Five dimensions of the ABFI and NEO-FFI. The only significant correlation emerging from these analyses was found for the Agreeableness dimension of the NEO-FFI, which was negatively correlated with social desirability (r=-26, p<.05).

Table 6

Correlations coefficients for social desirability and scores on the Adolescent Big Five

Inventory.

ABFI Dimension	Social Desirability	
	Adolescents	College Students
Neuroticism	-.47**	.30**
Extraversion	.12	.15
Openness	.24*	.05
Agreeableness	.42**	-.30**
Conscientiousness	.40*	- .25*

Note: N = 72 for adolescents and N = 107 for college students.

** p < .01

* p < .05

Study 1: Convergent Validity

The purpose of Study 1 was to determine if adolescents' scores on the ABFI were significantly related to the corresponding teacher ratings, which would indicate convergent validity for the instrument (Messick, 1989). Three teachers were used to rate the personalities of the adolescent participants. To reduce the variability due to raters, the sum of each teacher's rating on each dimension was converted to a Z score. The Z scores were then correlated with the student ABFI scores for each dimension. The validity coefficients can be found in Table 7. Significant positive correlations were found between adolescent scores and teacher ratings on the following dimensions: Extraversion (r=.30, p<.01), Openness (r=.31, p<.01), and Agreeableness (r=.68, p<.01). However, no significant correlations were found between student-rated and teacher-rated scores on the Neuroticism (r=.17, p>.05) or Conscientiousness (r=.18, p>.05) dimensions.

Teacher ratings of Neuroticism did not significantly correlate with any of the adolescents' scores on the ABFI. Teacher ratings of Extraversion were significantly correlated with ABFI scores on both Extraversion (r=.30, p<.01) and Openness (r=.26, p<.05). Teacher ratings on Agreeableness were significantly correlated at the p<.01 level with adolescent scores on all of the Big Five dimensions, resulting in the following correlation coefficients: r=-.40 for Neuroticism, r=.51 for Extraversion, r=.33 for Openness, r=.68 for Agreeableness, and r=.40 for Conscientiousness. Teacher ratings of Openness were significantly related only to student scores on Openness (r=.31, p<.01). Teacher-rated Conscientiousness was not significantly correlated with Conscientiousness

Table 7

Convergent validity coefficients for the ABFI and teacher ratings of the Big Five dimensions.

	METHOD 1					METHOD 2				
	N1	E1	O1	A1	C1	N2	E2	O2	A2	C2
Self-Report										
N1	(.85)									
E1	-.41**	(.85)								
O1	-.36**	.60**	(.75)							
A1	-.51**	.40**	.41**	(.72)						
C1	-.40**	.33*	.33**	.52**	(.76)					
Teacher Ratings										
N2	.17	-.01	-.17	-.18	-.17	(.79)				
E2	-.10	.30**	.26*	.07	.06	-.40**	(.82)			
O2	-.15	.09	.31**	.11	.09	-.51**	.62**	(.89)		
A2	-.40**	.51**	.33**	.68**	.40**	.00	-.22	.14	(.91)	
C2	-.03	.17	.24*	.27*	.18	-.66**	.54**	.63**	.14	(.93)

Note: N=72. Method 1 (N1, E1, O1, A1, C1) represents the ABFI and Method 2 (N2, E2, O2, A2, C2) represents the

Personality Rating Scale for Teachers. Values in parentheses represent Cronbach's alpha reliability coefficients.

Boldfaced correlations represent validity coefficients.

** $p < .01$

* $\underline{p} < .05$

(r=.18, p>.05) scores on the ABFI but were significantly correlated with Openness (r=.24, p<.05) and Agreeableness (r=.27, p<.05).

Several of the adolescent scores on the ABFI dimensions were significantly correlated with the teacher-rated dimensions of personality. In addition to being significantly correlated with teacher ratings of Openness, adolescent scores on the Openness dimension were significantly and positively correlated with teacher ratings on Extraversion (r=.26, p<.05), Agreeableness (r=.33, p<.01), and Conscientiousness (r=.24, p<.05). ABFI scores on the Agreeableness dimension were significantly and positive correlated not only with teacher-rated Agreeableness, but also with teacher-rated Conscientiousness (r=.27, p<.05). Pearson's product-moment correlations were computed for the teacher-rated Big Five dimensions and student scores on the social desirability items of the ABFI. The only significant relationship that emerged between social desirability and personality ratings was teacher-rated Agreeableness (r=-.51=, p<.01). See Appendix C for all of the correlations.

Significant correlations emerged among the Big Five scales of the Personality Rating Scale for Teachers. There were highly significant negative correlations between teacher-rated Neuroticism and teacher-rated Extraversion (r=-.40, p<.01), Openness (r=-.51, p<.01), and Conscientiousness (r=-.66, p<.01). In addition, teacher-rated Extraversion was significantly positively correlated with teacher-rated Openness (r=.62, p<.01) and Conscientiousness (r=.54, p<.01). Furthermore, teacher-rated Openness was significantly positively correlated with teacher-rated Conscientiousness (r=.62, p<.01).

Teacher-rated Agreeableness was not significantly correlated with any of the other teacher-rated dimensions of personality.

A series of t tests were run to determine if any significant gender differences in teacher ratings would emerge. Conscientiousness was the only dimension on which girls were rated significantly higher than boys (t=-2.40, p<.01). No significant differences were found in ratings of Neuroticism (t=-.40, p>.05), Extraversion (t=-1.45, p>.05), Openness (t=.29, p>.05), or Agreeableness (t=-.58, p>.05).

Study 2: Construct Validity

The purpose of Study 2 was to establish the construct validity of the Adolescent Big Five Inventory by testing for a convergence of indicators (Messick, 1989) of the Big Five personality dimensions by utilizing another Big Five instrument. College students completed the Adolescent Big Five Inventory along with the NEO Five-Factor Inventory (Costa & McCrae, 1992), a well-established adult measure of the Big Five. The correlation matrix can be found in Table 8. The Big Five dimensions on the ABFI were significantly correlated with the Big Five dimensions on the NEO-Five Factor Inventory. Pearson product moment correlations for the Big Five dimensions of the NEO-FFI and ABFI were found to be .83 for Neuroticism, .77 for Extraversion, .60 for Openness, .68 for Agreeableness, and .69 for Conscientiousness.

Neuroticism on the ABFI was significantly negatively correlated with Extraversion (r=-.29, p<.01), Agreeableness (r=-.36, p<.01), and Conscientiousness (r=-.26, p<.01) on the NEO-FFI. Extraversion on the ABFI was significantly negatively

Table 8

Correlation matrix for the Big Five dimensions on NEO-FFI and ABFI for college students.

