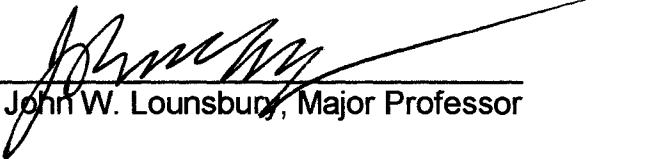


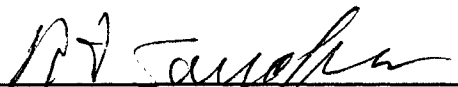
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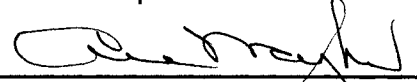
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AN INVESTIGATION OF THE PREDICTIVE VALIDITY
OF BROAD AND NARROW PERSONALITY TRAITS
IN RELATION TO ACADEMIC ACHIEVEMENT

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

Jessica A. Dunsmore
December 2005

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DEDICATION

This dissertation is dedicated to my parents Marsha and William Stowell, who encouraged and supported me throughout my education, and to my husband Tyler Dunsmore, for always believing in me and encouraging me to not give up when times were tough.

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I wish to thank all those who helped me complete my Doctor of Philosophy degree in Psychology. I would like to thank Dr. Lounsbury for his leadership and direction in my graduate studies. I would like to thank Dr. Fisher, Dr. Saudargas, and Dr. Sundstrom for serving on my committee. I would like to thank Dr. Pelley and Dr. Hensley for introducing me to the joys of Psychology and encouraging me to pursue my dreams. Lastly, I would like to thank my friends and family for helping me through the process of becoming a Ph.D.

Abstract

The purpose of this dissertation was to determine the ability of broad and narrow personality traits to predict academic achievement over time in adolescence. Analyses were conducted on a sample of 1328 adolescents from an archival data set. Students were in grades 6, 9 and 12 at time one, and measures were assessed over three consecutive annual testing occasions. Results from correlational analyses showed that all Big Five traits predicted academic performance at Time One and Time Two. All Big Five traits except for Openness predicted academic performance at Time Three. Additional correlational analyses demonstrated that the narrow traits of Work Drive and Optimism predicted academic performance at Time One and Time Two, while only Work Drive predicted academic performance at Time Three. Further analyses were performed to determine significant gender differences in the relationship between personality traits and GPA. Analyses revealed that there were significant gender differences in the relationships between the traits of Work Drive, Emotional Stability, and Assertiveness with GPA. These findings demonstrate the validity of the Big Five model of personality and selected narrow traits to predict academic performance over time in adolescence. Implications of these findings and ideas for further study are discussed.

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Chapter I

Review of the Literature

Historical Background and Definitions

There are four sources of influence upon modern personality theory: clinical psychology, Gestalt psychology, experimental psychology, and psychometrics (Hall & Lindzey, 1957). All but the Gestalt tradition have continued to have profound effects on personality psychology, despite the fact that they have remained virtually independent of each other (Pervin, 1990). The study of personality originally emerged in the psychological literature in the early part of the twentieth century through the work of Psychoanalysts such as Sigmund Freud, Alfred Adler, Karen Horney, and Carl Jung. The early days of personality research were focused on the unconscious, individual neuroses, conflicts and defenses, as well as the centrality of the sex drive. Personality was studied from the standpoint of abnormal psychology and much of the early data came from psychological patient's verbal reports. Much of psychoanalysis was a motivational theory of personality (Friedman & Schustack, 1999; Westen, 1990).

Less popular approaches in the early part of the 20th century were those of Gordon Allport and Raymond B. Cattell, who emphasized personality traits as a part of "normal" everyday life. They contended that everyday language was appropriate to capture personality. Allport hypothesized that traits initiated and guided behavior, a view that was motivational in nature, yet far different from the psychoanalytic motivation perspective. Allport and his colleague Odbert (1936)

reviewed *Webster's New International Dictionary* (1925 edition) and produced a list of terms which were pronounced to have "the capacity...to distinguish the behavior of one human being from that of another" (Allport & Odbert, 1936, p. 24). After eliminating nondistinctive or common behaviors, they were left with a list of about 18,000 words used to describe "personality".

Cattell utilized factor analysis and Allport's list of adjectives to arrive at a list of 16 basic personality traits that he arranged into dichotomies (i.e. outgoing-reserved), and which are typically measured using the 16 personality factor questionnaire (Cattell, 1943; Cattell et al., 1970). This trait approach formed the early basis of the Big Five Model of personality. "Cattell's innovative work and the availability of a relatively short list of variables stimulated other researchers to examine the dimensional structure of trait ratings" (John, 1990, p. 71). Fiske (1949) simplified Cattell's descriptions of the trait variables and used them as a rating system in a group of clinical psychology trainees. Ratings derived from other trainees, the psychological staff, and self-ratings were similar and suggested a five factor structure. Tupes and Christal (1961) reanalyzed data from other studies (including data from Cattell) with a range of subjects from high school graduates to graduate students and included ratings by peers, self, and teachers in many diverse settings. Overall their analyses, Tupes and Christal (1961) found "five relatively strong and recurrent factors and nothing more of any consequence (p. 14). Other researchers during this time were attempting to develop a taxonomy of personality traits (Borgatta, 1964; Bumgarten, 1933; Fiske, 1949; Klages, 1926/1932; Norman, 1963; Tupes & Cristal, 1961).

During the 1930's until about the 1960's the focus in personality research was predominantly on identification and measurement. Many different approaches were developed during this period. In addition to Cattell's research, Eysenck (1947; 1970) proposed a three factor model of personality that focused on three traits: Extraversion (sociability, activeness, dominance, and sensation-seeking), Neuroticism (anxiousness, depression, tension, emotionality, and low self-esteem), and Psychoticism (aggression, creativity, tough-mindedness, impulsiveness, and geocentricism). Eysenck's theory is sometimes referred to as the Big 2 (Extraversion and Neuroticism) or the Big 3 (all three factors) (Eysenck, 1947; Eysenck, 1970; Eysenck, 1990).

Although the Big Five model of personality has roots in personality psychology of the 1920's and 30's, it was in the 1960's that the Big Five model of personality was developed. Tupes and Christal (1958) analyzed peer ratings of 20 bipolar rating scales (taken largely from the work of Cattell) from a sample of cadets in a Michigan Air Force Base. They found a "clear and generalizable" (Wiggins & Trapnell, 1997, p. 741) five-factor solution consisting of Surgency (more commonly known as Extraversion), Agreeableness, Conscientiousness, Emotional Stability, and Culture (similar to the Openness factor of the Big Five). These factors were related to criteria such as Cadet Effectiveness Reports, ratings of leadership ability and officer potential. The ratings ranged from .24 for Surgency to .60 for conscientiousness. Tupes and Christal (1961) examined the "universal nature of the five factor solution" (Wiggins & Trapnell, 1997, p. 741). They utilized data from three main groups: four military samples, two

undergraduate samples, and two graduate samples. Their five factor model demonstrated remarkable stability across diverse samples. "In many ways it seems remarkable that such stability should be found in an area which to date has granted anything but consistent results. Undoubtedly the consistency has always been there, but it has been hidden by an inconsistency of factorial techniques and philosophies, the lack of replication using identical variables, and disagreement among analysts as to factor titles. None of the factors identified in this study are new. They have been identified many times before in previous analyses, although they have not always been called by the same names" (Tupes & Christal, 1961, p. 12).

Nevertheless, if it were not for Warren Norman's 1963 paper, these results would have been lost to the civilian public. Tupes and Christal's reports were all in the form of technical reports and technical notes read by only a small group of civilians. Warren Norman's research was supported by the Personnel Laboratory at Lackland Air Force Base; therefore he had access to these technical reports. Norman's (1963) paper, which presented Tupes and Christal's results, was considered a milestone for several reasons: it provided a clear statement of "...rational and procedures for developing a well structured taxonomy of personality, ...psychometric criticisms of Cattell's earlier factorial work...and a call for the development of self-report measures of the five factors" (Wiggins & Trapnell, 1997, p. 742).

In the 1980's Lewis Goldberg - a member of the Oregon Research Institute - demonstrated an enduring yet skeptical interest in the Big Five and

provided a firm psychometric base for it. Goldberg (1981, 1982, 1986, 1990, & 1992) familiarized a new generation of personality researchers to the Big Five and “rekindled the interests of more experienced investigators” (Wiggins & Trapnell, 1997, p. 743). Digman (1979, 1985, 1989, 1990), and his colleagues (Digman & Inouye, 1986; Digman & Takemoto-Chock, 1981) also researched the Big Five factors, finding that they were stable and central aspects of personality. Other researchers have demonstrated the longitudinal stability of the Big Five (Costa & McCrae, 1980; McCrae & Costa, 1990).

The Big Five dimensions as they are commonly called today consist of: Extraversion (comprised of sociability, dominance, and excitement seeking), Conscientiousness (comprised of dependability, achievement striving, and order), Agreeableness (comprised of cooperation, trustfulness, and friendliness), Openness to experience (comprised of creativity, broadmindedness, and intellectance), and Neuroticism (comprised of factors like anxiety, hostility, depression, and insecurity), or its opposite Emotional Stability (Barrick, Mount, & Judge, 2001). The Big Five, is a considered by most researchers to be a “unified and parsimonious theoretical framework for personality” (Lounsbury, Sundstrom, Gibson, & Loveland, 2003, p. 3) which has become widely used in psychology. While there is considerable agreement among researchers concerning the validity of a Five Factor model, the terms used to describe the five factors vary. A sample of these models is listed in Table 1 (all Tables are found in the Appendix starting on page 102).

The theories discussed above are not an exhaustive list of theories developed in the 1960's; nevertheless, it demonstrates the variety and similarities of theories developed in that time. Despite the prolific nature of trait theories during this period, the popularity of personality research diminished during the next couple of decades, due largely to several reasons: 1) a lack of consensus regarding a) conceptual underpinnings, b) the purpose of personality assessment, and c) what should be measured; 2) a lack of conclusive evidence that personality was related to job performance in Industrial / Organizational (I/O) Psychology; and 3) the popularity of the situation in the person-situation debate (Hogan & Roberts, 2001).

In spite of the problems discussed above, personality psychology was able to make a comeback due in part to I/O Psychologists "rediscovering" personality around 1990 (Hogan & Roberts, 2001). With the Big Five model of personality becoming accepted as a unifying model for normal personality, and with many empirical studies of Big Five construct relations, researchers began to conduct meta-analyses of personality and job performance (Barrick & Mount, 1991; Digman, 1990; Tett, Jackson, & Rothstein, 1991) and found that several traits—notably Conscientiousness, Extraversion and Openness—were validly related to performance for a wide range of occupations. In addition to the positive results from these meta-analyses, I/O Psychologists discovered that there was little or no adverse impact associated with the use of personality tests, contrary to the results of the popularly used test of cognitive ability (Hogan & Roberts, 2001). Adverse impact or unintentional discrimination occurs when

“identical standards or procedures are applied to everyone, despite the fact that they lead to a substantial difference in employment outcomes (selection, promotion, layoff) for the members of a particular group and they are unrelated to success on a job” (Cascio, 1998). The pressure to eliminate adverse impact led to the development of other selection methods, which would be less discriminatory and yet still valid. “Well constructed personality measures are race and gender neutral, making them attractive alternatives to cognitive measures” (Hogan & Roberts, 2001, p. 8).

The goal of this study was to analyze the role of broad and narrow personality traits as they relate to the prediction of academic achievement over time. Owing to the fact that there is significantly more literature on the subject of personality and job performance, I will include some of that literature when appropriate. The present study discusses a) the stability of personality, b) the measurement of personality in adolescence, c) the bandwidth fidelity dilemma, d) broad and narrow personality traits in predicting behavior, and e) limitations of the current literature and directions for future research.

The Bandwidth – Fidelity Dilemma

A famous psychologist once said, “The principal source of disagreement is the issue of specificity versus generality, with common sense postulating the latter and experimental studies giving results that are interpreted in either direction, often according to the inclination of the author” (Allport in Allport & Vernon, 1930). Thus, as early as the 1930’s, psychologists were thinking about the issue of broad versus narrow personality traits. Due in part to a resurgence

in the study of personality (particularly as it relates to job performance) the debate over broad versus narrow personality traits has become of interest in the field of psychology. A growing consensus that the Big Five model of personality can be used as a framework to study the relationship between personality and job performance, as well as the realization that countless personality measures found in the literature can be explained as part of the Big Five model, has contributed to the recent focus on this old dilemma.

According to Ones and Viswesvaran (1996), "In the personality domain, researchers and practitioners often claim to be faced with the choice of careful measurement of a single narrowly defined variable and more cursory explanation of many separate variables " (p. 610). The choice of narrow versus broad is what is commonly termed the bandwidth – fidelity dilemma. Murphy (1993) defines it as an "inevitable tradeoff" between a high degree of precision in measuring one trait or attribute and obtaining less precise information about a large number of variables. The debate is fundamentally "...whether broadly defined personality traits are better in predicting job performance as well as in explaining behaviors than narrowly defined personality traits" (Ones & Viswesvaran, 1996, p. 610). Hogan and Roberts (1996) compare the dilemma to the choice between a microscope and binoculars.

Some researchers advocate the use of broad measures of personality (Costa & McCrae, 1995; McGowan & Gormley, 1976; Muscowitz, 1982; Ones & Viswesvaran, 1996). They contend that although there are many personality measures that have been created, "all major personality inventories currently in

use measure some or all of the Big Five dimensions of personality” (Ones & Viswesvaran, 1996, p. 610). Researchers who advocate the use of broad measures of personality support the “summing of behavior” over time. For evidence of their position Ones and Viswesvaran (1996) cite a study by Barrick and Mount (1994) in which two facets of Conscientiousness did not predict better than the global measure of Conscientiousness. Additionally, they note that coefficient alpha reliabilities for narrow traits are often lower than those for global broad factors (Costa & McCrae, 1992). Other researchers encourage the use of narrow personality variables (Hogan & Roberts, 1996; Mischel & Peake, 1982; Paunonen & Ashton, 2001; Paunonen, Rothstein, & Jackson, 1999; Schneider, Hough, & Dunnette, 1996). They make the case that the use of broad personality measures leads to less understanding of individual differences and the effects of personality on behavior. Additionally, too much data can be lost if one aggregates traits to a broad level, resulting in decreased predictive accuracy (Paunonen, 1998). Researchers who support the use of narrow personality variables conclude that due to this decrease in predictive accuracy, one should not use broad measures such as the Big Five to predict behaviors.

Several issues concerning the bandwidth – fidelity dilemma should be clarified. While Ones and Viswesvaran (1996) aver that broad measures are to be preferred to narrow ones in all cases, Paunonen, Rothstein, and Jackson (1999) maintain that their (Ones & Viswesvaran’s) suggestion of “aggregation” of personality measures into a “superordinate composite of ever increasing breadth and dimensionality somehow increases the understanding of any resultant

composite criterion”(p. 400) to be flawed. A linear combination of separate personality constructs could mask any meaningfulness that may have been gained by study of individual variables. On the other hand, Paunonen et al (1999) reiterate a position held by Nunnally (1978) that the best way to represent a multidimensional factor is to “meet the factorial complexity by combining tests in a battery by multiple regression, in which case tests would be selected to measure the different factors that are thought to be important” (Nunnally, 1978). Paunonen and colleagues asserts that this method would be superior to using a broad factor obtained by “summing the predictor variables into an unweighted, heterogeneous composite” (p. 401).

Schneider, Hough, and Dunnette (1996) as well as Hogan and Roberts (1996) maintain that the definitions of “broad” and “narrow” are somewhat arbitrary. Cronbach’s (1960) definition of “narrow” refers to a trait that answers only one question, while Ones and Viswesvaran’s (1996) definition of “narrow” is that the trait is “more concrete” with “clear behavioral connotations”. One of these definitions focuses on the range of predicted outcomes while the other focuses on the level of abstraction (Hogan & Roberts, 1996). The Big Five traits are commonly considered broad while the facets of the Big Five are considered narrow. However, use of the Big Five as a marker for broad and narrow traits presents a problem: “how do we know for certain that the narrowest Big Five variable is broader than the broadest Big Five facet?” (Schneider, Hough, & Dunnette, 1996, p. 641). Additionally, Schneider and colleagues (1996) contend

that there is no dilemma. There is a trade-off between bandwidth and fidelity, but as this trade-off is unavoidable, there is no real dilemma.

The bandwidth – fidelity debate originally entered the field of psychology through an article by Shannon and Weaver (1949). Bandwidth was defined as the complexity of information gained, while fidelity was defined as the quality of information. In 1960, Cronbach enriched the debate by forming four proposals from Shannon and Weaver's theory: a) a shift toward greater fidelity reduces bandwidth (the opposite is also true), b) information from extremely large bandwidths are unreliable and small bandwidths are only appropriate when there is one specific question to be answered, c) when many outcomes are important, bandwidth must increase, and d) low fidelity measurements are a problem only when they lead to costly errors or are used to make irreversible decisions. Cronbach's generalizations lead to an important point about research: matching predictors to criteria enhances validity (Hogan & Roberts, 1996). In contrast, Ones and Viswesvaran (1996) note that "there is nothing inherent in broad traits that precludes high fidelity of assessment. In other words psychometric theory does not dictate the low fidelity assessment of broad traits." (Viswesvaran, 1996, p. 610) The question that follows from a discussion of the bandwidth – fidelity dilemma is whether in predicting behavior, broad or narrow personality traits are better.

In a discussion of broad versus narrow personality traits, one must determine what is broad. Usually the Big Five is used as a marker for the "broadness" of a trait, with traits smaller than the Big Five being "narrow" and

traits equal to or larger being “broad”. There are some problems with this accepted marker; as Saucier and Goldberg (1996) point out, some Big Five traits (Extraversion, Agreeableness, and Conscientiousness) are broader than others (Neuroticism and Openness). Additionally, a trait that is smaller than the Big Five may still be too broad to be appropriately considered a “narrow” trait.

Nevertheless, this distinction is the one most commonly used in the literature and, thus, it will be used for discussion purposes in this paper.

Job Performance

Job performance is considered a multi-dimensional concept by many researchers (Borman & Brush, 1993; Campbell, McCloy, Oppler, & Sager, 1993; Waldman & Spangler, 1989). Viswesvaran (1996) describes a hypothesized general factor underlying performance, much like “g” in intelligence, and several sub-factors including task performance and Conscientiousness. Recent literature divides job performance into two dimensions: task performance (a proficiency in performing “core” work tasks) and contextual performance (prosocial behavior that contributes to the organization’s environment and helps accomplish organizational goals) (Borman & Motowidlo, 1993). The focus on teams and facilitation of teamwork in organizations today shows the applicability and importance of contextual performance (McIntyre & Salas, 1995). Task and contextual performance show significant moderate intercorrelations. Thus, they are interrelated, but not highly. It has been suggested that “cognitive ability might be more relevant for predicting task performance whereas personality variables

might be more critical for predicting contextual performance” (Arvey & Murphy, 1998, p. 148).

Job performance is typically measured by peer and supervisor ratings. Vance, MacCallum, Coover, and Hedge (1988) demonstrated the construct validity of these performance evaluation methods in comparison to objective measures. Research has shown that supervisor ratings are more reliable than peer ratings (Viswesvaran et al., 1996). Additionally, the performance dimension being rated may affect the reliability of the ratings. For example, contextual factors such as communication and interpersonal competence are less reliably rated than task performance factors (Arvey & Murphy, 1998). Also, Barrick and Mount (1991) showed that objective versus subjective job performance ratings did not significantly impact validities of personality and job performance.

Broad Traits and Job Performance

In 1991, Barrick and Mount performed a meta-analysis of the Big Five factors and job performance. They found Conscientiousness to be a “valid predictor for all occupational groups studied and for all criterion types” (Barrick & Mount, 1991, pp. 17 - 18). At least some of the Big Five traits (high conscientiousness and high emotional stability) seem “universally associated with higher levels of performance” (Peterson, Pihl, Higgins, Seguin, & Tremblay, 2003, p. 161). It is believed that the other traits are useful in more specific situations. For example, an individual working in sales is likely to be high in Extraversion. Also, in their 2001 meta-analysis, Barrick, Mount, and Judge found that Conscientiousness consistently predicts success in a variety of jobs (mid

.20's to low .30 range) and may predict more strongly if moderators are taken into account. They also found that Neuroticism was a consistent predictor of job success, although the other three factors (Extraversion, Openness, and Agreeableness) were not found to be significant. Hurtz and Donovan (2000) also found similar results for the Big Five factors, with Conscientiousness being the best predictor of job performance. In fact, most meta-analyses of personality and performance demonstrate a significant relationship of Conscientiousness and Emotional Stability to job performance (Anderson & Viswesvaran, 1998; Barrick & Mount, 1991, 2001; Salgado, 1997; Tett et al., 1991). "It is hard to conceive of a job where it is beneficial to be careless, irresponsible, lazy...anxious, hostile..." (Barrick, Mount & Judge, 1991, p. 11). Therefore, it is logical that these two variables (Conscientiousness and Emotional Stability) are significantly related to job performance.

Ones and Viswesvaran (1996) support the use of broad personality measures in predicting job performance. Based on their review of studies on the personality – performance relationship, they found that, when the criterion is global job performance, broad measures of personality are preferable to narrow ones. Barrick and Mount (1994) provide additional evidence that broad traits are preferable to narrow ones, at least for the factor of Conscientiousness. They found no significant improvements in prediction of performance when using facets of Conscientiousness (Achievement Striving and Dependability) as compared to the global measure of Conscientiousness. Ones and Viswesvaran (1996) even argue for a super-ordinate personality trait that is broader than

factors in the Big Five. A combination of Conscientiousness, Agreeableness and Emotional Stability, referred to as a measure of “Integrity”, yields higher predictive validities than each of the Big Five factors alone (ibid).

In addition to being related to global job performance, Conscientiousness and Emotional Stability are related to a number of specific criteria. For example, teamwork and training success appear to be related to both variables (Hough, 1992; Mount, Barrick, & Stewart, 1998). The other three factors in the Big Five (Agreeableness, Openness, and Extraversion) are related to specific occupations and narrow performance criteria. For example, Agreeableness seems to be related to higher levels of performance in helping/nurturing professions as well as jobs requiring teamwork (Barrick, Stewart, Newbert & Mount, 1998). Openness has been related to training proficiency and job performance in unusual companies. An illustration of the relationship between Openness and job performance is found in a study by Bing and Lounsbury (2000) that found Openness to be positively related to job performance (utilizing teams, group calisthenics, after hours Karoke, and a collective work approach called “kaizen”) in a Japanese company operating in the Southeastern United States. Lastly, Extraversion appears to be related to training success, work involving teams, and performance in sales and management positions (Barrick & Mount, 1991; Hough, 1992).

Narrow Traits and Job Performance

There are many researchers who have examined the use of narrow traits in predicting job performance. Paunonen, Rothstein, and Jackson (1999) claim

that the use of broad traits produces inaccuracy in prediction and a reduction in the psychological meaningfulness and, therefore, interpretability of the personality and performance relationship. Aggregating personality traits into a single multidimensional criterion results in a loss of information about relationships between various behaviors and measures (Paunonen, Rothstein, & Jackson, 1999). Stewart (1999) found that a focus on broad personality measures may obscure interesting and potentially useful relationships between personality and performance. For example, Order, a facet of Conscientiousness, predicted success in training, but not performance later on the job. Additionally, the facet of Achievement Striving did not predict training success, though it did predict performance later on the job. Conscientiousness predicted training and later performance equally well. Thus, the narrow traits provide us with more information on specific criterion (Stewart, 1999). Other researchers also advocate the use of narrow measures of personality. "...one sacrifices a great deal of knowledge by bowing down to the false idol of generality" (Schneider, Hough, & Dunnette, 1996, p.650).

A number of researchers have examined the relationship between narrow traits and performance. Le Pine, Colquitt, and Erez (2000) examined personality in relation to adaptability to change in task context and decision quality. After a change in task context, individuals higher in Openness and lower in Conscientiousness made better decisions. They found that the Conscientiousness results were due to the "Dependability" facets (Order, Dutifulness, and Deliberation) rather than the "Volition" facets (Competence,

Achievement Striving, and Self-Discipline). Ashton (1998) found that the Responsibility and Risk-Taking facets of the Jackson Personality Inventory had higher validities with respect to job performance than the Big Five factors.

Optimism has been found to be related to job performance (Lounsbury, Loveland, & Gibson, 2002; Seligman, 1991). Begley, Lee, and Czajka (2000) reported that Achievement Striving predicted blood pressure and job performance when Optimism was high but not when it was low. Work Drive has also been found to relate to job performance in a variety of organizational settings (Lounsbury, Gibson, & Hamrick, 2002) and to predict job satisfaction and career satisfaction better than the Big Five (Lounsbury et al., 2003a). Spector (1978) presents a model of organizational frustration and aggression. He concludes that frustration causes aggression. Frustration also causes little to no increase in performance on simple tasks and a decrease in performance on difficult tasks. Therefore, the personality trait of Aggression seems to affect contextual job performance and, less directly, task performance. Aggressive acts interfere with production.

Academic Performance

Despite the wealth of information on the relationship of personality to job performance, other areas outside the realm of work behavior have not been explored as extensively (Paunonen, 2003). It would be useful to examine the relationship between broad personality measures and academic performance. Much of the research on personality and academic performance has been specifically devoted to the Big Five and academic achievement. Correlations

between the Big Five and academic performance tend to be higher than those for the Big Five and job performance. By way of example, in a study of personality predictors of adolescent achievement (Lounsbury, Sundstrom, Loveland, & Gibson, 2003), the Big Five traits together accounted for 15% of the variance in 7th grade GPA and 10% of the variance in 10th grade GPA. There is also some research on narrow personality measures and academic performance.

The transition from job performance in adult populations to academic performance in child and adolescent populations is a logical one. "School is work, the school is a workplace, the student is a learner, the learner is a worker" (Munson & Rubenstein, 1992, p. 289). In the process of learning, the student performs many different "work tasks" working with the categories of data (numbers, words, and symbols), people (communication and interpersonal skills), and things (setting up equipment and manipulating objects). In school, students follow instructions, plan projects, and debate issues. These processes allow students to "learn work roles and examine their own preferences and worker traits in the performance of these work roles and tasks" (Munson & Rubenstein, 1992, p. 290-291).

In school, performance is typically measured by GPA. Type A personality factors (Achievement Striving and Impatience-Irritability) have been found to be related to GPA (Rahim & Mohammed, 1997). Other researchers have found Humor Styles (Saroglou & Scariot, 2002) and Optimism (Chemers, Hu, & Garcia, 2001; Helton, Dember, Warm, & Matthews, 1999) to relate to grades in high school and college students. Occasionally, measures such as specific school

work behaviors or degree requirements (such as number papers written) and standardized tests such as the SAT are used in place of or in addition to GPA, (Hirschberg & Itkin, 1978; Sneed, Carlson, & Little, 1994). There are other measures of performance in school settings including: absences, behavior problems, social and problem solving abilities as well as grade in a specific course (Ehrler, Evans, & McGhee, 1999; McCown & Johnson, 1991; Robins, John, & Caspi, 1994).

The study of personality and academic performance is not exactly new. Although most research on academic performance has focused on intelligence (Elshout & Veenman, 1992; Harris, 1940; Neisser et al., 1966, Sternberg & Kaufman, 1998) several researchers in the 1960's and 70's did examine academic performance and personality (Cattell & Butcher, 1968; Kline & Gale, 1971; Mandyrk & Schuerger, 1974). Despite some early research that concluded there was no useful relationship between personality and academic performance (Green, Peters, & Webster, 1991; Mehta & Kumar, 1985), there is a significant amount of empirical research linking personality to academic performance (Busato, Prins, Elshout, & Hamaker, 1999; Eysenck, 1981; Furnham, 1992; Lounsbury, Sundstrom, Gibson & Loveland, 2003). In fact, the higher one goes in education the less predictive intelligence becomes (largely due to restriction of range) and personality appears to become more predictive of academic performance (Ackerman, 1994; Chamorro-Premuzic & Furnham, 2003; Furnham, Chamorro-Premuzic, & McDougall, 2003; Mehta & Kumar, 1985; Wolf, 1972).

It is believed that basic personality traits can influence grades by facilitating or inhibiting the use of learning and study strategies, providing motivation or blocking motivation to perform well, and may cause an individual to withdraw or work harder after an initial failure (Blickle, 1996; Mumford & Gustafson, 1988). Messick (1984) suggested that learning style was a “characteristic self-consistency in information processing that develops in congenial ways around underlying personality trends.” (p. 61). Support for this proposition is provided in several studies (Busato, Prins, Elshout & Hamaker, 1999, 2000; Duff, Boyle, Dunleavy & Ferguson, 2004) that demonstrated a relationship between learning style and personality.

Measuring Personality in Adolescence

A concern in research on the connection between personality and academic performance is whether one can reliably and validly measure personality in adolescence. Although some changes in personality occur throughout the lifespan, personality traits are relatively stable by age 30 (McCrae & Costa, 2003). Costa & McCrae (1978) found that there were few changes in adult personality during a 10-year interval. Adolescent personality seems to be similar in structure and stability to adult personality, and the five factor model has been shown to be valid for adolescents down to age 10-11 (Costa & McCrae, 1994). Other researchers agree: “A growing body of evidence exists for it’s [the Five Factor Model] applicability to adolescents” (Lounsbury et al., 2003b, p. 2), and some evidence for its usefulness in children (Barbaranelli et al., 2003; Digman & Takemoto-Chock 1981). There is evidence of personality change in

adolescence and early adulthood, but the transition is considered a smooth one without much change in personality traits. College age is considered the midpoint in the personality transition from adolescence to adulthood (Costa & McCrae, 1992). Kulas (1996) reported no significant change in locus of control among adolescents. Granzio, Jensen-Campbell and Finch (1997) found no age differences in the Big Five model of personality in adolescence. Similarly, Costa and colleagues (2002) found remarkable stability in adolescent personality in three longitudinal studies, despite the typical stereotype of “storm and stress” (Arnett, 1999). Although Neuroticism tends to increase in females and Openness tends to increase in both males and females, the change is modest. Extraversion, Agreeableness and Conscientiousness appear to remain stable across time in adolescence.

Most of the studies of personality and academic performance in children under the age of 10 utilize teacher and parent ratings of personality since most children younger than 10 are not able to read and comprehend the questions in the scales. There is a methodological problem with this approach in that, in most studies in this, teachers give both personality ratings and performance ratings which can lead to upwardly biased correlations (Mervielde, Buyst & De Fruyt, 1995). In adolescence, personality is typically assessed by the use of adult measures of personality. Because the adult forms often use words and phrases that adolescents may not understand, they may not be appropriate for adolescents (Costa & McCrae, 1992; & Costa & McCrae, 1994; Granzio & Ward, 1992). For example, words like “methodical” and “fastidious” may not be suitable

for a younger adolescent population. One published measure of adolescent personality is the High School Personality Questionnaire (HSPQ), a version of the 16 Personality Factor Questionnaire (16PF). The HSPQ has 14 scales (warmth, intelligence, emotional stability, excitability, dominance, enthusiasm, conformity, boldness, sensitivity, withdrawal, apprehension, self-sufficiency, self-discipline, and tension) (Cattell & Beloff, 1953).

Several researchers have used the HSPQ to assess the relationship between personality and academic performance (Mandyrk & Schuerger, 1974; Watterson, Schuerger, & McInyk, 1976). Hakstian and Gale (1979) found that personality and motivation, measured by the HSPQ, added incremental validity to ability measures for predicting academic performance. In terms of measuring the Big Five factors of personality, the HSPQ and the 16PF are not the most efficient measures, though their subscales can be “forced” into approximating the five factors. Additionally, the date of copyright of the measure (over 30 years ago) makes it possible that it is not applicable to adolescents of today (Lounsbury et al., 2003b). The Institute for Personality and Ability Testing (IPAT; www.ipat.com) has published a newer version of the HSPQ called the Adolescent Personality Questionnaire. However, there I could not locate any research published on it.

Inclusion of contextualized items typically helps improve the predictability of personality measures for setting-specific criterion variables such as academic performance (Schmit, Ryan, Steirwalt, & Powell, 1995). One such measure was developed by Lounsbury and colleagues (2003b) -- the Adolescent Personality Style Inventory (APSI) -- a measure of the Big Five and narrow traits that is

appropriate for use with adolescents. The APSI has items that measure the Big Five personality traits as well as several narrow personality constructs. The appropriate age range for adolescents taking the APSI is 11-22 years. Relatively simple items were used and, to further assure that they were appropriate for adolescents, all statements were reviewed and approved by middle-school teachers, middle-school students, and school psychologists. They have also been used with no reading problems reported by over 5,000 students in middle school and high school (Lounsbury & Gibson, 2004). In order to ensure that the questions were appropriate to middle and high school students, Lounsbury and colleagues (2003b) determined the Flesh-Kincaid grade level (3.2) and Flesch reading ease (88.9) of the APSI using Microsoft Word 2000.

The APSI demonstrates high internal consistency for each dimension (Neuroticism--.86, Agreeableness--.78, Conscientiousness--.82, Extraversion--.76, and Openness--.59). The measure has also been shown to validate with teacher ratings and has demonstrated known-group validation, and construct validity for middle and high school students as well as college students (Lounsbury et al., 2003b; Lounsbury, Saudargas, Gibson & Leong, 2005; Lounsbury, Saudargas, & Gibson, 2004).

Broad Traits and Academic Performance

Conscientiousness is by far the Big Five factor which has been most frequently found to relate to academic success (Allik & Realo, 1997; Graziano & Ward, 1992; John et al, 1994; Wolf & Johnson, 1995). It has been found to be a valid predictor of academic performance for middle and high school students

(Digman & Inouye, 1986; Lounsbury et al 2003b), college students (Goff & Ackerman, 1992; McIlroy & Bunting, 2002), and graduate students (Hirschberg & Itkin, 1978; Wiggins, Blackburn, & Hackman, 1969). Digman and Inouye (1986) demonstrated that teacher ratings of Conscientiousness were positively related to High School GPA. Conversely, Goff and Ackerman (1992) reported no relationship between Conscientiousness and High School GPA, though they did find a relationship between Conscientiousness and college GPA, hard work, perfectionism, and lack of distractibility. Additionally, Tross, Harper, Osher, and Kneidinger (2000) reported that Conscientiousness added incremental variance to High School GPA and SAT scores in predicting College GPA.

McIlroy and Bunting (2002) found Conscientiousness to be positively correlated with test grades, course work and Self-Efficacy in Irish undergraduates. Additionally, they found a negative correlation between Conscientiousness and test-irrelevant thoughts. Watterson, Schuerger and McNlyk (1976) found that using both intelligence and personality measures to predict academic success was better than either alone. Furthermore, they found Conscientiousness to be significantly related to freshmen and sophomore GPA among mid-western high school students. Colquitt and Simmering (1998) studied the relationship of Conscientiousness, Goal Orientation, Motivation to Learn, and GPA. Their results showed that Conscientiousness was positively related to GPA, Goal Commitment, and Motivation to Learn. The relationship of Conscientiousness to goals and Motivation to Learn may help to explain the relationship of Conscientiousness and grades. In a sample of medical school

students, Ferguson, Sanders, O’Hehir, and James (2000) reported that Conscientiousness predicted performance, even after controlling for previous academic achievement. However, Livens, Coetsier, DeFruyt, and DeMaessneer (2002) only found Conscientiousness to predict medical school performance for the first year, but not thereafter.