	1	2	3	4	5	6	7	8	9	10
FFI Dimension										
1. Neuroticism	--									
2. Extraversion	-.32**	--								
3. Openness	-.06	-.15	--							
4. Agreeableness	.27**	.33**	.00	--						
5. Conscientiousness	-.18	.42**	-.05	.30*	--					
ABFI Dimensions										
6. Neuroticism	.83**	-.29**	-.02	-.36**	-.26**	--				
7. Extraversion	-.26**	.77**	-.18	.26**	.32**	-.30**	--			
8. Openness	-.13	.26*	.60**	.14	.22*	-.13	.22	--		
9. Agreeableness	-.37**	.34**	.02	.68**	.31**	-.44**	.26**	.11	--	
10. Conscientiousness	-.21*	.33**	-.15	.28**	.69**	-.31**	.15	.17	.47**	--

Note. N=107. The bold-faced values represent the validity coefficients.

** p < .01

* p < .05

correlated with Neuroticism (r=-.26, p<.01) on the NEO-FFI and positively correlated

with Agreeableness (r=.26, p<.01), and Conscientiousness (r=.32, p<.01). Openness on

the ABFI was significantly correlated with Extraversion (r=.26, p<.05) and

Conscientiousness (r=.22, p<.05) on the NEO-FFI. Scores on the ABFI Agreeableness

dimension were significantly negatively correlated with Neuroticism (r=-.37, p<.01) and

significantly positively correlated with Extraversion (r=.34, p<.01), and

Conscientiousness (r=.31, p<.01), on the NEO-FFI. Conscientiousness scores on the

ABFI were significantly negatively correlated with Neuroticism (r=-.21, p<.05), and

positively correlated with Extraversion (r=.33, p<.01), and Agreeableness (r=.28, p<.01),

on the NEO-FFI.

Summary of Results

The Adolescent Big Five Inventory showed strong internal consistency reliability

with Cronbach's alpha coefficients ranging between .79 and .93. The ABFI dimensions

were not significantly related to gender or age in the adolescent population. Two gender

differences emerged in the college population on the ABFI dimensions. Female college

student participants significantly rated themselves higher on Conscientiousness and

Agreeableness than male participants. With regard to the college population, as age

increased, Neuroticism scores decreased and Agreeableness and Conscientiousness

scores increased. Social desirability in the adolescent ABFI scores was found to be

significantly positively correlated with Openness, Agreeableness, and Conscientiousness

and negatively correlated with Neuroticism.

Teacher ratings of Extraversion, Openness, and Agreeableness were significantly positively correlated with the same dimensions on the ABFI. There was no evidence to support the convergent validity for Neuroticism and Conscientiousness. Teacher ratings of Agreeableness were significantly correlated with every ABFI dimension and ABFI Openness significantly correlated with all teacher ratings except Neuroticism. Extraversion on the ABFI correlated stronger with teacher-rated Agreeableness than with teacher-rated Extraversion. Furthermore, Conscientiousness on the ABFI failed to correlate with teacher ratings on the same dimension, but correlated significantly with teacher-rated Agreeableness. These findings represent an absence of discriminant validity (Campbell & Fiske, 1959). However, the construct validity of the ABFI was supported by a convergence of indicators for all of the Big Five dimensions with their counterparts in the NEO-FFI.

CHAPTER IV

DISCUSSION AND CONCLUSIONS

Personality psychologists have identified the Big Five personality dimensions across age groups and cultures, as well as through parent, teacher, and peer ratings. There is evidence that these personality dimensions emerge from temperamental antecedents that appear early in life (Hakegull & Bohlin, 1998) and possibly develop into fairly stable dimensions of personality by age eleven. Furthermore, research on childhood and adolescence has begun to establish the Big Five as related to important outcome criteria, such as juvenile delinquency, school performance, IQ, future career success, stress and coping, social competence, and relationships with peers. An extensive nomological network for the Big Five in childhood and adolescence has begun to emerge. However, the majority of research has relied on adult ratings, specifically parents and teachers. The need for a self-report measure that allows adolescence to answer questions about themselves would contribute to the growing research in this domain because it allows researchers to test the reliability and validity of adolescents perceptions of themselves as well as track those self concepts over time. The purpose of the present investigation was to develop and validate a reliable self-report instrument to measure the Big Five personality dimensions in adolescence. The current research provides a useful, reliable and valid measure of personality for use with adolescent populations, particularly those in the 12 to 13 year old range, that which is considered early adolescence (Demo & Savin-

Williams, 1992). It appears that the goals of the current research were mostly successful. The Adolescent Big Five Inventory emerged as a reliable measure of the Big Five personality dimensions -- Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Significant relationships between the ABFI and teacher ratings emerged for Extraversion, Openness, and Agreeableness. Convergent validity was established only the Agreeableness dimension. Evidence for discriminant validity of the ABFI scales was (Campbell & Fiske, 1959). However, all five of the ABFI scales demonstrated a strong convergence of indicators using the constructs of the NEO Five-Factor Inventory. The finding that the ABFI showed cross-instrument convergence with the NEO Five-Factor Inventory provides support for construct validity of the ABFI scales. The following is a discussion of the main findings.

<center>The Adolescent Big Five Inventory</center>

The scales of the Adolescent Big Five Inventory demonstrated strong internal consistency reliability, indicating that the items within each scale were tapping into a set of relatively unified constructs of personality. The findings in current research will certainly contribute substantially to future research in the area of adolescent personality as well as help advance research in the area of personality development, particularly with regard to the Big Five. Investigations into the Big Five now possess a new tool that can be utilized to study not only the stability and change of the Big Five dimensions of personality over the lifespan but also a plethora of other psychological variables during

the period of adolescence. The present research does, however, bring up several important theoretical and methodological questions.

All of the dimension scores on the Adolescent Big Five Inventory were significantly correlated with the other dimensions. The high intercorrelations among the ABFI dimensions are due both to the nature of the constructs themselves as well as mono-method bias (Messick, 1989). Although the Big Five factors are conceptualized as being orthogonal, the scales that have been developed to measure them are often intercorrelated (McCrae et al., 1996). Ozer and Reise (1994) suggest that this is due to similar item content between the dimension scales of the Big Five. Many researchers use an oblique rotation when factor analyzing the items because they do not believe they are inherently independent and therefore, allow for the dimensions to be correlated, rather than orthogonal (McCrae et al., 1996; Scholte et al., 1997). The significant intercorrelations of the NEO Five-Factor Inventory in the current research demonstrate how the Big Five scales are not completely independent of one another. Furthermore, confirmatory factor analysis (CFA) has not supported the structure of the Five Factor Model, which may be due to the substantial correlations among factors (see McCrae et al., 1996). The Five Factor Model is not a simple structure, and therefore, the CFA may not be appropriate for it. It is has also been suggested that many important traits fall between the orthogonal axes of the Big Five dimensions (McCrae et al., 1996). Hakegull and Bohlin (1998) speculate that the temperamental base for Openness may be the same as that for Extraversion, which could account for the significant correlations between

these two dimensions. In fact, some researchers have challenged the idea that the Big

Five are distinct personality dimensions (Parker et al., 1993). Factor analysis was not

used in the current research for two reasons. First, the Adolescent Big Five Inventory was

developed using rational scale construction and *a priori* definitions of the Big Five

constructs. Secondly, factor analysis would have required between 400 and 500 subjects

for each group. The present research was limited by the ability to collect that much data

due to both time and monetary constraints.