Blickle (1996) studied the relationships between learning strategies, personality and academic performance. In a sample of junior college students, they studied two factors of learning strategies called Learning Discipline and Elaboration in relation to the Big Five factors of personality. Conscientiousness was correlated with learning discipline (made up of effort, time management and attention) ($r = .57, p < .01$) and elaboration (made up of critical evaluation, learning with others, and relationships) ($r = .20, p < .05$). In a study of senior college students, Conscientiousness was related to learning discipline ($r = .48, p < .01$) but not elaboration. Smith (1969) studied a factor called “Strength of Character” which is quite similar to Conscientiousness in three different populations (Spanish speaking high school students, English speaking undergraduates, and English speaking nursing students). “Strength of Character” was found to be consistently related to academic performance in all three samples. Astington (1960) found elementary school males who had high ratings of “persistence” to perform better in school. Schuerger and Kuna (1987) reported that Conscientiousness played a substantial role in predicting adolescent school grades.

De Fruyt and Mervielde (1996) studied Belgium university students in the last year of their program. In Belgium, students must pass an examination to graduate, and though they are encouraged to pass it on the first try, they are allowed to retake it once. De Fruyt and Mervielde found a significant correlation between Conscientiousness and passing the first exam (attainment of degree on first try). In this sample, gender affected results with males having a higher correlation than females. Lounsbury, Saudargas and Gibson (2004) found that Conscientiousness was related to intention to withdraw from college ($r = -.25, p < .05$). Other researchers have examined the relation of Conscientiousness to academic success among graduate students. Hirschberg and Itkin (1978) found that peer ratings of Conscientiousness predicted several criterion of graduate school success (obtaining the PhD, number of publications, time it took to get the degree, and GPA). Wiggins, Blackburn, and Hackman (1969) also found a relation between Conscientiousness and graduate GPA.

Conscientiousness is considered to be related to motivation (Andersson & Keith, 1997; Boekaerts, 1996; Chamorro-Premuzic & Furnham, 2003; Furnham, 1995). Motivation is of substantial importance in the study of performance (Andersson & Keith, 1997; Boekaerts, 1996; Furnham, 1995; Furnham, Chamorro-Premuzic, & McDougall, 2003; Hamilton & Freeman, 1971). Campbell (1990) said that motivation is a choice of expending effort, how much effort to expend, and whether or not to persist in expending effort. Therefore, it is likely that the relationship between Conscientiousness and Performance is at least to some degree exerted through motivation (Sackett, Gruys, & Ellingson, 1998).

Other Big Five factors have demonstrated moderate correlations with academic success. Wentzel (1993) found that agreeableness was related to higher grades in middle school students. However, Agreeableness has not been clearly defined or assessed in many of the studies of personality and academic performance, particularly in studies using the 16PF or the CPI (Byravan & Ramanaiah, 1995; McCrae, Costa & Piedmont, 1993). De Fruyt and Mervielde (1996) found that Openness was a stronger predictor of grades at first exam period for females than for males. Also, they found that Neuroticism predicted grades at first exam period with a higher correlation observed for males than females. Allik and Realo (1997) found an inverse relationship between Neuroticism and mean grades. Goff and Ackerman (1985) also found that in a sample of undergraduate students, Extraversion correlated with college GPA and with high school GPA. Finally, John et al. (1994) and Parker and Stumpf (1998) reported that some evidence that Openness is related to school performance.

Mervielde, Buyst and De Fruyt (1995) found that teacher rated personality (Conscientiousness, Extraversion, Openness and Emotional Stability) predicted grades in elementary school children. Agreeableness displayed no significant correlations with GPA in any of the grades that Mervielde and colleagues studied. However, the authors caution that these “correlations may be somewhat inflated because the same teacher provided both the ratings and the GPA” (Mervielde, Buyst & De Fruyt, 1995, p. 532). Lounsbury and colleagues (2003b) found that all the Big Five factors except for Extraversion predicted GPA in a semi-rural county high school. They also found that all the Big Five factors

except for Conscientiousness predicted GPA in an inner-city magnet high school. Therefore, school type and student demographics may affect the relationship between personality and academic achievement.

Cunningham (1968) reported a negative correlation between neuroticism and school performance among thirteen-year-old males. It is believed that around the age of thirteen or fourteen the connection between Neuroticism and school performance becomes stronger (DeRaad & Schouwenburg, 1996; Eysenck, 1992; Finlayson, 1970; Lynn, 1959; Savage, 1962). Several studies have found that a combination of high Extraversion and high Neuroticism is significantly related to poor school performance and even failure (Marin-Sanchez, Rejano, & Rodriguez, 2001; Lathey, 1991; Weiss, Lotan, Kedar & Ben-Shakhar, 1988).

Lounsbury, Saudargas, and Gibson (2004) found that Emotional Stability was negatively related to intention to withdraw from college ($r = -.35, p < .01$) as were Agreeableness ($r = -.23, p < .01$) and Extraversion ($r = -.15, p < .05$). Duff, Boyle, Dunleavy, & Ferguson (2004) found that several Big Five variables were related to deep processing of information (not accepting what you are told, thinking things out for yourself), surface processing (having trouble making sense of things), and strategic processing (knowing what you want and being determined to achieve it). Extraversion was related to deep and strategic approaches to learning, Neuroticism was related to surface and strategic approaches to learning, Openness was related to deep approaches to learning and Conscientiousness was related to strategic learning. Blickle (1996) found

that Extraversion and Openness were related to a learning style called elaboration.

Whereas the connection between Conscientiousness and academic performance may be through motivation, the relationship between Neuroticism and academic performance may be largely through anxiety (Furnham, Chamorro-Premuzic, & McDougall, 2003; Hembree, 1988; Siepp, 1991). "Inherent in important pursuits such as created by learning and education are challenges and obstacles. In the face of such problems individuals sometimes show a characteristic, maladaptive, helplessness style that prevents them from functioning effectively" (i.e. individuals higher in Neuroticism) (DeRaad & Schouwenburg, 1996, p. 326). It is believed that stress significantly impairs performance for high Neurotic individuals, particularly on examinations (often a large determinant of GPA). Additionally, it has been shown that Neuroticism is related to increased absences and illnesses (Chamorro-Premuzic & Furnham, 2002) and could affect academic performance through attendance. Additionally, physical consequences such as racing heart, muscle tension, and gastric disturbances in addition to low self concept and low self-estimated intelligence (Furnham, Chamorro-Premuzic, & Moutafi, 2003; Matthews, Davies, Westerman, & Stammers, 2000; Well & Matthews, 1994) which may result in lower academic performance.

The Big Five variable which has perhaps the most interesting relationship to academic performance is Extraversion. Some researchers have proposed that variables such as type of scale used, age, gender and even level of education

play an essential role in the strength and direction of the relationship between Extraversion and academic performance (Furnham, Chamorro-Premuzic, & McDougall, 2003). Many of the early studies of personality and academic performance seemed to show that Introverts performed better in school than Extraverts (Child, 1964; Entwistle & Entwistle, 1970; Savage, 1962). These findings were ascribed to the Introverts' better study habits and better attention in the classroom. Later research did not find such conclusive results. Kline and Gale (1971) did not find a relationship between Extraversion and academic performance. Additionally, Cowell and Entwistle (1971) found that low Neuroticism Introverts performed equally to Neurotic Extraverts on exams. Other researchers have found that individuals high in Extraversion do better in seminars and on oral exams (Chamorro-Premuzic & Furnham, 2003; Furnham & Medhurst, 1995; Robinson, Gabriel, & Katchan, 1993) while individuals low in Extraversion do better in written work and exams. Additionally, it has been found that Extraverts tend to fail more frequently than Introverts (Sanchez-Marín et al., 2001), and that individuals lower in Extraversion tend to have a better ability to consolidate learning as well as having better study habits and being less distractible than individuals higher in Extraversion (Entwistle & Entwistle, 1970; Eysenck & Cookson, 1969; Sanchez-Marín et al., 2001).

Higher levels of Extraversion are related to better academic performance in elementary schools (particularly under the age of 11), while in higher education higher levels of Extraversion are related to poor academic performance. (Bendig, 1960; Child, 1964; DeRaad & Schouwenburg, 1996; Entwistle, 1972; Finlayson,

1970; Lynn, 1959). There are several possible explanations for the mixed pattern of results for extraversion. Furnham and colleagues (2003) believe it is due to the more sociable and less competitive environment of elementary school, while in higher education is more formal and less sociable. On the other hand, Anthony (1973) believed that students who were less academically talented became more Extraverted to compensate, while academically talented students became more Introverted. There is an important confound in these findings that relates back to the choice of measures appropriate for a certain age group as well as the common use of teacher ratings in elementary school studies (see “measuring personality in adolescence” p. 13 of this article). Interestingly, in a study of students in a college seminar class, Extraversion was positively related to participation in the class, oral expression, final score in the class, and estimates of student performance. However, in the same sample, Extraversion was negatively related to grasp of subject matter, work habits, motivation and written expression (Furnham & Medhurst, 1994).

Narrow Traits and Academic Performance

As with job performance, narrow traits have also been used to predict academic performance. Work drive has been found to predict GPA in middle school, high school, and college students (Lounsbury, Sundstrom, Gibson & Loveland, 2003; Lounsbury, Gibson, & Hamrick, 2004; Perry, 2003). Additionally, the results concerning Tough-Mindedness in relation to GPA are mixed. Mandryk and Schuerger (1974) as well as Lounsbury, Sundstrom, Loveland & Gibson (2003), found a negative relationship between Tough

Mindedness and GPA. However, Barton, Dielman, and Cattell (1972) reported a positive relationship between Tough-Mindedness and academic performance.

Aggression has been found to be negatively related to GPA in elementary, middle, and high school students (Edwards, 1977; Feshbach & Price, 1984; Orpinas & Frankowski, 2001). Feshbach and Price (1984) studied aggressive behavior in relation to academic achievement among elementary age children. Their first study demonstrated that aggressive behaviors in kindergarten were better predictors of grades in 1st and 2nd grades than a measure of general cognitive ability. In the second study, aggression and delinquency were related to academic disability in boys. Orpinas and Frankowski (2001) also found that among middle school students aggression was negatively related to academic performance.

Optimism has been shown to have a positive correlation with GPA in high school and college students (Chemers, Hu, & Garcia, 2001; Prola & Stern, 1984; Robbins, Spence, & Clark, 1992; Stoecker, 1999). Prola and Stern (1984) studied optimism in college students. Optimism was significantly related to both High School GPA and college grades 2 years after assessment of Optimism (Prola & Stern, 1984). Helton, Dember, Warm and Matthews (1999) studied varsity collegiate swimmers in a laboratory computer task. Participants with higher levels of Optimism did better on the computer task. Chemers, Hu and Garcia (2001) studied college students' adjustment and performance in relation to Optimism and Self-Efficacy. At the end of the first quarter, 1st year students were assessed on Self-Efficacy, and Optimism. At the end of the 1st year in

college, they were assessed on academic performance, stress, personal adjustment and health. Both Self-Efficacy and Optimism were related to academic performance. Optimism was also negatively related to stress.

Stability of Personality Over Time

When conducting a longitudinal study, one issue of importance is the stability of personality over time. There are relatively few studies that have addressed the issue of the stability of personality over time. Exceptions include: Costa and McCrae (1986), Siegler, George, and Okun (1979), Reichard, Livson and Peterson (1962), and Haan, Millsap and Hartka (1986). Nevertheless, the general consensus of the aforementioned studies is that personality is generally stable over time. Methodological and practical considerations have prevented much research on this topic. The most direct way to measure stability is to follow individuals longitudinally across their lifespan. Few researchers seem able to demonstrate the considerable altruism it requires, knowing that another researcher will likely have to finish the study for you (Costa & McCrae, 1986). Another method to assess stability is the use of retrospective studies, which rely on reconstruction of early personality based memories. Retrospective studies are commonly used by clinicians, but are held suspect by methodologists, who question the accuracy of memory as a method to determine stability (Costa & McCrae, 1986). In fact, there is concern that individuals will report their personality to be stable to avoid looking inconsistent. Woodruff (1983) studied the issue of individuals over or under reporting consistencies in their personality, concluding that if anything, "memory appears to exaggerate estimates of

change,” supporting the idea of stability of personality over time. Reichard, Livson, and Peterson (1962) studied life histories of a sample of retired men. Their results suggest that the men’s personalities changed very little over their life spans. Other researchers have found similar results (Haan, Millsap, & Hartka, 1986; Siegler, George, & Okun, 1979). Costa and McCrae (1986) reviewed studies on the stability of personality over time. They divided the research into two types: the stability of mean levels and the stability of individual differences. The first type asks “does the mean level of a variable change with age?” and the second type, “how consistent are individual differences?” Cattell, Eber, and Tatsuoka (1970) studied white veterans ranging in age from 25 to 82 years. Participants were reassessed five years later. Two scales (from the 16PF) showed significant change over time (intellectual brightness and group independence) which were likely due to a practice effect. The other 14 scales showed no significant longitudinal changes. Siegler, George, and Okun (1979) studied men and women over an eight year period. Again, there were changes in intellectual brightness over time, but the other scales showed no significant changes. Leon, Gillum, Gillum and Gouze (1979) assessed middle-aged men on the MMPI at 4 intervals (1947, 1953, 1960, and 1977). Almost all the scales showed significant differences over time but the magnitude of the changes were trivial. The second question involves study of whether there are any unsystematic changes in personality over time (i.e. dramatic change in individuals with no change in the group as a whole). These changes would likely be due to life experiences that are unique to individuals. Researchers that have

tried to answer this question have also found that there is no real change in personality over time (Block, 1977; Kelly, 1955; Strong, 1951).

Another group of researchers (Caspi & Bem, 1990) have said that there are multiple types of continuity or stability and that each of them is in its own way important to the question of whether personality is stable over time. The first type has been conceptualized as *absolute stability*, which refers to consistency in the amount of a trait over time. Although it conceptually refers to absolute stability within an individual, absolute stability is often measured by group means. Absolute stability is the type of stability that is most frequently reported in the literature (Conley, 1985; Costa & McCrae, 1980; Kelly, 1955; Siegler, George, & Okun, 1979). Although personality changes have been reported when individuals are tested first as adolescents and later as adults (Mortimore, Finch, & Kumka, 1982) these changes are small in magnitude. Contrary to the popular belief of dramatic changes in adolescents, some studies have found no significant mean-level changes in personality from adolescence to adulthood (Dusek & Flaherty, 1981; Nessel-roade & Baltes, 1974). Nevertheless, significant absolute changes have been found in individuals who have experienced important "life transitions" such as having a baby (Feldman & Aschenbrenner, 1983). In order to be accurately assessed, absolute stability requires that behaviors be identifiable in all ages studied.

A second type of stability proposed by Caspi and Bem (1990) is *differential stability*. This refers to an individual's rank in the population on a particular trait. Several long term longitudinal studies (Terman's study of gifted

children, Kelly's longitudinal study, Berkeley Guidance and Oakland Growth studies) have provided us with some evidence of longitudinal stability of personality traits. Many self-report instruments have been shown to demonstrate differential stability including the Sixteen Personality Factor Questionnaire (Siegler, George, & Okun, 1979), the MMPI (Finn, 1986), the Guilford – Zimmerman Temperament Survey (Costa, McCrae & Arenberg, 1980) and the Big Five (Digman, 1989; McCrae & Costa, 1985; Norman, 1963). It has been shown that maturational changes in and of themselves, have trivial effects on the rank ordering of individuals personality. It is important to note that while a trait may have differential stability, individuals may have mean level changes (absolute changes) over time.

A third type of stability is termed *coherence* (Caspi & Bem, 1990), which refers to the idea that the actual behavior can change while the internal attribute that causes the behavior remains the same. For example a study by Caspi, Bem and Elder (1989) demonstrated that men who were highly dependent on adults in childhood, became adults who were sympathetic, nurturing, calm, and giving. Men who exhibited the pattern of dependence in childhood and then in adulthood demonstrated sympathy and nurturing, were also more likely to have happy, intact marriages. Rather than remaining dependent on others throughout their lives, these men “seem to have transformed their childhood dependency into a mature, nurturant style in adulthood that serves them particularly well in the intimate interpersonal world of home and family” (p. 397). Other studies have demonstrated that childhood task persistence “transformed” into adult

achievement orientation (Ryder, 1967). Coherence refers to a “conceptual rather than a literal continuity among behaviors” (Caspi & Bem, 1990).

Other types of continuity include: structural (stable pattern of correlations among a set of variables) and ipsative (explicit reference to stability at the individual level, a person - centered approach). No matter which type of stability studied, the conclusion is largely the same: personality is relatively stable over time. It is important to note that historical factors may be confounded with the issue of stability of personality. The majority of persons studied longitudinally were children of the Great Depression, who grew up and fought during WWII and the Korean War, had children themselves during the “booming postwar era” or during the turbulent 1960’s (Rossi, 1980). Major world events such as wars during the lifetimes of study participants may or may not have an effect on the stability or continuity of personality. Nevertheless, it remains a confound in the study of stability.

Most of the studies of personality continuity have focused on adults. However, a few have investigated the idea of personality stability in children and adolescents. Many of these studies demonstrated little to no change in personality from ages 12 to 18 (Arrindell, Van Faassen & Pereira, 1986; Graziano, Jensen-Campbell & Finch, 1997; Kulas, 1996). Other researchers have studied participants in transition from adolescence to adulthood (Bachman, O’Malley & Johnston, 1978; Jessor, 1983; Mortimer, Finch & Kumka, 1981). Mortimer, Finch, and Kumka (1981) studied male college students’ personality. The participants were tested in their freshman and senior years as well as 10

years after college. Analyses showed an increase in self – esteem, and decreases in sociability and unconventionality. Bachman, O'Malley, and Johnston (1978) and Jessor (1983) showed similar changes from adolescence to adulthood. Nevertheless, it is essential to note that the magnitude of changes that were observed was inconsequential. Eron (1982) studied 3rd graders using scales from the MMPI. These children were again tested at 19 and 30 years of age. There was long-term stability in the personality scales, with a median correlation of $r = 0.5$ ($P < .01$). Additionally, a study by Hair and Graziano (2003) demonstrated that the Big Five personality characteristics were more stable than self-esteem during adolescence.

In 1986, Costa and McCrae analyzed a series of longitudinal studies, which assessed the stability of personality over time. Results of the longitudinal studies they analyzed showed that there was considerable stability in personality, with retest correlations from .3 to over .8 for intervals of up to 30 years. Possible alternative explanations for the stability include subjects' overestimation of stability in order to appear consistent and subjects' consistent response styles of acquiescence, extreme responding or social desirability is where the consistency comes from. Both of these alternative explanations were addressed by Costa and McCrae (1986). Studies such as Woodruff (1983) found that there were larger retest correlations under normal instructions ($r = .58$) than when asked specifically by researchers to rely on memory ($r = .17$). In order to address the issue of response sets, Costa and McCrae (1986) partialled out the effects of response sets in a sample of 98 men with 6 year retest data. The only change

found when effects of response sets were partialled out was in the category of masculinity. Therefore, “stability of personality does not appear to be the result of response sets” (Costa & McCrae, 1986).

McCrae and colleagues (2002) analyzed the stability of personality traits over time in adolescents ages 12 to 18, in three studies (longitudinal, cross-sectional, and cross-cultural). In a longitudinal study McCrae and Colleagues (2002) showed significant retest correlations for male and female adolescents, although the correlations were smaller than those for adults (Roberts & DelVecchio, 2000). The longitudinal study also reported the numbers of participants who decrease, remained stable, or increased on the Big Five traits. Stability over a period of 4 years was demonstrated in 60% of the sample. In the cross-sectional study by McCrae and Colleagues (2002), data was compared across age groups within adolescence. The results suggest stability across age groups and replicate the structure found in adult samples (McCrae, et al., 2002, p. 1459). Additionally gender differences found in the sample mirrored that of adult populations (McCrae, et al., 2002, p. 1459). The cross-cultural study by McCrae and Colleagues (2002) also demonstrated stability across age groups. Overall their combined studies suggest mean level stability of Extraversion, Agreeableness, and Conscientiousness, while there are modest changes in Neuroticism and Openness. The small changes in Neuroticism in female adolescents are consistent with reports of depression. Thus it appears that personality is relatively stable over time, and that the Big Five measure of personality is relatively stable over time.

Chapter II

The Present Research

Rationale

Although they are informative, the studies above do not address whether broad or narrow traits are better in terms of predicting academic success. Several studies have addressed this issue. Lounsbury, Sundstrom, Gibson & Loveland (2003) found that Work Drive predicted incremental variance in GPA after controlling for the Big Five and intelligence. Furthermore, Lounsbury and colleagues (2003b) demonstrated that both Work Drive and Aggression predicted incremental variance in GPA after controlling for the Big Five. Livens and colleagues (2002) found that facets of Conscientiousness (Self-Discipline and Competence) were correlated with medical school performance, and that the facet Self-Discipline predicted better than the factor Conscientiousness.

A few studies have assessed the effects of personality over time. Hair and Graziano (2003) found that agreeableness and openness in middle school is related to later academic success and adjustment in high school. Asendorpf and Van Aken (2003) studied personality and school achievement at age 4-6 and age 12. Their study revealed that conscientiousness predicted later school achievement outcomes. Shiner and Masten (2002) discovered that childhood personality (measured at age 10) predicted adaptation in areas such as academic achievement, work, and relationships at ages 20 and 30. Academic conscientiousness, surgent engagement, mastery motivation, and agreeableness

in childhood (age 8-12) have been shown to relate to academic achievement 10 years later (Shiner, 2000).

Chamorro-Premuzic and Furnham (2003) studied British undergraduates during a three-year period of time and compared personality (as measured by the Big Five) and several criteria (e.g. exams, projects, absenteeism).

Agreeableness was related to exam scores in the first year. Conscientiousness was positively related and Neuroticism was negatively related to exam scores in all three years as well as the final project grade. Furthermore,

Conscientiousness was negatively related to absenteeism. Furnham and Mitchell (1990) studied students in an occupational therapy program over the course of 4 years. Individuals low in Extraversion tended to do better on exams in their first year and were more successful in their practical placements. They also found that Neuroticism was negatively related to success in a communication skills class and performance on exams.

As yet, however, I could not identify any studies that have assessed the relative predictive validities of the broad (the Big Five) and narrow personality traits (such as aggression, assertiveness, optimism, tough mindedness, career decidedness, self-regulated learning, and work drive) over time in adolescence. There are several reasons why this information could be useful. From a theory standpoint it is important to fully understand the generalizability over time of the personality and performance relationship. From a practical standpoint identification of specific traits that predict school violence, absences, and other behavior problems could be useful to school teachers and administrators. At-risk

students could be identified and interventions might be designed to help alleviate some of the problems. Additionally, performance in leadership roles, athletics and artistic extracurricular activities could be useful to guide students in their course and activity choices. Furthermore, these traits might help to identify particular strengths and weaknesses of Learning Disabled and other types of disadvantaged students so that educators can provide the best possible education for all students. Overall this study analyzed broad and narrow personality traits in predicting academic achievement across three consecutive annual occasions of measurement.

Hypotheses

Data were collected longitudinally over a period of three consecutive school years. Four hypotheses and one research question were formulated which tested both predictive validities at initial occasions of measurement and predictive validities over three consecutive years of school.

Hypothesis 1: Broad personality variables will be significantly related to GPA for an initial occasion of measurement.

Based on their definitions as well as the job performance and academic performance literature reviewed above, the following predictions were made for each of the five variables:

- 1) *Conscientiousness will be positively related to GPA.* A person scoring higher in Conscientiousness tends to be more orderly, determined, dedicated, achievement motivated and tend to prefer more structured environments. In light of this and the fact that Conscientiousness has

demonstrated a consistent relationship with both job performance and academic performance in the literature, it is expected that this factor will be positively related to GPA.

- 2) *Extraversion will be positively related to GPA.* A person scoring higher in Extraversion is gregarious, outgoing, warmhearted, and talkative. Due to its outward focus and the relationship between Extraversion and training proficiency (Mount & Barrick, 1998), it is expected that this relationship would carry over to academic learning environments.
- 3) *Emotional Stability will be positively related to GPA.* Individuals higher in Emotional Stability tend to be more resilient and perform better under stress. Since much of the academic environment is inherently stressful at times, individuals higher in Emotional Stability should have higher GPA's than individuals lower on this factor.
- 4) *Openness will be positively related to GPA.* Individuals higher in Openness are willing to accept new ways of learning, thinking, and doing things. As learning new things is a fundamental part of the education process, this factor should be positively related to GPA. Openness was demonstrated to be related to GPA in both a semi-rural school system and an inner city magnet school (Lounsbury et al., 2003b).
- 5) *Agreeableness will be positively related to GPA.* Individuals scoring higher on Agreeableness tend to be more cooperative, easygoing, and work well with others. Students higher on this trait should get along

better with their teachers and other students and they are likely to perform better on group projects and other team-oriented tasks.

Lounsbury and colleagues (2003b) reported that agreeableness was related to GPA, absences, and behavior problems.

Hypothesis 2: Broad personality traits will be significantly related to GPA at the second and third annual occasions of measurement.

Based on broad personality traits' relationships with GPA in the literature and the relative stability of personality over time in adolescence it is hypothesized that broad personality measures will significantly predict academic performance over three consecutive annual occasions of measurement. In other words it is expected that the above relationships of broad personality traits and GPA will hold for Time Two and Time Three. Furthermore it is predicted that these relationships will be of lower magnitude with each successive wave of measurement (i.e. Time One correlations will be of greater magnitude than Time Two correlations, which in turn are likely to be of higher magnitude than Time Three correlations).

Hypothesis 3: Narrow personality traits will be significantly related to GPA for an initial occasion of measurement.

Based on their definitions and their relationships with Job Performance and Academic Performance in the literature, the following predictions are made:

- 1) *Optimism will be positively correlated with GPA.* Optimism reflects the "disposition to expect the best possible outcome or to emphasize the most positive aspects of a situation" (Webster's II, 1995).

Expecting the best possible outcome may lead to self-fulfilling prophecies. Additionally, several studies show that Optimism is related to job performance (e.g. Begley, Lee, & Czajka, 2000; Seligman, 1991) and academic performance (e.g. Chemers, Hu, & Garcia, 2001; Prola & Stern, 1984). Therefore, Optimism should be positively related to GPA.

2) *Work Drive will be positively correlated with GPA.* Work drive is a tendency towards industriousness and a willingness to expend additional time and effort, beyond that which is necessary, to achieve success (Lounsbury, et al., 2003a). Students who are more industrious, and expend extra effort in order to achieve goals, are likely to do well in school. Additionally, Work Drive has been demonstrated to correlate positively with academic performance (Lounsbury et al, 2003a; Perry, 2003). Therefore, Work Drive should be positively related to GPA.

3) *Career Decidedness will be positively correlated with GPA.* Career Decidedness is the degree to which an individual “knows that occupational fields s/he wants to go into after leaving school” (Lounsbury, Saudargas, & Gibson, 2004). It is reasonable to assume that individuals who know what they intend to do after school will be more engaged and committed to their classes and class work. Additionally, Career Decidedness may be related to goals which have been shown to be related to performance (Locke, Shaw, Saari, &

Latham, 1981). Students who are lower on this trait may be “biding their time” and are less committed to classes as well as expending less effort in their classes.

- 4) *Assertiveness will be positively related to GPA.* Assertiveness refers to the inclination to seize the initiative, take charge of situations, speak up on matters of importance, defending personal beliefs, and being forceful (Lounsbury, Loveland, Sundstrom, Gibson, Drost, & Hamrick, 2003). I could not identify any studies that have shown a significant relationship between assertiveness and academic performance. A few researchers have looked at assertiveness training and its relation to academic performance in an attempt to improve grades in elementary to high school students (Ladouceur & Armstrong, 1983). Therefore, it is hypothesized that individuals with higher levels of assertiveness will have higher GPA's.

Hypothesis 4: Narrow personality traits will be significantly related to GPA at the second and third annual occasions of measurement.

Based on the narrow traits of Assertiveness, Optimism, Aggression, Work Drive, and Career Decidedness in relation to GPA in the literature and the relative stability of personality over three consecutive annual occasions of measurement in adolescence, it is hypothesized that these narrow personality traits will predict academic performance over three consecutive annual occasions of measurement. In other words it is expected that the above relationships of narrow personality traits and GPA will hold for Time Two and Time Three.

Furthermore it is predicted that the magnitude of these correlations will decline from Time One to Time Three.

Research Question 1: How are broad and narrow personality traits jointly related to GPA over three consecutive annual occasions of measurement?

It would be useful to determine the relative ability of broad versus narrow personality traits to predict GPA over three consecutive annual occasions of measurement using the full set of broad and narrow traits. Accordingly I used stepwise multiple regression analyses to determine the best sets of predictors of GPA at the three occasions of measurement.

Research Question 2: Is the relationship between personality traits and GPA different for males and females?

Although the Big Five model of personality has been shown to be stable across gender (Digman, 1990), the interaction of the Big Five, narrow traits, GPA and gender has demonstrated mixed results in the literature. There have been inconsistent results for gender differences in the personality – performance relationship (Mervielde et al., 1995). Furnham (1982, 1990), Johnson and Bloom (1995), and McCrae and colleagues (2002) found no consistent gender effects. However, other researchers have shown that there are some gender differences on narrow traits (Furnham & Rajamanickam, 1992; Perry 2003). Therefore I will examine the relationship between all 10 personality traits and GPA separately for males and females at each time period to assess whether there are differences in correlations as a function of gender.

Method

An archival data source was used for this study. The data were collected as a part of a larger longitudinal study conducted by Resource Associates Inc. in cooperation with a county school system in the Southeastern United States. The data presented here are used with permission from Resource Associates. The school system is comprised of 98% Caucasian students and 2% African American students. Data was collected at 3 separate times. At time 1, there were 542 students in 6th grade, 445 in 9th grade and 341 in 12th grade. At time 2 there were 245 students in 7th grade, 320 in 10th, 13 in 11th and 284 in 12th. At time 3, there were 493 students in 8th grade and 692 in 11th. Thirty four percent of students that were in 6th grade at time 1 continued in the study in 7th grade and 30% continued in the study to 8th grade. Additionally, 46% of students who were in grade 9 at the beginning of the study, continued to 10th grade, and 20% continued into 11th grade.

Participants

There were no data available for race other than that available for the school system as a whole. Among those students in grade 6 at time one, 50.4% were male and 49.6 % were female. Among those students in grade 9 at time one, 47.9% were male and 52% were female. Lastly, of students in the 12th grade at time one, 46.3% were male and 53.7% were female.

Measures

Personality. The Adolescent Personality Style Inventory or APSI (Lounsbury et al, 2003b) was used in this study to measure personality. The

APSI is a normal personality inventory contextualized for adolescents and has been used for early, middle, and late adolescents from middle school through high school and college. Scale development information, norming, reliability, and validity evidence are found in Lounsbury, Gibson, and Hamrick (2004), Lounsbury et al. (2003a), Lounsbury et al. (2003b), and Lounsbury, Loveland, and Gibson (2003). The APSI consists of 118 items scored on a five-point Likert scale. This measure is described in some detail above and psychometric data are published (see Lounsbury et al, 2003b; Lounsbury, Gibson & Hamrick, 2004; Lounsbury et al., 2003a; Lounsbury, Loveland & Gibson, 2003). The APSI has scales for the Big Five personality traits as well as several narrow trait scales. The narrow traits measured are defined below:

 Career Decidedness – is designed to measure the degree to which an adolescent knows what occupational field s/he wants to go into after leaving school.

 Assertiveness – an inclination to seize the initiative, take charge of situations, speak up on matters of importance, defending personal beliefs, and being forceful.

 Optimism – is defined as having an optimistic, hopeful outlook concerning prospects, people, and the future, even in the face of difficulty and adversity as well as a tendency to minimize problems and persist in the face of setbacks.

 Work Drive - being hard-working, industrious, and inclined to put in long hours and much time and effort to reach goals and achieve at a high level.

Grade-point-average. The grade point average was cumulative and based on a 4.0 scale. At time one, the mean GPA was 3.02 for 6th graders, 2.97 for 9th graders, and 3.16 for 12th graders. At time two, the mean GPA was 2.93 for 7th graders and 2.99 for 10th graders. At time three, the mean GPA was 2.93 for 8th graders. No GPA was available for 11th graders at time 3.

Procedure

Permission was requested and obtained from the organization that managed the assessment, Resource Associates Inc. The records consisted of anonymous grade and personality data.

Results

Broad Traits and GPA at the Initial Occasion of Measurement

The correlations between the Big Five traits and GPA are displayed in Table 2. All the Big Five factors (broad personality traits) were significantly related with GPA. Agreeableness was the broad personality factor most strongly correlated to GPA ($r = .27; p < .01$), followed by Conscientiousness ($r = .23; p < .01$), Extraversion ($r = .22; p < .01$), Emotional Stability ($r = .19; p < .01$) and Openness ($r = .18; p < .01$).

In order to see if these relationships varied by grade level (6th, 9th, or 12th) Pearson correlations were computed for each grade individually (shown in Table 3). For 6th graders all the Big Five factors were significantly related to GPA ($p < .01$). Conscientiousness and Extraversion were the factors most strongly related to GPA ($r = .28; p < .01$), followed by Agreeableness ($r = .26; p < .01$), Emotional Stability ($r = .24; p < .01$) and Openness ($r = .15; p < .01$). For 9th graders all the

Big Five factors were significantly related to GPA ($p < .01$). Agreeableness was the factor most strongly related to GPA ($r = .26$; $p < .01$), followed by Conscientiousness ($r = .22$; $p < .01$), Extraversion ($r = .21$; $p < .01$), Openness ($r = .20$; $p < .01$) and Emotional Stability ($r = .17$; $p < .01$). For 12th graders, only three of the Big Five factors were significantly related to GPA. Agreeableness was the Big Five factor most strongly related to GPA ($r = .28$; $p < .01$), followed by Conscientiousness ($r = .16$; $p < .01$) and Emotional Stability ($r = .16$; $p < .01$).

Broad Traits and GPA at the Second and Third Annual Occasions of Measurement

Correlations for broad traits and GPA across three consecutive annual occasions of measurement are listed in Table 2. All Big Five factors predicted GPA at the second annual occasion of measurement. Additionally, all Big Five factors, with the exception of Openness predicted GPA at the third annual occasion of measurement. As with analyses of the initial occasion of measurement, Agreeableness was the Big Five factor most strongly related to GPA at Time Two ($r = .31$; $p < .01$) and at Time Three ($r = .30$; $p < .01$). Conscientiousness was related to GPA at Time Two ($r = .26$; $p < .01$) and at Time Three ($r = .21$; $p < .01$). Extraversion was related to GPA at Time Two ($r = .25$; $p < .01$) and at Time Three ($r = .20$; $p < .01$). Emotional Stability was related to GPA at Time Two ($r = .19$; $p < .01$) and at Time Three ($r = .20$; $p < .01$). Openness was related to GPA at Time Two ($r = .16$; $p < .01$) but not at Time Three.