<center>Openness to Experience</center>

The present study had difficulty establishing an internally consistent set of items

to measure the dimension of Openness. This is not surprising due to the ambiguous

nature of the Openness dimension, nor is the aforementioned difficulty a new one.

Measuring Openness in children and adolescence presents an especially difficult task,

primarily because they lack the cognitive function, maturity, understanding, knowledge,

and diverse experiences associated with many of the Openness facets. Low reliabilities

for Openness ranging from .53 to .68 have been reported on several different measures of

the Big Five (John et all, 1994; Parker & Stumpf, 1998). Parker and Stumpf (1998) found

Openness items demonstrated the weakest alignment in both self and parent ratings of the

Big Five. In almost every study reviewed for the current research, Openness emerged as

the last dimension in the factor analyses. More importantly, the construct of Openness is

not one that is agreed upon by different researchers (Digman, 1990). An entire chapter of

a recent published personality book, Handbook of Personality Psychology (Hogan,

Johnson, & Briggs, 1997) was dedicated to understanding McCrae and Costa's definition and conceptualization of Openness to experience and other closely related constructs such as Intellect and Culture. Costa and McCrae (1997) conceptualize Openness as a need for new and varied experiences, including trying new foods, engaging in philosophical arguments, endorsing liberal political and social values, questioning authority, and rejecting convention. However, Hakegull and Bohlin (1998) found that the Openness descriptors in their prospective study of children captured concepts such as curiosity and creativity rather than the cognitive abilities or general mental ability often found to be related to Openness (John et al., 1994; Judge et al., 1999; McCrae, 1987).

The first set of Openness items on the ABFI were focused on assessing how much the adolescent likes to try new things, enjoys learning about other cultures, languages, and places and the extent to which they are rigid in their thinking and activities. Openness items for Part II were an attempt to assess an adolescent's desire to learn about new things, respect for other peoples' ideas, creativity, and how easily he or she gets bored. There was a marked increase in internal consistency reliability from the first to the second versions of the ABFI. Openness still, however, presents a problem for future researchers who will have to examine how Openness develops through the lifespan and possibly identify the developmental antecedents to the stable adult dimension.

Gender and the Big Five

Several gender differences emerged in the current research. There were significant gender differences on the Extraversion, Openness, and Agreeableness scales

for the first version of the ABFI with female adolescents scoring significantly higher on

all three of the dimensions. Both Victor (1994) and Hakegull and Bohlin (1998) reported

gender differences in their investigations of the Big Five in childhood and adolescence,

but only with regard to Conscientiousness. Female participants in both of the studies

scored significantly higher on Conscientiousness than their male counterparts, a finding

not replicated in the present research. Similar to the current findings though, Marusic and

Bratko (1998) found that female Croatian high school students had significantly higher

scores on Neuroticism, Openness, and Agreeableness than male high school students. The

gender differences in Neuroticism and Agreeableness have also been documented in

American populations (Costa & McCrae, 1992; Trapnell & Wiggins, 1990). Marusic and

Bratko also provided evidence that Agreeableness is related to femininity, as measured

by the Bem Sex Role Inventory. However, there were no significant gender differences

on the Neuroticism dimension for the any of the participant groups in the current

research. Gender differences with regard to Extraversion have not been reported

previously. Interestingly, the gender differences that emerged in the first group of middle

school students were not replicated in the second group of middle school students who

participated in the validation of the scale. Differences in population may account for the

discrepancy. The first group included 11, 12, 13, and 14 year olds in all three middle

school grades, 6th, 7th, and 8th, while the second group consisted only of 7th graders who

were either 12 or 13 years old. Furthermore, changes to the ABFI had been made, which

may have eliminated the gender differences found in the first group of students.

Although tangential to the current research, there were significant gender differences on the ABFI Agreeableness and Conscientiousness scales in the college student population. Again, female participants scored significantly higher than male participants on both Agreeableness and Conscientiousness. Both Victor (1994) and Hakegull and Bohlin (1998) have reported that their female participants scored significantly higher on Conscientiousness than male participants. Hakegull and Bohlin established this finding in a longitudinal study of the Big Five from infancy to middle childhood, which found that girls aged 8-9 years were significantly more conscientious than male children.

If the gender differences reported for the ABFI are replicated in future research, it could suggest the need for different norms on the ABFI scales for males and females or an analysis of the individual items making up the scales. However, consistent gender differences among diverse populations and age groups may suggest different nomological networks for male and female adolescents. The research of Marusic and Bratko (1998) implies that some other characteristic, such as masculinity or femininity, may be responsible for the gender differences that emerged, rather than the biological sex of the individual.

Stability and Change of the Big Five Through the Lifespan

In the study of the long-term stability of adult personality, research has shown little or no change in the Big Five personality dimensions after age 30 (McCrae & Costa, 1990). However, before age 30, there appears to be some rather universal changes in

personality as individuals move from late adolescence and college age into adulthood.

Interestingly, Costa & McCrae (1994) found that women and men in their 20s fall right

between adolescents and adults in norms of the Big Five. Cross-sectional comparisons of

college students and older adults have demonstrated mean differences on the Big Five

with college students scoring higher on Neuroticism, Extraversion, and Openness and

lower on Agreeableness and Conscientiousness (Costa & McCrae, 1994). Longitudinal

follow-up research of college students found that Negative Affect (Neuroticism) and

Sociability, a core aspect of Extraversion, decline with age (Mortimer, Finch, & Kumka,

1982; Watson & Walker, 1996). Helson and Klonen (1998) found a decline in Negative

Emotionality and an increase in Constraint, a core aspect of Conscientiousness, in women

who were followed from age 27 to 43. These same patterns of developmental changes in

the Big Five have been documented across cultures as well. McCrae et al. (1999) found

similar patterns across five different cultures, including German, Italian, Portuguese,

Croatian, and Korean participants. Specifically, older men and women were significantly

lower on Extraversion and Openness and higher in Agreeableness and Conscientiousness

than were younger adults. However, there was less consistency in the tendency for

younger adults to report higher levels of Neuroticism. McCrae et al. (1999) concluded

that older adults in all of the cultures examined appear to be less emotionally volatile and

more mature.