Narrow Traits and GPA at the Initial Occasion of Measurement

The correlations between narrow personality variables and GPA, as well as descriptive statistics are displayed in Table 2. Optimism ($r = .28$; $p < .01$) and Work Drive ($r = .34$; $p < .01$) were significantly related to GPA. Assertiveness and Career Decidedness were not significantly related to GPA over all grades or in individual grade levels. To determine if there were differences by grade level (6th, 9th, or 12th) Pearson correlations were computed for each grade individually (shown in table 3). For 6th graders, Optimism ($r = .25$; $p < .01$) and Work Drive ($r = .32$; $p < .01$) were significantly related to GPA. For 9th graders, Optimism ($r = .31$; $p < .01$) and Work Drive ($r = .35$; $p < .01$). Lastly for 12th graders, Optimism ($r = .22$; $p < .01$) and Work Drive ($r = .39$; $p < .01$) were significantly related to GPA.

Narrow Traits and GPA at the Second and Third Annual Occasions of Measurement

Correlations for narrow traits and GPA across three consecutive annual occasions of measurement are listed in Table 2. Assertiveness and Career Decidedness were not significantly related to GPA at Time Two or Time Three. Work Drive was the narrow trait most strongly related to GPA at Time Two ($r = .35$; $p < .01$) and at Time Three ($r = .29$; $p < .01$). Optimism was related to GPA at Time Two ($r = .28$; $p < .01$) and at Time Three ($r = .17$; $p < .01$).

Broad and Narrow Traits over Time in Adolescence

In order to assess the relationship between broad and narrow personality traits and GPA over time, multiple regression analyses were utilized. Detailed

hierarchical regression data are listed in table 8. The first step analyzed the broad personality traits using a stepwise multiple regression procedure, which selects the independent variable which makes the largest contribution to R -squared, then selects the next independent variable whose partial correlation is the highest from the remaining variables. This was used to assess all traits for their role in the prediction of GPA. Next, a hierarchical or forced entry regression was performed on the significant broad traits from the stepwise regression and the residuals were saved. The third step was to run a stepwise multiple regression on the narrow personality traits with the saved residual as the dependent variable. Lastly, a hierarchical regression was performed on the significant broad and narrow traits from the stepwise regressions, with the significant broad traits entered first and then the significant narrow traits entered. Entry of the variable Agreeableness produced a multiple R of .240 ($p < .01$). Entry of variable Conscientiousness increased the multiple R to .270 ($p < .01$). Entry of the variable Extraversion increased the multiple R to .284 ($p < .01$). Entry of the variable Work Drive increased the multiple R to .339 ($p < .01$). Entry of the variable Career Decidedness increased the multiple R to .344 ($p < .01$). Entry of the variable Assertiveness increased the multiple R to .350 ($p < .01$).

Gender Differences

Correlations were computed for analysis of gender differences in the relationship between broad personality traits and GPA (see Tables 4, 5, 6, and 7). Additionally, Fisher's Z test for independent correlations (Guilford & Fruchter, 1979) was used to determine if there were significant gender differences in the

relationship between personality traits and GPA. Results of those tests are shown in table 9 and table 10. For males in all three grades, all of the Big Five factors were significantly related to GPA ($p < .01$). Emotional stability the factor most strongly related to GPA ($r = .28$; $p < .01$), followed by Agreeableness ($r = .25$; $p < .01$), Extraversion ($r = .22$; $p < .01$), Openness ($r = .20$; $p < .01$) and Conscientiousness ($r = .19$; $p < .01$). For females in all three grades, all of the Big Five factors were significantly related to GPA ($p < .01$). Agreeableness and Conscientiousness were the factors most strongly related to GPA ($r = .25$; $p < .01$), followed by Emotional Stability ($r = .19$; $p < .01$), Openness ($r = .17$; $p < .01$) and Extraversion ($r = .16$; $p < .01$). Using Fisher's Z Test, it was found that there were no significant gender differences in the relationships between broad personality traits and GPA.

For males in 6th grade, all of the Big Five factors except Openness were significantly related to GPA ($p < .01$). Conscientiousness was the factor most strongly related to GPA ($r = .29$; $p < .01$) followed by Emotional Stability ($r = .28$; $p < .01$), Extraversion ($r = .25$; $p < .01$) and Agreeableness ($r = .23$; $p < .01$). For females in 6th grade, all of the Big Five factors except Openness were significantly related to GPA ($p < .01$). Emotional Stability was the factor most strongly related to GPA ($r = .27$; $p < .01$) followed by Agreeableness ($r = .27$; $p < .01$), Conscientiousness ($r = .27$; $p < .01$), and Extraversion ($r = .26$; $p < .01$). There were no significant differences in the relationship between broad personality traits and GPA for males and females in 6th grade.

For males in 9th grade, only Emotional Stability ($r = .26; p < .01$), Extraversion ($r = .22; p < .01$) and Agreeableness ($r = .21; p < .01$) were significantly related to GPA. For females in 9th grade, only Agreeableness ($r = .27; p < .01$), Conscientiousness ($r = .26; p < .01$) and Openness ($r = .20; p < .01$) were significantly related to GPA. For males in 12th grade, only Agreeableness ($r = .31; p < .01$) and Emotional Stability ($r = .24; p < .01$) were significantly related to GPA. For females in 12th grade, only Agreeableness ($r = .22; p < .01$) and Conscientiousness ($r = .22; p < .01$) were significantly related to GPA.

Correlations were computed for males and females separately at the second and third annual occasions of measurement for broad personality traits (see Tables 4 and 5). For males, all the Big Five factors were related to GPA at Time Two and Time Three, except for Openness which was not significantly related to GPA for males at Time Two or Time Three. Agreeableness was related to GPA for males at Time Two ($r = .28; p < .01$) and at Time Three ($r = .28; p < .01$). Conscientiousness was related to GPA for males at Time Two ($r = .30; p < .01$) and at Time Three ($r = .25; p < .01$). Extraversion was related to GPA for males at Time Two ($r = .23; p < .01$) and at Time Three ($r = .22; p < .01$). Emotional Stability was related to GPA for males at Time Two ($r = .27; p < .01$) and at Time Three ($r = .28; p < .01$). Furthermore, for females only Agreeableness and Conscientiousness were significantly related to GPA across three annual occasions of measurement. Agreeableness was significantly related to GPA for females at Time Two ($r = .30; p < .01$) and at Time Three ($r = .29; p < .01$). Conscientiousness was significantly related to GPA for females at

Time Two ($r = .20$; $p < .01$) but was not significantly related at time three. Using Fisher's Z Test, it was found that at Time Two there was a significant gender difference in the relationship between Emotional Stability and GPA ($z = 1.993$, $p < .1$).

Correlations were computed for analysis of gender differences in the relationship between narrow personality traits and GPA (see Tables 4, 5, 6, and 7). For males in all grades, Optimism ($r = .27$; $p < .01$) and Work Drive ($r = .27$; $p < .01$) were significantly related to GPA. For females in all grades, Work Drive ($r = .39$; $p < .01$), Optimism ($r = .28$; $p < .01$), and Assertiveness ($r = .12$; $p < .01$) were significantly related to GPA. In order to assess if there were significant differences between these correlations, a Fisher's Z test for independent correlations was used. There was a significant difference for males and females on the narrow trait of Work Drive ($z = -2.469$; $p < .05$).

For 6th grade males, Work Drive ($r = .32$; $p < .01$) and Optimism ($r = .26$; $p < .01$) were significantly related to GPA. For 6th grade females, Work Drive ($r = .27$; $p < .01$), Optimism ($r = .26$; $p < .01$) and Assertiveness ($r = .20$; $p < .01$) were significantly related to GPA. Using Fisher's Z Test for independent correlations, it was found that there was a significant gender differences in the relationship between Assertiveness and GPA ($z = -2.12$; $p < .05$). For males in 9th grade, Optimism ($r = .28$; $p < .01$) and Work Drive ($r = .23$; $p < .01$) were significantly related to GPA. For females in 9th grade, Work Drive ($r = .44$; $p < .01$) and Optimism ($r = .31$; $p < .01$) were significantly related to GPA. For males in 12th grade, only Work Drive ($r = .22$; $p < .01$) was significantly related to GPA. For

females in 12th grade, Work Drive ($r = .51; p < .01$) and Optimism ($r = .29; p < .01$). Again, a Fisher's Z test was used to assess significant differences between correlations for males and females. In 9th grade, there was a significant difference in the correlations for the narrow trait of Work Drive and GPA for males and females ($z = -2.49; p < .01$). Additionally, for students in 12th grade, there was a significant gender difference in the correlations for the narrow trait of Work Drive and GPA ($z = -3.09; p < .01$).

Lastly, correlations were computed for males and females separately at the second and third annual occasions of measurement for narrow personality traits (see Tables 4 and 5). For Males, Work Drive was significantly related to GPA at Time Two ($r = .32; p < .01$) and at Time Three ($r = .32; p < .01$). Optimism was significantly related to GPA for males at Time Two ($r = .27; p < .01$) but not at Time Three. For females, Work Drive was significantly related to GPA at Time Two ($r = .33; p < .01$) and at Time Three ($r = .23; p < .01$). Optimism was significantly related to GPA for females at Time Two ($r = .25; p < .01$) but not at Time Three. There were no significant differences in the relationship between narrow personality traits and GPA at Time Two or Time Three.

Chapter III

Discussion and Conclusions

Broad Traits

Hypothesis One was supported, with all Big Five traits being significantly related to GPA in Adolescents (grades 6, 9 and 12). These results are consistent with previous literature demonstrating a relationship between personality and GPA (e.g. Lounsbury, et al., 2003). Agreeableness was the Big Five factor most strongly related to GPA, replicating the results of Wentzel (1993) for academic performance and Tett and Colleagues (1991) for job performance. Nevertheless, Agreeableness has displayed inconsistent relationships with performance in the literature. One explanation for this inconsistency is that different personality inventories such as the 16PF or the CPI don't distinctly assess agreeableness (Byravian & Ramanaiah, 1995; McCrae, Costa, & Piedmont, 1993).

Nevertheless, based on the meaning of the construct it would be expected that Agreeableness would be related to academic performance. Individuals higher in Agreeableness would tend to be more cooperative, helpful, and inclined to work well with others. One possible explanation for this finding may be the presence of other students in the classroom and the teachers' use of group projects or other team-related tasks in the classroom so that students who are higher on agreeableness, may do better in class and make higher grades. Agreeableness may also facilitate study groups and collaborative learning among students. Low levels of Agreeableness have also been linked to higher levels of conflict and

poorer relationships with teachers and peers (Graziano, Jensen-Campbell & Finch, 1997; Jensen-Campbell, Graziano, & Hair, 1996, Wentzel, 1993).

Conscientiousness was significantly, positively related to GPA which is consistent with prior findings such as those of Lounsbury and colleagues (2003b) and Digman and Inouye (1986). This relationship is to be expected based on the meaning of the construct of conscientiousness. More conscientious students tend to be more orderly, determined, achievement motivated and prefer more structured environments. In school settings, such characteristics are likely to lead to higher grades because school is a relatively structured environment where students who are more orderly and who are achievement motivated tend to do well (Wentzel, 1993; Wentzel, 1996). In addition to academic performance, Conscientiousness has been found to be significantly correlated with intelligence and negatively correlated with attention problems, procrastination, and juvenile delinquency (John, et al., 1994; Lay, Kovacs, & Danto, 1998; Victor, 1994). Therefore, it appears that students with higher levels of Conscientiousness do better in several aspects of school performance related criterion (grades, behavior problems, attendance and class participation).

Openness was also significantly related to GPA. This result is consistent with previous literature (Lounsbury, et al., 2003b). The definition of Openness typically includes willingness to learn and have new experiences. Since learning new ideas and concepts is an essential part of the academic process, it makes sense that Openness is significantly related to GPA in the present study. Some studies have found a relationship between Openness and IQ (John, et al., 1994;

Parker & Stumpf, 1998). However, the construct of Openness has suffered from definitional problems in the literature, resulting in inconsistent relationships between Openness and performance. In addition, this construct may have differing degrees of importance in the personality performance relationship depending on the specific academic (or work) performance setting (e.g. Bing & Lounsbury, 2000).

Emotional Stability was also related to GPA, which is consistent with the findings of Allik and Realo (1997) and Lounsbury and colleagues (2003a).

Emotional Stability is defined as being able to handle higher levels of stress and being more resilient. These qualities would be beneficial in a school environment, where the pressure of studying, taking exams and trying to make a good grade creates substantial stress for students. Such stress can impair performance on exams for individuals lower in Emotional Stability. Furthermore, Emotional Stability has been shown to have a negative relationship with absences, low self-concept, low self-estimated intelligence, and illnesses (Chamorro-Premuzic, & Furnham, 2002; Matthews, Davies, Westerman, & Stammers, 2000) – which would also impair school performance.

Lastly, Extraversion was significantly related to GPA. This supports the findings of Goff & Ackerman (1985), Lounsbury and colleagues (2003a), and Mervielde, Buyst, and De Fruyt (1995). The relationship between Extraversion and GPA in the literature is mixed with variables such as age, gender and level of education affecting the direction and strength of the relationship (Furnham, Chamorro-Premuzic & McDougall, 2003). Extraversion has been shown to relate

to participation in class, oral expression, and final scores in classes (Furnham & Medhurst, 1994) as well as training proficiency, work involving teams, and performance in sales and management positions (Barrick & Mount, 1991; Hough, 1002; Mount & Barrick, 1998).

In addition, all Big Five factors were significantly related to GPA for 6th graders and 9th graders individually. However, for 12th graders only Agreeableness, Conscientiousness, and Emotional Stability were significantly related to GPA. It is possible that Extraversion not being significantly related to GPA for 12th graders can be explained by the fact that high levels of Extraversion are related to GPA for younger students, while it has been negatively related to GPA in higher education (Bendig, 1960; Child, 1970; Deraad & Schouwenberg, 1996; Entwistle, 1972; Finlayson, 1970; Lynn, 1959). These seemingly inconsistent results can be explained by the more social and less competitive environment of elementary and middle schools in comparison to the more formal and competitive environment of high school and college.

Hypothesis Two was mostly supported, with all Big Five traits being significantly related to GPA in adolescents (grades 6, 9, and 12) at the second annual occasions of measurement and four out of five of the Big Five traits being significantly related to GPA at the third annual occasion of measurement. With the exception of Openness, broad traits predicted GPA significantly over time. This result is consistent with previous research (Asendorpf & Van Aken, 2003; Hair & Graziano, 2003; Shiner, 2000; Shiner & Masten, 2002) demonstrating that broad personality traits predicted later academic success, work success, and

ability to adjust to new situations. These results are also consistent with the idea of personality stability over time (Haan, Millsap & Hartka, 1986; McCrae et al., 2002; Siegler, George & Okun, 1979).

Narrow Traits

Hypothesis Three was partially supported, in that only two of the four narrow traits were significantly related to GPA in adolescents (grades 6, 9, and 12) at initial time of measurement. Optimism, having a hopeful outlook on life and a tendency to minimize problems was significantly related to GPA at the time of initial measurement. This finding replicates the results of many researchers (e.g. Chemers, Hu, & Garcia, 2001; Lounsbury, et al., 2003a; Prola & Stern, 1984). Expecting more positive outcomes such as good grades, may lead to self-fulfilling prophecies, where the student does well in school. Many studies support this claim (Chemers, Hu, & Garcia, 2001; Seligman, 1991). Additionally, Optimism has been found to be negatively related to stress (Chemers, Hu, & Garcia, 2001). Stress leads to lowered performance on exams; therefore it is logical that Optimism would be positively related to GPA.

Work Drive was significantly related to GPA at the initial time of measurement. This confirms the results of Lounsbury and colleagues (2003a). Work Drive represents a tendency to be industrious and a willingness to go beyond the necessary, expending extra time and effort to achieve success. These dispositions should logically be related to academic performance. Work drive reflects the amount of effort put toward any task. Extra effort on the part of individuals higher in Work Drive should relate to higher grades. Those

individuals who spend long hours studying and do more than what the teacher expects in class are likely to do well in school. The concept of Work Drive is closely tied to motivation (as is Conscientiousness). Since motivation is of such importance in performance (Andersson & Keith, 1997; Boekaerts, 1996; Furnham, Chamorro-Premuzic, & McDougall, 2003; Wentzel, 1996; Wentzel, 1999), the relationship between Work Drive and GPA is to be expected.

Unexpectedly, Assertiveness and Career Decidedness were not significantly related to GPA at the initial time of measurement. Assertiveness reflects among other things an inclination to take charge or seize the initiative. Based on the meaning of the construct, it would be expected that assertiveness would be related to academic performance. In the literature Assertiveness training has been shown to be related to improved grades (Ladouceur, & Armstrong, 1983). Nevertheless, Assertiveness was not significantly correlated with GPA in this sample. Perhaps more assertive students are interpreted by teachers as being aggressive and aggression has been shown to be related to lower academic performance. It may be that higher levels of assertiveness were undesirable to teachers, resulting in less attention from teachers for students high in assertiveness. In this vein, several researchers have found that teacher's preferences for cooperative, cautious, conforming and responsible students over independent, argumentative, assertive, and disruptive students may explain the relationship between classroom behavior and academic achievement (Brophy & Good, 1974; Feshbach, 1969; Helton & Oakland, 1977; Kedar-Voivodas, 1983; Wentzel, 1993). Career Decidedness refers to knowing what one wants do for a

living after leaving school and what kind of career a student wants to have as an adult. Although it makes sense that this form of self knowledge might lead to greater involvement in and commitment to class work, leading to higher grades, Career Decidedness was not significantly correlated with GPA in the present sample. Perhaps the sample was simply too young for careers to be a meaningful issue. It is likely that even if these students know what they want to do in terms of a career, they may change several times before deciding on a final career. There may be a stronger connection between Career Decidedness and GPA in a college sample, where students choose classes related to their chosen career, rather than the situation in middle and high schools where all students take the same predetermined classes.