No significant relationships were found between age and the Big Five dimensions

of the ABFI in any of the groups of middle school students, who ranged in age from 11 to

15 years. This finding suggests that the Big Five dimensions remain relatively stable at least through the early adolescent years, consistent with previous research (Hakegull & Bohlin, 1998; Judge et al., 1999). Although no significant relationships were found between age and the Big Five dimensions of the ABFI in the adolescent groups, the consistent patterns of change in the Big Five were documented in the undergraduate population. As age increased, scores on Neuroticism decreased and scores on Agreeableness and Conscientiousness increased. These findings do replicate the previous research that has found individuals in late adolescence score higher on measures of Neuroticism and lower on measures of Agreeableness and Conscientiousness than older adults. These findings lend further support for the validity of the ABFI in terms of the development changes that accompany the Big Five into adulthood. It also implies that construct relations of the Big Five may need to be studied by age.

Social Desirability and the Adolescent Big Five Inventory

Socially desirable responding in self-report instruments is generally considered to be responding in ways that make the individual look good. A social desirability scale was utilized in second part of the research to determine if the ABFI was susceptible to favorable biases in responding. For adolescents, social desirability was significantly negatively correlated with Neuroticism and positively correlated with Openness, Agreeableness, and Conscientiousness. Because Openness, Agreeableness, and Conscientiousness all have appealing qualities associated with them, it is not surprising that they are all related to socially desirable responding. For example, Openness items

include those assessing an individual's desire for learning, ability for creativity, and openness to new and different things. Although not everyone possesses these personality characteristics, most people would consider them positive qualities in a person. The same argument could be made for Agreeableness, the tendency to be empathetic, trusting, and interpersonally-oriented and Conscientiousness, the tendency to be reliable, hardworking, and achievement-oriented. In fact, one Conscientiousness item in version 1, I like to do well in school, had to be removed because no one marked it False.

The Neuroticism dimension represents the extent to which a person is tense, fearful, anxious, and worrisome and feels inferior to others. Neurotic individuals have a tendency to be anxious, depressed, self-conscious, impulsive, and even hostile. Research in the realm of stress and coping demonstrates that highly Neurotic individuals perceive more stress, experience more negative affect, and use more passive and ineffective coping and problem-solving strategies than individuals low on Neuroticism (Watson & Hubbard, 1996). Individuals high on Neuroticism may be unable to accurately reflect on their own behavior, and therefore, have difficulty presenting themselves positively to others.

Schmit, Stierwalt, Ryan, and Powell (1995) however, point out that accurately presenting oneself in a positive light is not social desirability. It is the positive but inaccurate presentation that is considered social desirability. The latter is considered measurement error and therefore, can lower the validity. However, if individuals present themselves positively and accurately within a given context or frame of reference then

validity actually increases (Schmit et al., 1995). Therefore, socially desirable responding in personality instruments may not necessarily mean that the assessment is lacking in validity. The personality dimensions of the ABFI associated with increased social desirability, Openness, Agreeableness, and Conscientiousness, all have a pro-social nature. This suggests that emotionally stable adolescents are responding to social norms for positive behavior, an important aspect of socialization. However, neurotic adolescents had a more difficult time presenting themselves in a positive light. Further investigation into the role of social desirability in responses on the ABFI is needed to determine if it is a methodological or construct issue.

Convergent Validity

There is substantial evidence to suggest that teacher ratings are useful and quite often very valid assessments of child and adolescent personality (e.g. Digman & Inouye, 1986; Graziano & Ward, 1992; Hakegull & Bohlin, 1998). The current study is unique in that it investigated whether different methods of measuring the Big Five in adolescence produce equivalent results, more specifically, convergent validity. Campbell and Fiske (1959) outline two requirements to meet convergent validity, which necessitates the use of two independent approaches of measuring more than one personality trait. First, the coefficients in the validity diagonal should be significantly different from zero, and second, the coefficients should be higher than values lying in the column or row in the heterotrait-heteromethod triangle. With regard to the first requirement, the ABFI

dimensions of Extraversion, Agreeableness, and Conscientiousness were significantly

correlated with teacher ratings on the same dimensions. Teacher ratings of Neuroticism

and Conscientiousness were not significantly related to ABFI scores on those same

dimensions. Agreeableness was the only Big Five dimension to satisfy the second

requirement in terms of the column values. However, there appeared to be a halo effect

with regard to Agreeableness, producing significant correlations with all of the ABFI

scales. The present findings have important implications for psychologists who study

adolescent personality and personality assessment.

Previous studies of teacher ratings of personality have suggested that

Conscientiousness is the most salient personality dimension to teachers due to the school

context where learning and academic achievement are encouraged (Kohnstamm, et al.,

1995; Mervielde, et al., 1995). Lay, Kovacs, and Danto (1998) found a correlation of .33

between teacher and student ratings on Conscientiousness in an adolescent sample.

Conscientiousness emerged as the first factor in half of the studies reviewed for the

present research. Conscientiousness would appear to be the most prominent of all of the

Big Five dimensions to teachers. However, there was not a significant correlation

between self- and teacher-rated Conscientiousness in the present study. Victor (1994)

points out that in Digman's studies of teacher ratings of the Big Five in children have

found that Conscientiousness consistently shares variance with the Agreeableness factor.

One explanation for this finding may be that teachers are more sensitive to the facets of

Agreeableness than to Conscientious behavior in early adolescents.

Graziano, Jensen-Campbell, Steele, and Hair (1998) suggest that words describing

people in terms of social relations, such Agreeableness items, may be more widely

known than words describing people in terms of mental states, which cannot be accessed

by others. They found that Agreeableness terms in adjective markers were better well

known by adolescents and college-aged individuals than were words associated with

Neuroticism. This finding is relevant to the current disagreement between teacher-rated

and adolescent-rated Neuroticism scores. Teachers may have an easier time rating an

individual student within the context of his or her social relations with others than rating

their internal mental states, which are not easily accessible to others. Adolescents do not

readily share their thoughts and feelings with others, particularly adults, making

Neuroticism descriptors difficult to rate in this age group.

The differences documented between teacher-rated and student-rated could be

interpreted as a lack of agreement between adults and adolescents on key personality

variables. Many of the studies reviewed for this research utilized adult raters as their

main source of assessing personality. There have been previously reported discrepancies

between parent and teacher ratings and child or student ratings on some important

personality and psychological variables. For example, Parker and Stumpf (1998) found

that when compared to adolescent self-reports on the Big Five dimensions, parent ratings

produced a significant difference for Extraversion, Agreeableness and Openness.

Graziano and Ward (1992) found that teacher ratings of school adjustment were not

significantly related to self-ratings by adolescents on this same variable. As suggested at

the beginning of this research, adults may view adolescents differently than they view themselves, lending further support for the current research's goal of designing an assessment for adolescents to use.

Research relying solely on adult raters may be inadequate when studying adolescence and the key variables and characteristics of this developmental stage. There are, of course, other explanations for the discrepant results. The rating scale that teachers utilized may account for the incongruity. Although all of the scales on the Personality Rating Scale for Teachers demonstrated high internal consistency, construct validity for the scales has not been established. Besides the rating scale, there are several alternative explanations to account for the disagreement between self- and teacher-ratings, which include methodological issues, the halo effect, and the gender of the teacher and student.

<u>Methodological Issues</u>

There are several important issues surrounding the use of ratings by others that may explain why some of the personality dimensions rated by teachers did not converge with scores on the ABFI. The more familiar a target is with the rater, the more accurate the observer rating of personality generally is. This is why spouses are often used as raters in investigations of personality. However, even spouses only typically produce correlations that range between .4 and .6 for common personality constructs (McCrae, 1982; McCrae, et al., 1998). These moderate correlations are surprising due to the intimate nature and cross-situational observations involved in marital relationships. Although many have attempted to understand the discrepancies between self-ratings and ratings by others, two

lines of reasoning have been identified in an attempt to understand these differences (McCrae et al., 1998). The first explanation concerns error introduced by the individual, such as carelessness, acquiescence, social desirability, response sets, and misinterpretation of terminology. The second centers on social cognition, how individuals come to know and understand one another, which involves the inaccessibility of personal thoughts and feelings to the rater.

The problem with trying to limit the effects of individual error or social misperceptions is that those differences are not consistent or common. McCrae (1994) studied 28 variables that could possibly influence ratings, including length of acquaintance, frequency of social interaction, perceived similarity, and how much the rater liked the individual. No single variable was identified to be consistently related to self/peer ratings. Furthermore, McCrae et al. (1998) failed to identify any response styles, characteristics of respondents, or relationship characteristics that moderated the relationship between self and rater in a study of married couples. The strongest finding in this study was that the most common reason for disagreement between husband and wife on personality ratings is inconsistent interpretations of trait terms on the inventories. Other sources of disagreement were attributable to frame of reference effects. More specifically, spouses were using different times, behaviors, and contexts to rate behavior. Trying to control for these discrepancies is not an easy task, and therefore, is something personality researchers will have to take into account when using ratings by others. Use

of ratings by others may account for a significant amount of disagreement found between students and teachers on Neuroticism and Conscientiousness.

<div align="center">The Halo Effect</div>

The halo effect refers to a generally favorable or unfavorable rating of an individual that is based on a single, prominent personality trait (Derlega et al., 1991). The teacher ratings in the current study showed a strong halo effect for Agreeableness. Those adolescents who were rated as Agreeable, were also rated as being extraverted, open, conscientious, and emotionally stable. As ratings of Agreeableness decreased, so did ratings of Extraversion, Openness, and Conscientiousness and ratings of Neuroticism increased. In addition, teacher-rated Agreeableness was significantly related to social desirability scores on the ABFI. Therefore, as adolescents presented themselves more favorably, so did the teachers perceive them as being more agreeable.

Agreeableness was usually the second of third dimension that emerged in factor analyses in the studies reviewed for this research. However, Mervielde (1994) found Agreeableness to be the most prominent factor in teacher descriptions of children 4 to 12 years of age. The agreeable early teen probably stands out as being popular, empathetic, and cooperative and as getting along with his or her peers. These personality characteristics are often just as important to teachers as turning in work on time and doing well in school. In fact, these characteristics may stand out even more to middle school teachers who are thrown into the social world of early adolescents, who are developing both friendly as well as romantic relationships with their peers.

Scholte, van Aken, and van Lieshout (1997) found that adolescents accepted by

their peers are viewed as being enthusiastic, considerate and friendly, enjoying being with

peers, sensible, perceptive, intelligent and imaginative, secure, cooperative, sincere, and

spontaneous. Furthermore they found that adolescents rejected by their peers tended to be

perceived as quarrelsome, irritable, unfriendly, lazy and lacking ambition, unreflective

and unintelligent and giving up easily. One could break down those characteristics and

find each of the Big Five in that list of descriptors. Enthusiasm, friendliness, spontaneous

and enjoying being with others are all facets of Extraversion. Intelligent and imaginative

are characteristics often associated with Openness. Considerate, cooperative, and sincere

are all aspects of Agreeableness, with quarrelsome being at the opposite pole. Laziness,

lack of ambition, and giving up easily are all associated with low scores on

Conscientiousness. If peers are influenced by these characteristics, it is easy to

hypothesize that teachers may also be influenced by these things, and therefore, rate

agreeable students as high on Extraversion, Conscientiousness, and Openness, and low on

Neuroticism. The findings of Scholte et al. (1997) introduce the possibility that teacher

ratings of the Big Five are not due solely to measurement issues or halo effect, but could

be natural or real commonalities among the constructs. Nunnally and Berstein (1994)

refer to these relationships as "true halo", the idea that some desirable traits have small

correlations with other desirable traits, which can superficially inflated by the halo effect

(pg. 373). To accurately assess halo effect, however, you would have to obtain multiple

ratings from several teachers and calculate the true versus observed scores for all

participants (see Nunnally & Bernstein, 1994).

<center>Gender and Personality Ratings</center>

The findings of Victor, Halverson, and Wampler (1988) indicate that the gender

of the child and possibly the rater may influence the personality ratings of children. For

example, fathers were found to be more sensitive when rating their sons than their

daughters with more significant and higher correlations when compared to their

daughters. In the present study, one significant gender difference in teacher ratings

emerged. Teachers rated girls higher on Conscientiousness than boys. This finding has

been well documented in previous research with children and adolescents (Hakegull &

Bohlin, 1998; Lay, Kovacs, & Danto, 1998; Victor, 1994). Gender differences in

Conscientiousness may be a function of developmental differences between boys and

girls during certain age ranges. The gender of the teacher in relation to the student was

not assessed in the current study. Therefore, no conclusions can be made as to how

gender affected personality ratings. However, gender is an important variable for future

investigations utilizing personality ratings by others.

<center>Limitations of the Current Research</center>

Although the current research included almost 400 adolescents and college-aged

individuals, the pool of participants were fairly homogenous, with the majority being

Caucasian. Data was also constrained by geography, the size of the city, and the size and

type of middle school. Further research is needed with more diverse populations to determine if the psychometric properties of the Adolescent Big Five Inventory are similar for other racial and ethnic groups. Data collection procedures that can obtain a larger number of participants in any given school are needed as well. In the middle school population, there was a 30% response rate for the first round of data collection and a 50% response rate for the second round. Participation bias may have also influenced some of the findings with regard to personality and personality ratings. For example, it is possible that the more conscientious students returned parental informed consent forms and that more extraverted and open adolescents were interested in participating. These are hypotheses that cannot be tested but are worth consideration for future research with the Adolescent Big Five Inventory.