Hypothesis Four was partially supported, in that only two of the four narrow traits were significantly related to GPA in adolescents (grades 6, 9, and 12) at the second and third annual occasions of measurement. Work Drive and Optimism were significantly related to GPA at time two and time three. Again, this is consistent with research suggesting that personality is relatively stable over time (Costa & McCrae 1994; Haan, Millsap & Hartka, 1986; McCrae & Costa, 2003; Siegler, George & Okun, 1979) and that specific personality traits such as Conscientiousness and Emotional Stability predict later school performance, work performance and adaptability (Asendorpf & Van Aken, 2003; Hair & Graziano, 2003; Shiner, 2000; Shiner & Masten, 2002). Contrary to hypothesized relationships, Assertiveness and Career Decidedness were not significantly related to GPA at time two or time three.

Gender Differences

Separate analyses by gender showed that all Big Five variables were significantly related to GPA for males and females individually. Furthermore, there were few significant gender differences in the relationship between personality traits and GPA, supporting other research that showed little to no gender differences in the personality performance relationship (Johnson & Bloom, 1995; McCrae, et al., 2002). One exception is the Big Five trait, Emotional Stability. There was a significant gender difference in the relationship between Emotional Stability and GPA at Time Two, but not at either Time One or Time Three. This relationship between Emotional Stability to GPA was stronger for males than for females. This result is consistent with research demonstrating that the relationship between Emotional Stability and GPA is stronger for males than for females (De Fruyt & Mervielde, 1996; Di Maria & Di Nuovo, 1990). The reason for this gender difference might lie in the different gender roles present in American society. Females can talk out their problems and their feelings with their friends, while males are expected to be strong and have no problems or emotions. "For boys and men, separation and individuation are critically tied to gender identity, since separation from the mother is essential for the development of masculinity...femininity is defined through attachment," (Gilligan, 1982). In females, attachment to others and the ability to share feelings and problems with their social support system provides a buffer to the relationship between Emotional Stability and GPA. In males, this buffer does not exist, hence the stronger relationship.

Additionally, correlational analyses were performed for each gender individually for narrow personality traits. There was a significant difference in the relationship between Work Drive and GPA for males and females, with the relationship being stronger for females, supporting results of Perry (2003) who found that females had higher scores on Work Drive and higher GPA's than males. Also, McDermott, Mordell and Stolfus (2001) found that females had higher levels of disciplined behavior and motivation, thus supporting the idea that the relationship between GPA and Work Drive is stronger in females than males. Further analyses revealed that there was no difference in the correlation between Work Drive and GPA for males and females in grade 6, but there was a difference in grades 9 and 12. A possible explanation for the stronger relationship between Work Drive and GPA for females might be that in males athletic ability is more important to their self-esteem and popularity than schoolwork. In females, on the other hand poor performance in academics causes low self-esteem regardless of how athletically talented they are. These gender role differences might explain why there is a stronger relationship between Work Drive and GPA for females.

Only one other narrow trait demonstrated a significant gender difference in their relationship with GPA. There was a stronger relationship for females on the narrow trait, Assertiveness for 6th graders but not 9th or 12th graders. The explanation for this might be that the assertive female students are also the more intelligent females, resulting in the stronger correlation for females. It is possible that gender bias in teachers' evaluations can partially explain these

results. It is known that teachers prefer certain types of students and that teachers give the preferred types of students more one-on-one attention, resulting in higher levels of academic performance (Wentzel, 1993). Additionally it is possible that assertive female students are also the more intelligent females, resulting in the stronger correlation for females.

Implications for Future Research

The present research effectively demonstrates the utility of broad and narrow personality traits to predict academic performance over time. There are several potential benefits of this finding: predicting future employability of students, guiding students in career choices, and assessment of potential academic or behavioral problems. Work Drive and Conscientiousness have been shown to predict job performance (Barrick & Mount, 1991; Hough 1992) and they are desired by employers (Viswesvaran, 1996). Perhaps certain patterns of behavior, which might lead to later unemployment or job difficulties, could be identified. Interventions might be designed which could prevent these difficulties later in life. If a pattern of traits (i.e. low conscientiousness and low agreeableness, for example) can be identified that predicts difficulties in careers or unemployment, interventions could be aimed at students with these characteristics. In this vein, Caspi, Wright, Moffitt and Salva (1998) found a relationship between lack of attachment to school (due to socialization or level of success in school) and later unemployment.

Additionally, analysis of students' personality and typical patterns of behavior might help to direct students into compatible hobbies, extracurricular

activities and even future careers. For example, after being given a personality test such as the APSI, students could receive feedback on possible compatible career choices and then be given opportunities to tests some of these options. Students would by no means be restricted by these suggestions; rather, the suggested careers could open new doors for the students. As students are encouraged to choose career paths earlier and earlier in their educational careers, the ability to steer students into the direction of compatible careers becomes especially important. Often students are asked to make career choices with little information about what doing that particular job would really be like. As a result choices may be based on what seems like a fun career, or what seems interesting. Later in life, these same individuals may end up unhappy in their jobs, yet unsure of what to do in order to change that (Miller, 2005). Using personality to guide students into potential careers might be a great starting point in career counseling. For example students could explore five to ten of the careers which are compatible with their personality in detail before deciding on one career.

A third benefit could be in identifying potential problematic patterns in early childhood or early adolescence which might lead to attendance problems, behavioral problems, and other difficulties in the learning environment. Although it was not assessed in this study, early identification of problematic patterns of interaction might enable educators to intervene with programs designed to prevent problems such as unemployment later in life. Interventions for problematic patterns of interaction would not only help students potentially at risk

but also their classmates whom their misbehaviors often affect by interruption of the learning environment. While personality is believed to be relatively stable, early adolescence is a good time to introduce change and teach new ways of interacting with the environment. For example, if we know that higher levels of both extraversion and neuroticism lead to higher levels of failure, we can perhaps teach these students ways of dealing with stress that might help them to improve academically, without changing who they essentially are (Thomasen, 2002).

Limitations of the Current Research

Despite the large sample of students, the demographics of this sample may limit the generalizability of the findings. A largely Caucasian sample in a rural southeast school in a single state might not be representative of all adolescents. A more diverse sample including students from different areas of the country, with different socio-economic statuses, in different types and sizes of schools, and different races is necessary to determine the generalizability of the current findings. This type of study might bring to light differences in race or socio-economic status or different types of schools in the personality performance relationship that are not identified in a heterogeneous sample. For example, Lounsbury and colleagues (2003b) found some differences between an inner city school sample and a rural school sample.

A second limitation of the current study involves the inevitable drop off in sample size with a longitudinal study. Students move or decide not to participate further, leading to missing data which might lead to interesting findings.

Additionally, the study utilized a relatively narrow age range. It would be useful

to study a sample from kindergarten through college and into their future careers. This could provide additional information on the stability of these results and the applicability of these results to their later lives. However, to avoid a drop off in sample size there would need to be some funding for incentives to complete the full study. Inclusion of data from and about the teachers, parents and peers of the subjects could aid in the understanding of the relationships between personality and performance. Perhaps some teaching styles are better for students low in extraversion while other styles are better for students high in extraversion. Also, socialization by parents and pressure from peers might affect the results. Lastly, it might be beneficial to include additional narrow traits such as Sense of Identity, Tough Mindedness, Aggression, or others.

Conclusions

In conclusion, this study supports the use of the Big Five (as measured by the APSI) to predict adolescent academic performance. It also supports the use of the Big Five to predict later academic performance. Use of narrow traits such as Work Drive in predicting both current and later academic performance is also supported. The findings of this study point to the fact that different academic environments are better for different personalities, and that gender moderates these differences. Further research with different samples, and a longer time span should further elucidate these relationships and suggest directions for preventing behavioral problems, directing students in their career choices, and designing educational environments.

REFERENCES

- Ackerman, P. L. (1994). Intelligence, attention and learning: Maximal and typical performance. In D. K. Dettermen (ED.) *Current Topics in Human Intelligence. Theories of Intelligence, vol. 4* (pp. (1-27). Norwood: Ablex.
- Allik, J & Realo, A. (1997). Intelligence, academic abilities, and personality. *Personality and Individual Differences, 23*(5), 809-814.
- Allport, G. W. & Odbert, H. S. (1936). Trait names: A psycho-lexical study. *Psychological monographs, 47* (no 211).
- Allport, G. W., & Vernon, P. E. (1930). The field of personality. *Psychological Bulletin, 27*, 677 – 730.
- Anderson, E. S., & Keith, T. Z. (1997). A longitudinal test of a model of academic success for at-risk high school students. *Journal of Educational Research, 90*(5), 259 – 268.
- Anthony, W. (1973). The development of extraversion, of ability and of the relation between them. *British Journal of Educational Psychology, 43*, 223-227.
- Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist, 54*, 317 – 326.
- Arvey, R. D. & Murphy, K. R. (1998). Performance evaluation in work settings. *Annual Review of Psychology, 49*, 141 – 168.
- Ashton, M. C. (1998). Personality and job performance: the importance of narrow traits. *Journal of Organizational Behavior, 19*, 289-303.

- Astington, E. (1960). Personality assessment and academic performance in a boy's grammar school. *British Journal of Educational Psychology*, 30, 225 – 236.
- Bachman, J. G., O'Malley, P. M., & Johnston, J. (1978). *Adolescence to adulthood: Change and stability in the lives of young men*. Ann Arbor, MI: Institute for Social Research.
- Barbaranelli, C. Caprara, G. V., Rabasca, A., & Pastorelli, C. (2003). A questionnaire for measuring the Big Five in late childhood. *Personality and individual differences*, 34(4), 645-664.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1-26.
- Barrick, M. R. & Mount, M. K. (1994). Personality and job performance: Do specific components of conscientiousness predict better than the overall construct? Paper presented as the symposium, Personality and Job Performance: Big Five versus specific traits, conducted and the meeting of the Society for Industrial and Organizational Psychology, Nashville, TN.
- Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment*, 9, 9-30.
- Barrick, M. R., Stewart, G. L., Newbert, M.J., & Mount, M. K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology*, 83, 377 – 391.

- Barton, K., Dielman, T. E., & Cattell, R. B. (1972). Child-rearing practices related to child personality. *Journal of Social Psychology*, 101(1), 75-85.
- Begley, T.M., Lee, C. & Czajka, J. M. (2000). The relationship of type A behavior and optimism with job performance and blood pressure. *Journal of Business and Psychology*, 15(2), 215-227.
- Bendig, A. W. (1960). Extraversion, neuroticism, and student achievement in introductory psychology. *Journal of Educational Research*, 53, 263 – 267.
- Bing, M. N. & Lounsbury, J. W. (2000). Openness and job performance in U. S. based Japanese manufacturing companies. *Journal of Business and Psychology*, 14(3), 515 – 522.
- Blickle, G. (1996). Personality traits, learning strategies, and performance. *European Journal of Psychology*, 10, 337 – 352.
- Block, J (1977). Advancing the psychology of personality: Paradigmatic shift or improving the quality of research? In D. Magnusson & N.S. Endler (Eds.) *Personality at the Crossroads: Current issues in interactional psychology* (pp.37-64) Hillsdale, NJ: Erlbaum.
- Bokaerts, M. (1996). Self-regulated learning at the junction of cognition and motivation. *European Psychologist*, 1(2), 100 – 112.
- Borgatta, E. F. (1964). The structure of personality characteristics. *Behavioral Science*, 9, 8-17.
- Borman, W. C. & Brush, D.H. (1993). More progress toward a taxonomy of managerial performance requirements. *Human Performance*, 6, 1 – 21.

- Borman, W. C. & Motowidlo, S. J. (1993). Expanding the criterion domain to include elements of contextual performance. In N. Schmidt, W. C. Borman, & Associates (Eds.), *Personnel Selection in Organizations*. San Francisco: Jossey-Bass.
- Brophy, J. E. & Good, T. L. (1974). *Teacher-Student Relationships: Causes and consequences*. New York: Holt, Rinehart & Winston.
- Busato, V. V., Prins, F. J., Elshout, J. J., & Hamaker, C. (1999). The relation between learning styles, the Big Five personality traits and achievement motivation in higher education. *Personality and Individual Differences*, 26, 129 – 140.
- Busato, V. V., Prins, F. J., Elshout, J. J., & Hamaker, C. (2000). Intellectual ability, learning style, achievement motivation, and academic success of psychology students in higher education. *Personality and Individual Differences*, 29, 1057 – 1068.
- Byravan, A., & Ramanaiah, N. V. (1995). Structure of the 16PF fifth edition from the perspective of the five-factor model. *Psychological Reports*, 76, 555 – 560.
- Campbell, J. (1990). Modelling the performance prediction problem in industrial-organizational psychology. In M. Dunnette & L. Hough (Eds). *Handbook of industrial and organizational psychology*, Vol2 (pp. 687 – 732). Palo Alto, CA: Consulting Psychologists Press.

- Campbell, J. P., McCloy, R. A., Oppler, S. H. & Sager, C. E. (1993). A theory of performance. In N. Schmitt, W. C. Borman, & Associates (Eds.). *Personnel Selection in Organizations*. San Francisco: Jossey-Bass.
- Cascio, W.F. (1998). *Applied Psychology in Human Resource Management* (fifth ed.). Upper Saddle River, NJ: Prentice Hall.
- Caspi, A. & Bem, D. J. (1990). Personality continuity and change across the life course. In Pervin (Ed.) *Handbook of Personality: Theory and Research*, (pp.549 – 575). New York: Guilford Press.
- Caspi, Bem & Elder (1989). Continuities and consequences of interactional styles across the life course. *Journal of Personality*, 57(2), 375 – 406.
- Cattell, R. B. (1943). The description of personality: Basic traits resolved into clusters. *Journal of Abnormal and Social Psychology*, 38, 476-506.
- Cattell, R. B. & Beloff, H. (1953). Research origin and construction of the IPAT Junior Personality Quiz. *Journal of Consulting Psychology*, 17, 436-442.
- Cattell, R. & Butcher, H. (1968). *The prediction of achievement and creativity*. Indianapolis: Bobbs-Merrill.
- Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *Handbook for the 16PF*. Champaign, IL: Institute for Personality and Ability Testing.
- Chamorro-Premuzic, T. & Furnham, A. (2002). Neuroticism and 'special treatment' in university examinations. *Social Behavior and Personality*, 30, 807 – 813.

- Chamorro-Premuzic, T. & Furnham, A. (2003). Personality predicts academic performance: Evidence from two longitudinal studies on university students. *Journal of Research on Personality*, 37, 319 – 338.
- Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, 93(1),55-64.
- Child, D. (1964). The relationships between introversion-extraversion, neuroticism, and performance in school examinations. *British Journal of Educational Psychology*, 34, 187 – 196.
- Chronbach, L. J. (1960). *Essentials of Psychological Testing*. New York: Harper & Row.
- Costa, P. T. & McCrae, R. R. (1978). Objective personality assessment. In M. Storandt, I. C. Seigler, & M. F. Elias (Eds.). *The Clinical Psychology of Aging*. New York: Plenum Press.
- Costa, P. T. & McCrae, R. R. (1980). Still stable after all these years: Personality as a key to some issues in adulthood and old age. In P.B. Baltes & O.G. Brimm Jr. (Eds.), *Lifespan development and behavior* (Vol 3. pp.65-102). New York: Academic Press.
- Costa, P. T., & McCrae, R. R. (1986). Personality stability and its implications for clinical psychology. *Clinical Psychology Review*, 6, 407-423.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*. Odesa, FL: Psychological Assessment Resources, INC.

- Costa, P. T. & McCrae, R. R. (1994). Stability and change in personality from adolescence through adulthood. In C.F. Halverson, Jr., G. A. Kohnstamm, & R. R. Martin (Eds.). *The Developing Structure of Temperment and Personality from Infancy to Adulthood*. Hillsdale, NJ: Erlbaum.
- Costa, P. T. & McCrae, R. R. (1995). Longitudinal stability of adult personality. In R. Hogan, J Johnson, & S. Briggs (Eds). *Handbook of Personality Psychology* (pp. 269 - 285). San Diego: Academic Press.
- Costa, P.T., McCrae, R. R., & Arenberg, D. (1980). Enduring dispositions in adult males. *Journal of Personality and Social Psychology*, 38, 793-800.
- Colquitt, J. A. & Simmering, M. J. (1998). Conscientiousness, goal orientation, and motivation to learn during the learning process: A longitudinal study. *Journal of Applied Psychology*, 83(4), 654-665.
- Cowell, M. & Entwistle, N. (1971). The relationship between personality, study attitudes and academic performance in a technical college. *British Journal of Educational Psychology*, 41, 85 – 90.
- De Fruyt, F. & Mervielde, I. (1996). Personality and interests as predictors of educational streaming and achievement. *European Journal of Personality*, 10, 405-425.
- DeRaad, B. & Schouwenberg, H. (1996). Personality in learning and education: A review. *European Journal of Personality*, 10, 303 – 336.
- Di Maria, F. & Di Nuovo, S. (1990). Gender differences in social and test anxiety. *Personality and Individual Differences*, 11(5), 525-530.