Characteristics of the teacher raters were not taken into consideration in the analyses. The gender, age, and experience of the rater may have influenced ratings of students. Furthermore, characteristics of the students may have influenced personality ratings. Future work in this area may consider incorporating multiple teacher ratings for each student as well as collecting parent ratings to assess the similarities and differences between adults and adolescents. Investigating how real life criteria relate to the Big Five would also contribute to the construct validity of the ABFI.

Directions for Future Research

Graziano and Ward (1992) use the term "developmentally shallow" (pg. 426) to describe the information available to support the developmental antecedents of the Big Five. There is very little understanding of how these dimensions of personality develop or change through the life span. Digman and Shmelyov (1996) suggest that individual differences in early temperament may be stable over time and interact with the environment to produce the Big Five dimensions of personality. Research is just beginning to attempt to understand the developmental antecedents of the Big Five into adolescence (Hakegull & Bohlin, 1998; Judge et al., 1999). This kind of information may lead to a comprehensive theory of how the Big Five develop from infancy into the stable dimensions of personality they become in adulthood.

In light of current research in the areas of adolescent development (Lerner & Galambos), careers and career success (Judge et al., 1999), stress and coping (Hoffman, Levy-Schiff, & Malinski, 1996; Medvedova, 1998), and juvenile delinquency (John et al., 1994), the Adolescent Big Five Inventory ought to serve an important function in further developing the nomological network of the Big Five personality dimensions in adolescence. In a longitudinal study, Judge, Higgins, Thoresen, and Barrick (1999) demonstrated that childhood measures of personality could significantly predict career success later in life. The ABFI may help distinguish personality traits early on that may affect career choice as well as identifying kids who may need extra support for career information and guidance. Hoffman, Levy-Shiff, and Malinski (1996) identified

Neuroticism and Extraversion as the two most relevant personality dimensions to issues of stress, coping, and adjustment in adolescence. Neuroticism is thought to exacerbate the experience of stressful life events, a finding prevalent in adult literature on stress and coping (Watson et al., 1994; Watson & Hubbard, 1996). They also found Neuroticism to be significantly related to behavioral problems when faced with stress. Medvedova (1998) found almost identical findings with regard to the Big Five and coping strategy use in adolescent populations that have been identified in college-aged and adult populations (Tatum et al., 1999; Watson & Hubbard, 1996). These findings open the door to future research into how adolescents cope with stress and how the Big Five influence the choices of coping, an interesting topic in light of growing school violence in the United States. The ABFI can be utilized to help assess those influences on coping strategy utilization in the face of stress.

Guay, Boivin & Hodges (1999) found that children use social comparison to evaluate their own abilities in school, more specifically, their own perceived academic competence. It may be possible to extend this research into the realm of personality assessment. What role do peers and friends play in self-perceived personality? When adolescents evaluate their own personalities, do they compare themselves to other adolescents? Demo and Savin-Williams (1992) suggest that peer relations and self-concept may be interconnected during adolescence, a developmental stage during which individuals spend more time with their peers than with parents or other adults.

Lerner and Galambos (1998) point out that although there is a growing body of sophisticated scientific literature about adolescence, more information is needed about adolescent development and individual differences among adolescents. Furthering the nomological network of the Big Five in adolescence will contribute enormously to the information that already exists about this phase of life which is conceptualized as beginning in biology and ending in society (Petersen, 1988). The Big Five will surely evolve into reliable and commonly used descriptors of adolescent personality as soon as they are studied in relation to real-life criteria that are pertinent to this developmental stage of life.

Conclusions

The present investigation has demonstrated that the Adolescent Big Five Inventory reliably produces the Big Five personality dimensions from the self-reports of adolescents. Construct validity was established for all five of the scales. With the exception of Agreeableness, the present study failed to provide strong evidence of convergent and discriminant validity for the ABFI scales utilizing teacher ratings of personality. There were several limitations of the current study that include sample size, sample homogeneity, and geographical location. The Adolescent Big Five Inventory offers researchers the opportunity to study the Big Five dimensions from the perspective of adolescents rather than having to rely on adult ratings, and the problems that plague ratings by others, such as halo bias. Most importantly, the Adolescent Big Five Inventory

offers the advantage of being able to study the Big Five from the adolescents'

perspectives as well as providing a quick and convenient way to collect large amounts of

data.

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APPENDICES

APPENDIX A

LETTERS OF INFORMED CONSENT

PARENT FORM
ASSENT FORM

Informed Consent – Parent or Guardian

We would like to ask your permission for you son or daughter to participate in a study that is being conducted at Bearden Middle School. This research is being conducted as part of the requirements for a doctoral degree from the University of Tennessee, Knoxville. Holly Tatum, a graduate student in the Department of Psychology, will be collecting the data under the supervision of Dr. John W. Lounsbury, Professor of Psychology. This research will focus on personality in adolescence. A scale has been developed to measure personality for middle school students that will help determine if there is a similarity between adolescent and adult personality. This scale measures **normal** personality and cannot identify psychological disorders.

What is Involved?

This study will include three groups of students. One group will fill out <u>one</u> personality questionnaire during class time. Participation will last approximately 20 minutes. The second group of students will also fill out the same personality questionnaire. In addition, the teachers of the second group will rate statements regarding each student's personality. Your child will be assigned to one of these two groups.

Potential Benefits and Concerns

There are no expected risks associated with participating in the present study. Students who participate will be given a short description of their personality if they would like one. They should check the box at the end of the personality scale indicating that they would like feedback on their personality.

Participation is Voluntary

Participation in this study is completely voluntary. There will be no penalty if you do not wish your child to be included in the study, and he or she may withdraw at any time after the study has begun.

Information is Confidential

All information will be treated confidentially. All participants will be identified by a number. Names will only be used to distribute feedback to your child. The information collected will be maintained and stored in a locked, secure location. Names of participants will not be used in any report about this project. Data from this study may be used for further studies by the researchers.

Questions

If you have any questions, please feel free to call Holly Tatum (546-6499) or Dr. John Lounsbury (588-8252). Arrangements can be made for you to see the questionnaires in advance if you wish. If you would like your child to participate, please sign below and have your son or daughter return this form to his or her participating teacher. Thank you for your consideration.

Sincerely,

Holly E. Tatum

John W. Lounsbury, Ph.D.
Professor of Psychology

___

My child's name is _____

Please check one:
☐   I do **not** give my permission for my child to participate in this study.

☐   I have read the above description of the study and I give my permission for my son or
    daughter to participate.

Parent's Signature/Date _____ Print Name _____

Assent Form

Your parents have given permission for you to participate in a research project about personality. You will be asked to fill out a form that has questions about the way you act and about things that you like and do not like. Do not put your name on the form. All of your answers will be kept private. No one will know how you answer the questions. After you have finished, you will be asked if you would like the results to the questions you answered. You can mark yes or no. If you mark yes, you will get the results back in a few months.

You do not have to participate in this study. If you decide to participate and then you change your mind, you can stop. You can quit at any time during this study. You can also ask any questions about this study before or during your participation. No names will be used in any reports about this study.

If you want to participate in this study, read the sentence below and sign your name:

I agree to participate in the research project on personality. I know that I can quit at any time. I also know that I can ask questions about the study at any time. I do not have to answer any question that I do not want to answer.

Write your name here: _____

Sign your name here: _____ Date _____

Researcher's Signature _____ Date _____

APPENDIX B

ADOLESCENT BIG FIVE INVENTORY

Adolescent Big Five Inventory Items	Corrected Item-total r	Squared Multiple r
Neuroticism		
1. I worry about things a lot.	.49	.53
6. I feel calm when I think about the future.*	.48	.31
11. I get nervous a lot.	.55	.48
16. I am afraid of many things.	.43	.38
21. I get mad easily.	.48	.49
27. I have a bad temper.	.49	.53
33. I feel good about myself most of the time.*	.53	.45
38. I get angry with other people a lot.	.46	.48
43. Sometimes I don't feel like I'm worth much.	.60	.54
48. When something bad happens, it's usually my fault.	.42	.27
53. I often feel sad.	.69	.57
58. I sometimes can't help eating or drinking too much.	.26	.14
63. I often have bad dreams that wake me up.	.33	.20
68. It takes a lot to get me worried.*	.43	.47
73. I sometimes feel like I'm going crazy.	.42	.32
80. I always feel like I am in control of my life.*	.40	.29
Extraversion		
2. I like meeting new people.	.66	.56
7. It's fun for me to talk with people I have just met.	.64	.51
12. I tell my friends secrets about myself.	.29	.23
17. I like to eat lunch by myself.*	.31	.31
22. I like to go to parties.	.49	.32
28. I would rather play games by myself than with other people.*	.41	.35
29. I like to tell other people about myself.	.39	.31
34. I have a lot of energy.	.44	.33
39. If I am in a group of people and nobody says anything, I will say something first.	.43	.34
44. It's hard for me to make new friends.*	.53	.41
49. I am a really happy person.	.58	.54
54. I like to be in charge of a group or activity.	.50	.34
59. Other people tell me I am cheerful.	.55	.49
64. I am a friendly person.	.54	.42

74.	Doing stuff with other people makes me feel good.	.54	.44
78.	Most people who know me like me.	.40	.30

Openness to Experience

3.	I am very set in my ways.*	.15	.19
8.	I like to learn about new ways of doing things.	.53	.37
13.	I am open-minded about what other people believe.	.36	.32
18.	I like to listen to many different types of music.	.40	.35
23.	I don't like taking new classes in school.*	.24	.21
24.	It is fun for me to take trips to places I have never been before.	.33	.33
30.	I don't like to try new kinds of food.*	.41	.39
35.	I don't like people who are different from me.*	.14	.28
40.	I get bored easily.	-.10	.18
45.	I would like to keep going to school just to learn new things.	.47	.35
50.	I really like to read books on different things.	.50	.37
55.	I like to try new things.	.61	.56
57.	I like TV shows which let me see how life is in other times and places.	.36	.24
60.	I am good at creating things.	.42	.38
70.	I would like to have a new hobby.	.37	.26
75.	I like to work on problems and puzzles.	.38	.30
77.	I would not like a job where I had to invent new things.*	.38	.34
82.	I like to work on problems that only have one right answer.*	-.04	.11

Agreeableness

4.	I think most people are honest.	.35	.33
9.	I believe that most people are nice.	.26	.24
14.	When somebody offers me help, I wonder what they want from me.*	.39	.22
25.	If somebody says something mean to me, I say something mean right back to them.*	.53	.44
36.	I think that most other people would steal if they thought they could get away with it.*	.52	.38
41.	I sometimes trick other people into doing what I want them to do.*	.48	.27

46.	I sometimes tell a lie to other people to get them to like me.*	.24	.23
51.	I always go out of my way to help other people if they need help.	.16	.08
61.	I think most people in this world tell lies.*	.41	.31
66.	People get on my nerves a lot of the time.*	.38	.25
71.	Sometimes I say things on purpose that hurt other people's feelings.*	.39	.28
81.	I will fight another person if that person makes me really mad.*	.46	.39
83.	I brag to other people about myself.*	-.09	.12

Conscientiousness

5.	I am always very careful when I am doing something.	.48	.34
10.	I like to keep everything I own in its proper place.	.47	.50
15.	It is hard for me to keep my bedroom neat and clean.*	.46	.50
20.	I always do what I say I will do.	.29	.19
26.	I don't like to follow every rule when I am playing a game.*	.07	.09
32.	I like to clean up after I have made a mess.	.45	.43
37.	I always try to do my best when I do something for somebody else.	.45	.37
42.	Some people think I am lazy.*	.23	.22
47.	I always finish everything I start.	.50	.36
52.	I like to plan things.	.35	.28
57.	I like to get up at the same time every day.	.16	.13
62.	I would like a job where I did not have to follow any rules.	.35	.31
65.	I often do things without thinking them over first.*	.00	.08
67.	I would like to work at a job where I had to be very organized.	.45	.33
72.	I put away all of my things when I am done with them.	.60	.58
84.	I think most rules are made to be broken.*	.41	.39
85.	I only miss school when I am very sick.	.25	.20

Social Desirability

19.	I have never borrowed something without asking permission first.	.27	.13
31.	I have never told a lie to anyone in my life.	.67	.74
56.	I have liked everyone I have ever met in my life.	.66	.71
69.	Sometimes I like to gossip.*	.27	.15
76.	When I make a mistake, I always admit I am wrong.	.02	.10
79.	I never get upset with my parents.	.51	.35

Note. An asterick (*) beside an item denotes that is it to be reverse coded when summing the scores for each scale. Scores are calculated on a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

APPENDIX C

PERSONALITY RATING SCALE FOR TEACHERS

GUIDELINES FOR PERSONALITY RATINGS
ITEMS AND DESCRIPTIVE STATISTICS
SOCIAL DESIRABILITY ESTIMATES

Guidelines for Personality Ratings

1. Use the rating scale at the tope of the Teacher Rating Form to assess each item.

2. Each rating should be as accurate and honest as possible. Accurate ratings of a child's personality are essential for the results of this project to be useful.