- Digman, J. M. (1979). *The five major domains of personality variables: Analysis of questionnaire data in light of the five robust factors emerging from studies of rated characteristics*. Paper presented at the annual meeting of the Society of Multivariate Experimental Psychology: Berkley, CA. As cited in Wiggins & Trapnell
- Digman, J. M. (1985). *The Big Five factors of personality: Some efforts after meaning*. Paper presented at the annual meeting of the Society of Multivariate Experimental Psychology: Berkley, CA. As cited in Wiggins & Trapnell
- Digman, J. M. (1989). Five robust trait dimensions: Development, stability, and utility. *Journal of Personality*, 57, 195-214.
- Digman, J. M. (1990). Personality Structure: Emergence of the Five Factor Model. *Annual Review of Psychology*, 41, 417-440.
- Digman, J. M., & Inouye, J. (1986). Further specification of the five robust factors of personality. *Journal of Personality and Social Psychology*, 50, 116-351.
- Digman, J. M. & Takemoto-Chock, N. K. (1981). Factors in the natural language of personality: Reanalysis, comparison, and interpretation of six major studies. *Multivariate Behavioral Research*, 16, 149-170.
- Duff, A., Boyle, E., Dunleavy, K., & Ferguson, J. (2004). The relationship between personality, approach to learning and academic performance. *Personality and Individual Differences*, 36, 1907 – 1920.

- Dusek & Flaherty (1981). The development of self-concept during the adolescent years. *Monographs of the Society for Research in Child Development*, 46(4), 67.
- Edwards, R. C. (1977). Personal traits and success in schooling and work. *Educational and Psychological Measurement*, 37(1), 125-138.
- Elshout, J., & Veenman, M. (1992). Relation between intellectual ability and working method as predictors of learning. *Journal of Educational Research*, 85, 134 – 143.
- Ehrler, D. J., Evans, J. G., & McGhee, R. L. (1999). Extending the big-five theory into childhood: a preliminary investigation into the relationship between big-five personality traits and behavior problems in children. *Psychology in the Schools*, 36(6), 451-458.
- Entwistle, N. (1972). Personality and academic attainment. *British Journal of Educational Psychology*, 42, 137 – 151.
- Entwistle, N. & Entwistle, D. (1970). The relationship between personality, study methods and academic performance. *British Journal of Educational Psychology*, 40, 132 – 143.
- Eron (1982). Parent – child interaction, television violence, and aggression in children. *American Psychologist*, 37(2), 197 – 211.
- Eysenck, H. J. (1947). *Dimensions of personality*. London: Routledge & Kegan Paul.
- Eysenck, H. J. (1970). *The Structure of Human Personality*. (3rd Ed). London: Methuen.

- Eysenck, H. J. (1981). Psychoticism as a dimension of personality: A reply to Kasielke. *Zeitschrift fur Psychologie*, 189, 381 – 386.
- Eysenck, H. J. (1990). Biological dimensions of personality. In Pervin, L. A. (Ed), *Handbook of personality: Theory and research*. (pp.244-276). New York, NY, US: Guilford Press
- Eysenck, H. J. (1992). A reply to Costa and McCrae: P or A and C – the role of theory. *Personality and Individual Differences*, 13, 867 – 868.
- Eysenck, H. J. & Cookson, D. (1969). Personality in primary school children – Ability and achievement. *British Journal of Educational Psychology*, 39, 109 – 130.
- Feldman, S. & Ashenbrenner, B. (1983). Impact of parenthood on various aspects of masculinity and femininity: a short term longitudinal study. *Developmental Psychology*, 19(2), 278 – 289.
- Ferguson, R., Sanders, A., O'Hehir, F., & James, D. (2000). Predictive validity of personal statements and the role of the five factor model of personality in relation to medical training. *Journal of Occupational and Organizational Psychology*, 73, 321-344.
- Feshbach, S. (1969). Student teacher preferences for elementary school pupils varying in personality characteristics. *Journal of Educational Psychology*, 60, 126-132.
- Feshbach, S. (1984). Cognitive competencies and aggressive behavior: A developmental study. *Aggressive Behavior*, 10(3), 185-200.

- Feshbach, S. & Price, J. (1984). Cognitive competencies and aggressive behavior: A developmental study. *Aggressive Behavior*, 10, 185 – 200.
- Finlayson, D. S. (1970). A follow-up study of school achievement in relation to personality. *British Journal of Educational Psychology*, 40, 344 – 349.
- Finn, S. E. (1986). Stability of personality self-ratings over 30 years: Evidence for an age-cohort interaction. *Journal of Personality and Social Psychology*, 50, 813-818.
- Fiske, D. W. (1949). Consistency of the factorial structures of personality ratings from different sources. *Journal of Abnormal and Social Psychology*, 44, 329-344.
- Furnham, A. (1987). Predicting Protestant work ethics beliefs. *European Journal of Personality*, 1, 93-106.
- Furnham, A. (1990). A content, correlational, and factor analytic study of seven questionnaire measures of the Protestant Work Ethic. *Human Relations*, 43(4), 383-399.
- Furnham, A. (1992). Personality and learning style: A study of three instruments. *Personality and Individual Differences*, 13, 429 – 438.
- Furnham, A. (1995). The relationship of personality and intelligence to cognitive learning style and achievement. In D. Saklofske & M. Zeidner (Eds.) *International Handbook of Personality and Intelligence. Perspectives on individual differences*. (pp. 397 – 413). New York: Plenum Press.

- Furnham, A. & Medhurst, S. (1995). Personality correlated of academic seminar behaviour: A study of four instruments. *Personality and Individual Differences*, 19, 197 – 208.
- Furnham, A. & Mitchell, J. (1990). Personality, needs, social skills, and academic achievement: A longitudinal study. *Personality and Individual Differences*, 12, 1067 - 1073
- Furnham, A. & Rajamanickam, R. (1992). The Protestant work ethic and just world beliefs in Great Brittan and India. *International Journal of Psychology*, 27(6), 401-416.
- Furnham, A., Chamorro-Premuzic, T., & McDougall, F. (2003). Personality, cognitive ability, and beliefs about intelligence as predictors of academic performance. *Learning and Individual Differences*, 14, 49-66.
- Furnham, A., Chamorrow-Premuzic, T., & Moutafi, J. (2003). *Personality, and intelligence: Gender, the Big Five, psychometric and self-estimated intelligence*. Under review
- Gilligan, C. (1982). *In a Different Voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.
- Goff, M. & Ackerman, P. L. (1992). Personality-intelligence relations: Assessment of typical intellectual engagement. *Journal of Educational Psychology*, 84, 537 – 553.

- Goff, M. & Ackerman, P. L. (1992). Personality-intelligence relations: Assessment of typical intellectual engagement. *Journal of Educational Psychology*, 84(4), 537-552.
- Goldberg, L. R. (1981). Language and individual differences: The search for universals in personality lexicons. In L. Wheeler (Ed). *Review of personality and social psychology* (Vol 2, pp.141-165). Beverly Hills, CA: Sage.
- Goldberg, L. R. (1982). From Ace to Zombie: Some explorations in the language of personality. In D. C. Spielberger & J. N. Butcher (Eds.) *Advances in personality assessment* (Vol 1, pp. 203-234). Hillsdale, NJ: Earlbaum.
- Goldberg, L. R. (1986). The validity of rating procedures to index the hierarchical level of categories. *Journal of Memory and Language*, 25, 323-347.
- Goldberg, L. R. (1990). An alternative "description of personality": The Big Five factor structure. *Journal of Personality and Social Psychology*, 59, 1216 – 1229.
- Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment*, 4, 26 – 42.
- Granzio, W. G., Jensen-Campbell, L. A., & Finch, J. F. (1997). The self as mediator between personality and adjustment. *Journal of Personality and Social Psychology*, 73(2), 392 – 404.
- Granzio, W.G. & Ward, D. (1992). Probing the Big Five in adolescence: Personality and adjustment during a developmental transition. *Journal of Personality*, 60, 425-439.

- Green, A., Peters, T., & Webster, D. (1991). An assessment of academic performance and personality. *Medical Education*, 25, 343 – 348.
- Guilford, J. P. & Fruchter, B. J. (1979). *Fundamental statistics in psychology and education*. New York: McGraw-Hill.
- Guion, R. M. & Gottier, R. F. (1965). Validity of personality measures in personnel selection. *Personnel Psychology*, 18, 135-164.
- Haan, N., Millsap, R., & Hartka, E. (1986). As time goes by: Change and stability in personality over fifty years. *Psychology and Aging*, 1, 220-232.
- Hair, E. G., & Graziano, W. G. (2003). Self-esteem, personality, and achievement in high school: A prospective longitudinal study in Texas. *Journal of Personality*, 71(6), 971 – 994.
- Hakstian, A. R. & Gale, C. A. (1979). Validity studies using the Comprehensive Ability Battery III: Performance in conjunction with personality and motivational traits. *Educational and Psychological Measurement*, 39, 389-400.
- Hall & Lindzey (1957). *Theories of Personality*. Oxford, England: Wiley.
- Hamilton, C. S. & Freeman, G. (1971). *Theories of Personality*. New York: Wiley.
- Harris, D. (1940). Factors affecting college grades: A review of the literature, 1930 – 1937. *Psychological Bulletin*, 37, 125 – 166.
- Helton, G. B., & Oakland, T. D. (1977). Teachers' attitudinal responses to differing characteristics of elementary school students. *Journal of Educational Psychology*, 69, 261-265.

- Helton, W. S., Dember, W. N., Warm, J. S., & Matthews, G. (1999). Optimism, pessimism, and false failure feedback: Effects on vigilance performance. *Current Psychology, 18*(4), 311
- Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research, 58*, 47 – 77.
- Herringer, L. G. (1998). Facets of extraversion related to life satisfaction. *Personality and Individual Differences, 24*(5), 731-733.
- Hirschberg, N. & Itkin, S. (1978). Graduate student success in psychology. *American Psychologist, 33*, 1083-1093
- Hogan, J. & Hogan, R. (1989). How to measure employee reliability. *Journal of Applied Psychology, 74*, 273-279.
- Hogan, F. & Roberts, B. W. (1996). Issues and non-issues in the fidelity-bandwidth trade-off. *Journal of Organizational Behavior, 17*(6), 627 – 637.
- Hogan, R. T. & Roberts, B. W. (2001). Introduction: Personality and industrial and organizational psychology. In R. T. Hogan and B. W. Roberts (Eds.), *Personality Psychology in the Workplace* (pp.3 -16). Baltimore: United Book Press.
- Hough, L. M. (1992). The “Big Five” personality variables—construction confusion: description versus prediction. *Human Performance, 5*, 139 - 155.
- Hurtz, G. M. & Donovan, J. J. (2000). Personality and job performance: The big five revisited. *Journal of Applied Psychology, 85*(6), 869-879.

- Jessor, R. (1983). The stability of change: Psychosocial development from adolescence to young adulthood. In D. Magnusson & V. L. Allen (Eds). *Human Development: An interactional perspective* (pp.321-341). New York: Academic Press.
- John, O. P. (1990). The "Big Five" factor taxonomy: Dimensions of personality in the natural language and in questionnaires. In Pervin, L. A (Ed), *Handbook of personality: Theory and research*. (pp.225-243). New York, NY, US: Guilford Press.
- John, O.P., Caspi, A., Robbins, R.W., Moffit, T. E., & Stouthammer-Loeber, M. (1994). The "Little Five": Exploring the nomological network of the Five-Factor model of personality in adolescent boys. *Child Development*, 65, 160-178.
- Judge, T. A., Martocchio, J. J., & Thorensen, C. J. (1997). Five-Factor Model of personality and employee absence. *Journal of Applied Psychology*, 82(5), 745-755.
- Kedar-Voivodas, G. (1983). The impact of elementary children's school roles and sex roles on teacher attitudes: An interactional analysis. *Review of Educational Research*, 53, 415-437.
- Kelly, E. L., (1955). Consistency of adult personality. *American Psychologist*, 10, 659 – 681.
- Klages, L. (1932). *The Science of Character* (Translated 1932). London: George Allen & Unwin. (Original work published 1926).

- Kline, P., & Gale, A. (1971). Extraversion, neuroticism, and performance in a psychology examination. *British Journal of Educational Psychology*, 41, 90 – 94.
- Lepine, J. A., Colquitt, J., A., & Erez, A. (2000). Adaptability to changing task contexts: Effects of general cognitive ability, conscientiousness, and openness to experience. *Personnel Psychology*, 53, 563-593.
- Leon, G. R., Gillium, B., Gillium, R. & Gouze, M. (1979). Personality stability and change over a 30 year period – Middle age to old age. *Journal of Consulting and Clinical Psychology*, 47, 517 – 524.
- Livens, F., Coetsier, P., DeFruyt, F., & DeMaessneer, J. (2002). Medical students' personality characteristics and academic performance: A five factor model perspective. *Medical Education*, 36, 1050-1056.
- Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin*, 90, 125-152.
- Lounsbury, J. W. & Gibson, L. W. (2004). Resource Associates' Adolescent Personality Style Inventory. Technical manual. Resource Associates, Inc.
- Lounsbury, J. W., Gibson, L. W., & Hamrick, F. L. (2004). The development of a personological measure of work drive. *Journal of Business and Psychology*, 18(4), 347-371.
- Lounsbury, J. W., Saudargas, R., & Gibson, L. W. (2004) An investigation of broad and narrow personality traits in relation to intention to withdraw from college. *Journal of College Student Development*, 45(5), 517-534.

- Lounsbury, J. W., Saudargas, R., Gibson, L. W. & Leong, F. T. (2005) An investigation of broad and narrow personality traits in relation to general and domain-specific life satisfaction of college students. *Research in Higher Education*, 46(6).
- Lounsbury, J. W., Loveland, J. L., & Gibson, L. W. (2002). *An Investigation of the Job Performance Validity of Optimism*. Poster presentation at the 17th Annual Conference of the Society for Industrial and Organizational Psychologists, Toronto.
- Lounsbury, J. W., Sundstrom, E. Gibson, L. W., & Loveland, J. L. (2003a). Broad Versus narrow personality traits in predicting academic performance of adolescents. *Learning and Individual Differences*, 14(1), 65-75.
- Lounsbury, J. W., Gibson, L. W., Sundstrom, E., Wilburn, D., & Loveland, J. L. (2003). An empirical investigation of the proposition that "School is Work". A comparison of personality-performance correlations in school and work settings. *Journal of Education and Work*, 17, 119-131.
- Lounsbury, J. W., Loveland, J. L., Sundstrom, E., Gibson, L. W., Drost, A. W., & Hamrick, F. (2003). An investigation of personality traits in relation to career satisfaction. *Journal of Career Assessment*, 11(3), 287-307.
- Lounsbury, J. W., Tatum, H., Gibson, L. W., Park, S. H., Sundstrom, E., Hamrick, F., & Wilburn, D. (2003b). The development of a Big Five adolescent personality scale. *Psychoeducational Assessment*, 21, 111-133.

- Lynn, R. (1959). Two personality characteristics related to disparity of attainment in reading and arithmetic. *British Journal of Educational Psychology*, 29, 213 – 216.
- Mandyrk, T. R. & Schuerger, J. M. (1974). Cross validation of the HSPQ as a predictor for high school grades. *Educational and Psychological Measurement*, 34, 449-454.
- Matthews, G., Davies, D. R., Westerman, S. J., & Stammers, R. B. (2000). *Human Performance. Cognition, stress, and individual differences*. London: Psychology Press.
- McCown, W. & Johnson, J. (1991). Personality and chronic procrastination by university students during an examination period. *Personality and Individual Differences*, 12(5), 413-415.
- McCrae, R. R. & Costa, P. T. (1990). *Personality in Adulthood: Emerging lives, enduring dispositions*. New York: Guilford Press.
- McCrae, R. R. & Costa, P. T. (2003). *Personality In Adulthood*. New York: Guilford Press.
- McCrae, R. R., Costa, P. T., & Piedmont, R. L. (1993). Folk concepts, natural language, and psychological constructs: the California Psychological Inventory and the Five-Factor model. *Journal of Personality*, 61, 1 – 26.
- McCrae, R. R., Costa, P. T., Terracciano, A., Parker, W. D., Mills, C.J., DeFruyt, F., & Mervielde, I. (2002). Personality trait development from age 12 to age 18: Longitudinal, cross-sectional, and cross cultural analyses. *Journal of Personality and Social Psychology*, 83(6), 1456-1468.

- McDermott, P.A., Mordell, M. & Stoltzfus, J. C. (2001). The organization of student performance in American schools: Discipline, motivation, verbal learning, nonverbal learning. *Journal of Educational Psychology*, 93(1), 65-76.
- McGowan, J. & Gormley, J. (1976). Validation of personality traits: a multi-criteria approach. *Journal of Personality and Social Psychology*, 34, 791-794.
- McIlroy, D. & Bunting, B. (2002). Personality, behavior, and academic achievement: Principles for educators to inculcate and students to model. *Contemporary Educational Psychology*, 27, 326-337.
- McIntyre, R.M., & Salas, E. (1995). Measuring and managing for team performance: Emerging principles from complex environments. In R. Guzzo & E. Salas (Eds.), *Team Effectiveness and Decision Making in Organizations*. San Francisco: Jossey-Bass.
- Mehta, P., & Kumar, D. (1985). Relationships of academic achievement with intelligence, personality, adjustment, study habits, and academic motivation. *Journal of Personality and Clinical Studies*, 1, 57 – 68.
- Mershon, B. & Gorsch, R. L. (1988). Number of factors in the personality sphere: Does increase in factors increase predictability of real life criteria? *Journal of Personality and Social Psychology*, 55(4), 675-680.
- Mervielde, I., Buyst, V., & De Fruyt, F. (1995). The validity of the big-five as a model for teacher's ratings of individual differences among children aged 4-12 years. *Personality and Individual Differences*, 18(4), 525-534.