3. Your rating should reflect a typical range of behavior for the student, not the extreme examples.

4. When you are making ratings, try to think of specific examples of behavior that you have observed.

5. Do not let your rating be influenced by your like or dislike for a particular student. For instance, do not rate a student high on all items just because you like them. Also, do not rate a student low on all of the items just because you dislike them.

6. If you do not have sufficient information to make a precise rating, you should ask for input from other teachers who have that student in their classes. It is better to ask for input from others than to guess on any item. If you absolutely cannot rate the item, please place a N/A beside it.

Personality Rating Scale for Teachers

Reliability Estimates for the Personality Rating Scale for Teachers (N=72).

	Scale Mean	Cronbach's Alpha	Mean Inter-item r
Neuroticism	13.83	.79	.36
Seems to be anxious a lot of the time.			
Is very self-confident.*			
Seems sad and depressed.			
Is very self-conscious.			
Has trouble keeping emotions under control.			
Has a temper.			
Extraversion	28.44	.82	.38
Talks a lot.			
Is warm and friendly with other students.			
Spends a lot of time by him/herself.*			
Does not like to speak in front of the class.*			
Is usually cheerful and positive.			
Is energetic in groups.			
Is shy and reserved.*			
Has a lot of friends.			
Openness	22.35	.89	.60
Enjoys learning about new things in class.			
Is very curious.			
Likes to try out new ways of doing things.			
Has a very active imagination.			
Readily experiments with new ideas.			
Is open to new perspectives.			
Agreeableness	30.51	.91	.61
Starts fights (verbal or physical) with other students.*			
Gets easily annoyed by others.*			
Argues with the teacher or other students.*			

Tells lies to others/is deceptive.*			
Is very cooperative.			
Is considerate of the feelings of others.			
Tries to manipulate other people.*			
Conscientiousness	32.82	.93	.64
Is always prepared for class.			
Keeps belongings neat and clean.			
Turns in all of his/her assignments completed and on time.			
Strives to perform well in school.			
Is organized and orderly.			
Always follows class rules and policies.			
Turns in sloppy assignments.*			

Note. An asterick (*) beside an item denotes that is it to be reverse coded when summing the scores for each scale. Items are rated using the following scale: 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), and 5 (Always).

Correlation coefficients for social desirability on the ABFI and teacher-rated Big Five
personality dimensions (N=72)

Dimension	Social Desirability
Neuroticism	-.11
Extraversion	-.03
Openness	.15
Agreeableness	.51**
Conscientiousness	.12

** $p < .01$

* $p < .05$

APPENDIX D

SAMPLE FEEDBACK LETTER DISTRIBUTED TO
ADOLESCENT PARTICIPANTS

Sample Feedback Letter Distributed to Adolescent Participants

Personality Report Prepared for
Name of child

Introduction

When psychologists talk about personality they mean the general ways that people interact with the world and with other people. Personality is measured by asking people to answer questions about their thoughts, feelings, interests, habits, and preferences. This report describes your results on five personality scales that were included in the test you took. The descriptions are based on the answers you gave to the questions. Some of the descriptions may sound a lot like you and others may not. If you do not agree with some of the results, you could ask another person who knows you well what they think about it. There are no 'good' or 'bad' personalities. These results are supposed to help you learn more about yourself. We thank you for participating in the study.

Introversion – Extroversion

Your score indicates that you are an **Extrovert**. This means you are very outgoing, talkative, and friendly. You enjoy being around other people and sharing things about yourself. Making friends is probably an easy thing for you to do. Most of the time, you would rather be with other people than be by yourself. Crowds of people don't bother you. If you have to work on a project you would rather work with other people than by yourself. In class, you tend to talk a lot and probably don't mind being called on by the teacher. You have probably been the leader of a group at some time. Other people may describe you as being cheerful and happy. Because you like being around other people so much, you may get distracted when you need to be concentrating and getting things done.

Resilient – Emotional

You scored in the middle on the **Resilient – Emotional** scale. You are aware of your emotions but you do not let them get in the way. You like to express your emotions but you don't overdo it. You may sometimes get mad or frustrated at other people, but you are mostly able to control it. You are okay at dealing with stress and pressure but sometimes it may overwhelm you.

Stability – Change

You scored high on the **Change** scale. This means you are open to new experiences and new things. You really like to learn and enjoy trying new things. Change does not bother you at all. You probably like to work on puzzles and problems because they challenge you to think in new ways. Traveling to new places and trying new foods are probably things you would enjoy doing. Most likely, you are willing to try anything, at least once.

Straightforward – Agreeable

You scored high on the **Agreeable** scale. This means you are very trusting of other people and believe most people are honest and nice. You enjoy helping other people. You probably like to be a part of a team because you like working with people. It upsets you if other people are fighting or mad at each other. You try to avoid conflict with other people. You don't like to hurt other people's feelings. If someone upsets you, you probably have trouble confronting him or her and telling them how you feel. You are generally thoughtful and considerate of other people. However, be careful not to let others push you around. You can't always please other people, so don't always put other peoples' needs and feelings ahead of your own.

Flexible – Structure

You scored high on the **Structure** scale. This means you like structured rules and activities. You almost always follow the rules even if you don't like them. You prefer things to be neat and organized. This makes you good at planning and organizing things. Other people consider you very reliable and dependable and when you start something, you almost always finish it. You try hard when you are doing something for someone else. You probably only miss school when you are really sick. You think things through before doing them.

VITA

Holly Elizabeth Tatum was born in Oklahoma City, Oklahoma on December 23, 1971. She attended public schools in Naples, Florida, Elizabeth City, North Carolina, and Ellicott City, Maryland and graduated from Centennial High School in Ellicott City, Maryland in June, 1990. Holly graduated cum laude from Mary Baldwin College in Staunton, Virginia in May of 1994 with an undergraduate degree in Psychology. In the fall of 1994, she matriculated into the Experimental Psychology Ph.D. program at the University of Tennessee. In May 1998, Holly received her Master's degree in Experimental Psychology.

At the University of Tennessee, Holly served as a Teaching Associate and was involved in the Graduate Teaching Assistant (GTA) Mentoring Program for two years. She pursued research in the areas of stress, coping, and personality. Holly is currently a Visiting Instructor of Psychology at Emory & Henry College in Emory, Virginia. After receiving her Doctoral degree, Holly will assume the position of Assistant Professor of Psychology at Colby-Sawyer College in New London, New Hampshire. Colby-Sawyer is a private, co-ed liberal arts college dedicated to teaching and scholarly pursuits. At Colby-Sawyer, Holly will teach classes in the areas of health and developmental psychology while continuing her research on personality and coping in adolescents.