- Messick, S. (1984). The nature of cognitive styles: problems and promise in educational practice. *Educational Psychologist*, 19, 59 – 74.
- Mischel, W. & Peake, P. K. (1982). Beyond Déjà vu in the search for cross-situational consistency. *Psychological Review*, 89, 730-755.
- Mortimore, J. T., Finch, M. D., & Kumka, D. (1982). Persistence and change in development: The multidimensional self-concept. In P. B. Baltes, & O. G. Brim Jr. (Eds). *Life-span Development and Behavior* (Vol 4. pp. 264 – 315). New York: Academic Press.
- Moskowitz, D. S. (1982). Coherence and cross-situational generality in personality: a new analysis of old problems. *Journal of Personality and Social Psychology*, 43, 754-768.
- Mount, M. K., Barrick, M. R., & Stewart, G. L. (1998). Five-factor model of personality and performance in jobs involving interpersonal interactions. *Human Performance*, 11(2-3), 145 – 165.
- Mumford, M. D. & Gustafson, S. B. (1988). Creativity syndrome: integration, application, and innovation. *Psychological Bulletin*, 103, 27 – 43.
- Munson, H. L. & Rubenstein, B. J. (1992). School IS work: Work task learning in the classroom. *Journal of Career Development*, 18(4), 289-297.
- Murphy, K. R. (1993). *Honesty in the Workplace*. Pacific Grove, CA: Brooks/Cole Publishing.
- Neisser, U., Boodoo, G., Bouchard, T., Boykin, A., Brody, N., Ceci, S., Halpern, D., Loehlin, J., Perloff, R., Sternberg, R., & Urbina, S. (1996). Intelligence: Knowns and unknowns. *American Psychologist*, 51, 77 – 101.

- Nessel-roade, J. R., & Baltes, P. B. (1974). Adolescent personality development and historical change (1970 – 1972). *Monographs of the society for Research in Child Development*, 39, 1-79.
- Norman, W. T, (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology*, 66, 574 – 583.
- Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed). New York: McGraw – Hill.
- Ones, D. S. & Viswesvaran, C. (1996). Bandwidth-fidelity dilemma in personality measurement for personnel selection. *Journal of Organizational Behavior*, 17, 609-626.
- Ones, D. S., Viswesvaran, C., & Schmidt, F. L. (1993). Comprehensive meta-analysis of integrity test validities: Findings and implications for personnel selection and theories of job performance. *Journal of Applied Psychology*, 78, 679-703.
- Orpinas, P. & Frankowski, R. (2001). The Aggression Scale: A self-report measure of aggressive behavior for young adolescents. *Journal of Early Adolescence*, 21(1), 50-67.
- Parker, W. D. & Stumpf, H. (1998). A validation of the five factor model of personality in academically talented youth across observers and instruments. *Personality and Individual Differences*, 25, 1005-1025
- Paunonen, S. V. (1998). Hierarchical organization of personality and prediction of behavior. *Journal of Personality and Social Psychology*, 74, 538 – 556.

- Paunonen, S. V. (2003). Big Five factors of personality and replicated predictions of behavior. *Journal of Personality and Social Psychology*, 84(2), 411-424.
- Paunonen, S.V. & Ashton, M. C. (2001a). Big Five factors and facets and the prediction of behavior. *Journal of Personality and Social Psychology*, 81(3), 524-539.
- Paunonen, S. V. & Ashton, M. C. (2001b) Big Five predictors of academic achievement. *Journal of Research in Personality*, 35, 78-90.
- Paunonen, S. V., Rothstein, M. G., & Jackson, D. N. (1999). Narrow reasoning about the use of broad personality measures for personnel selection. *Journal of Organizational Behavior*, 20(3), 389-405.
- Perry, S. R. (2003). Personality and academic performance: An integrative review of empirical research. Unpublished manuscript, University of Tennessee.
- Pervin, L. A. (1990). A brief history of modern personality theory. In Pervin, L. A. (Ed), *Handbook of personality: Theory and research*. (pp.3-18). New York, NY, US: Guilford Press.
- Peterson, J. B., Pihl, R. O., Higgins, D. M., Seguin, J. R., & Tremblay, R. E. (2003). Neuropsychological performance, IQ, personality, and grades in a longitudinal grade-school male sample. *Individual Differences Research*, 1(3), 159 – 172.
- Prola, M. & Stern, D. (1984). Optimism about college life and academic performance in college. *Psychological Reports*, 55(2), 347-350.

- Rahim, M. A. & Mohammed, Z. (1997). Structural equations models of achievement striving and impatience—irritability dimensions of Type A behavior and academic performance. *Journal of Education for Business*, 72, 175-180.
- Ridgell, S. D. (2003). Predicting Academic Success: continuing the narrow-broad personality trait discussion within examination of work drive construct. Unpublished manuscript, University of Tennessee.
- Robbins, A. S., Spence, J. T., & Clark, H. (1992). Psychological determinants of health and performance: The tangled web of desirable and undesirable characteristics. *Journal of Personality and Social Psychology*, 61, 755-765.
- Robins, R. W., John, O., & Caspi, A. (1994). Major dimensions of personality in early adolescence: The Big Five and beyond. In C. F. Halverson, Jr., G. A. Kohnstamm, & R. P. Martin (Eds.), *The Developing Structure of Temperament and Personality From Infancy to Adulthood* (pp.267-292). Hillsdale, NJ: Lawrence Erlbaum.
- Robinson, D. L., Gabriel, N., & Katchan, O. (1993). Personality and second language learning. *Personality and Individual Differences*, 16, 143 – 157.
- Rossi, A. S. (1980). Lifespan theories and women's lives. *Signs*, 6, 4 – 32.
- Ryder (1967)"Birth to Maturity" revisited: A canonical analysis. *Journal of Personality and Social Psychology*, 7(2), 168 – 172.

- Sackett, P. R., Gruys, M. L., & Ellingson, J. E. (1998). Ability –personality interactions when predicting job performance. *Journal of Applied Psychology*, 83, 545 – 556.
- Salgado, J. F. (1997). The five factor model of personality and job performance in the European community. *Journal of Applied Psychology*, 82(1), 30-43.
- Sanchez – Marin, M., Rejano, E. I., & Rodriguez, Y. T. (2001). Personality and academic productivity in the university student. *Social Behavior and Personality*, 29 (3), 299- 306.
- Saroglou, V. & Scariot, C. (2002). Humor styles questionnaire: Personality and educational correlates in Belgian high school and college students. *European Journal of Personality*, 16, 43-54.
- Saucier, G. & Goldberg, L. R. (1996). What is beyond the Big Five? *Journal of Personality*, 66(4), 495 – 524.
- Savage, R. D. (1962). Personality factors, and academic performance. *British Journal of Educational Psychology*, 32, 251 – 253.
- Schmit, M. J., Ryan, A.M., Steirwalt, S. L., & Powell, A. B. (1995). Frame-of-reference effects on personality scale scores and criterion-related validity. *Journal of Applied Psychology*, 80(5), 607-620.
- Schneider, R. J., Hough, L. M., & Dunnette, M. D. (1996). Broadsided by broad traits: How to sink science in five dimensions or less. *Journal of Organizational Behavior*, 17, 639-655.

- Schuerger, J. M. & Kuna, D. L. (1987). Adolescent personality and school performance: A follow-up study. *Psychology in the Schools*, 24, 281 – 285.
- Seibert, S.E. & Kraimer, M. L. (2001). The five factor model of personality and career success. *Journal of Vocational Behavior*, 58, 1-21.
- Seligman, M. E. P. (1991). *Learned optimism*. New York: Pocket Books.
- Shannon, C. & Weaver, W. (1949). *The Mathematical Theory of Communication*. Urbana, IL: University of Illinois Press.
- Shiner, (2000). Linking childhood personality with adaptation: Evidence for continuity and change across time into adolescence. *Journal of Personality and Social Psychology*, 78(2), 310 – 325.
- Shiner & Masten (2002). Transactional links between personality and adaptation from childhood through adulthood. *Journal of Research in Personality*, 36, 580 – 588.
- Siegler, I. C., George, L. K., & Okun, M. A. (1979). Cross-sequential analysis of adult personality. *Developmental Psychology*, 15, 350-351.
- Siepp, B. (1991). Anxiety and academic performance: A meta-analysis of findings. *Anxiety Research*, 4, 27 – 41.
- Smith, G. (1969). Personality correlates of academic performance in three dissimilar populations. *Proceedings of the Annual Convention of the American Psychological Association*, 4, 303 – 304.
- Sneed, T. G., Carlson, J. S., & Little, T. D. (1994). The relationship of teacher and parent ratings of academically related personality traits to academic

- performance in elementary age students. *Learning and Individual Differences*, 6(1), 37-64.
- Spector, P. E. (1978). Organizational frustration: A model and review of the literature. *Personnel Psychology*, 31, 815 – 829.
- Sternberg, R. & Kaufman, J. (1998). Human abilities. *Annual Review of Psychology*, 49, 479 – 502.
- Stewart, G. L. (1999) Trait Bandwidth and stages of job performance: assessing differential effects for conscientiousness and its substrates. *Journal of Applied Psychology*, 84(6), 959-968.
- Stoecker, J. A. (1999). Optimism and grade expectations. *Psychological Reports*, 84(3), 873-879.
- Strong, E. K., Jr. (1951). Permanence of interest scores over 22 years. *Journal of Applied Psychology*, 35, 89-91.
- Tett, R. P., Jackson, D. N. & Rothstein, M. (1991). Personality measures as predictors of job performance: A meta-analytic review. *Personnel Psychology*, 44, 703-742.
- Thomassen, K. (2002). *Building Resilient Students: Integrating resiliency into what you already know and do*. Thousand Oaks, CA: Corwin Press.
- Tross, S. A., Harper, J. P., Osher, L. W., & Kneidinger, L. M. (2000). Not just the usual cast of characters: Using personality to predict college performance and retention. *Journal of College Student Development*, 41(3), 323-334.

- Tupes, E. C. & Cristal, R. C. (1958). Stability of personality trait rating factors obtained under diverse conditions. *USAF WADC Technical Note*, No. 58-61.
- Tupes, E. C. & Cristal, R. C. (1961). *Reccurent personality factors on trait ratings* (Technical Report no. ASD-TR-61-97). Lackland Air Force Base, TX: US Air Force.
- Vance, R. J., MacCallum, R. C., Coovert, M. D. & Hedge, J. W. (1988). Construct validity of multiple job performance measures using confirmatory factor analysis. *Journal of Applied Psychology*, 73, 74 – 80.
- Viswesvaran, C. (1996). *Modeling Job Performance: Is There a General Factor?* Presented at 11th Annual Meeting of SIOP, San Diego.
- Viswesvaran, C. Ones, D. S. & Schmidt, F. L. (1996). Comparative analysis of the reliability of job performance ratings. *Journal of Applied Psychology*, 81, 557 – 574.
- Waldman, D. A. & Spangler, W. D. (1989). Putting together the pieces: A closer look at the determinants of job performance. *Human Performance*, 2, 29 – 59.
- Watterson, D. G., Schuerger, J. M., & McInyk, G. I. (1976). The addition of personality measures to ability measures for predicting and understanding school achievement. *Multivariate Experimental Clinical Research*, 2(3), 113-122.
- Webster's Handy College Dictionary* (3rd ed.) (1995). New York: Signet.

- Weiss, M., Lotan, I., Kedar, H., & Ben-Shakhar, G. (1988). Selecting candidates for a medical school: An evaluation of a selection model based on cognitive and personality predictors. *Medical Education*, 6, 492 – 497.
- Well, A. & Matthews, G. (1994). *Attention and emotion: A clinical perspective*, Hove, UK: Lawrence Erlbaum Associates.
- Wentzel, K. R. (1993). Does being good make the grade? Social behavior and academic competence in middle school. *Journal of Educational Psychology*, 85, 357 – 364.
- Wentzel, K. R. (1996). Social and academic motivation in middle school: Concurrent and long-term relations to academic effort. *Journal of Early Adolescence*, 16(4), 390-406.
- Wentzel, K. R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology*, 91(1), 76-97.
- Westen, D. (1990). Psychoanalytic approaches to personality. In Pervin, L. A. (Ed), *Handbook of personality: Theory and research*. (pp.21-65). New York, NY, US: Guilford Press.
- Wiggins & Trapnell (1997). Personality structure: The return of the Big Five. In R. Hogan, J Johnson, & S. Briggs (Eds). *Handbook of Personality Psychology* (pp. 737-758). San Diego: Academic Press.
- Wiggins, N., Blackburn, M., & Hackman, J. R. (1969). Prediction of first year graduate success in psychology: Peer ratings. *Journal of Educational Research*, 63, 81-85.

- Wolf, (1972). Percieved locus of control and prediction of own academic performance. *Journal f Consulting and Clinical Psychology*, 38, 80 – 83.
- Wolf, R.N., & Johnson, S. D. (1995). Personality as a predictor of college performance. *Educational and Psychological Measurement*, 55(2), 177-185.
- Woodruff, D. S. (1983). The role of memory in personality continuity: a 25 year follow-up. *Experimental Aging Research*, 9, 31-34.

APPENDIX

Table 1

*The Five Robust Dimensions of Personality from Fiske (1949) to Present.
Reproduced from Digman (1990).*

Author	I	II	III	IV	V
Fiske (1949)	Social Adaptability	Conformity	Will to Achieve*	Emotional Control	Inquiring Intellect
Eysenck (1970)	Extraversion	Psychoticism-	Psychoticism	Neuroticism	
Tupes & Christal (1961)	Surgency	Agreeableness	Dependability	Emotionality	Culture
Norman (1963)	Surgency	Agreeableness	Conscientiousness	Emotional stability	Culture
Borgatta (1964)	Assertiveness	Likeability	Task Interest	Emotionality	Intelligence
Cattell (1957)	Exvia	Cortertia	Superego strength	Anxiety	Intelligence
Guilford (1975)	Asocial activity	Paranoid disposition	Thinking introversion	Emotional stability	
Digman (1988)	Extraversion	Friendly compliance	Will to achieve	Neuroticism	Intellect
Hogan (1986)	Sociability & Ambition	Likeability	Prudence	Adjustment	Intellectance
Costa & McCrae (1975)	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Peabody & Goldberg (1989)	Power	Love	Work	Affect	Intellect
Buss & Plomin (1984)	Activity	Sociability	Impulsivity	Emotionality	
Tellegen (1985)	Positive emotionality		Constraint	Negative emotionality	
Lorr (1986)	Interpersonal involvement	Level of socialization	Self-control	Emotional stability	Independent

* Noted in a re-analysis by Digman & Takemoto-Chock (1981).

Table 2
Correlations of Personality Variables and GPA for All Grades.

	GPA Time 1	GPA Time 2	GPA Time 3
Agreeableness	.27*	.31*	.30*
Assertiveness	.08	.04	.07
Career Decidedness	-.05	-.04	-.08
Conscientiousness	.23*	.26*	.21*
Emotional Stability	.19*	.19*	.20*
Extraversion	.22*	.25*	.20*
Openness	.18*	.16*	.09
Optimism	.28*	.28*	.17
Work Drive	.34*	.35*	.29*

* $p < .01$

Table 3

Correlations of Personality Variables and GPA at Time One for Each Grade Individually.

	6 th Grade	9 th Grade	12 th Grade
Agreeableness	.26*	.26*	.28*
Assertiveness	.05	.04	.13
Career Decidedness	-.09	-.03	-.07
Conscientiousness	.28*	.22*	.16*
Emotional Stability	.24*	.17*	.16*
Extraversion	.28*	.21*	.11
Openness	.15*	.20*	.14
Optimism	.25*	.31*	.22*
Work Drive	.32*	.35*	.39*

* $p < .01$

Table 4

Correlations of Personality Variables and GPA at Time One, Two, and Three for Males.

	GPA Time 1	GPA Time 2	GPA Time 3
Agreeableness	.25*	.28*	.28*
Assertiveness	.07	.09	.07
Career Decidedness	-.03	-.01	-.04
Conscientiousness	.19*	.30*	.25*
Emotional Stability	.28*	.27*	.28*
Extraversion	.22*	.23*	.22*
Openness	.20*	.14	.15
Optimism	.27*	.27*	.19
Work Drive	.27*	.32*	.32*

* $p < .01$

Table 5

Correlations of Personality Variables and GPA at Time One, Two and Three for Females.

	GPA Time 1	GPA Time 2	GPA Time 3
Agreeableness	.25*	.30*	.29*
Assertiveness	.12*	.03	.11
Career Decidedness	-.06	-.05	-.10
Conscientiousness	.25*	.20*	.14
Emotional Stability	.19*	.14	.18
Extraversion	.16*	.16	.11
Openness	.17*	.15	.01
Optimism	.28*	.25*	.14
Work Drive	.39*	.33*	.23*

* $p < .01$

Table 6

Correlations of Personality Variables and GPA for Males at Time One for Each Grade Individually.

	6 th Grade	9 th Grade	12 th Grade
Agreeableness	.23*	.21*	.31*
Assertiveness	.02	.05	.17
Career Decidedness	-.05	-.05	-.05
Conscientiousness	.29*	.16	.05
Emotional Stability	.28*	.26*	.24*
Extraversion	.25*	.22*	.07
Openness	.19	.20	.17
Optimism	.26*	.28*	.14
Work Drive	.32*	.23*	.22*

* $p < .01$

Table 7

Correlations of Personality Variables and GPA for Females at Time One for Each Grade Individually.

	6 th Grade	9 th Grade	12 th Grade
Agreeableness	.27*	.27*	.22*
Assertiveness	.20*	.06	.14
Career Decidedness	-.09	-.04	-.07
Conscientiousness	.27*	.26*	.22*
Emotional Stability	.27*	.13	.19
Extraversion	.26*	.13	.09
Openness	.15	.20*	.10
Optimism	.26*	.31*	.29*
Work Drive	.27*	.44*	.51*

* $p < .01$

Table 8

Results of Hierarchical Multiple Regression for Broad and Narrow Personality Variables over Time.

Step	Variable	Multiple R	R ²	R ² Change
1	Agreeableness	.240*	.057	.057
2	Conscientiousness	.270*	.072	.015
3	Extraversion	.284*	.081	.009
4	Work Drive	.339*	.115	.034
5	Career Decidedness	.344*	.118	.003
6	Assertiveness	.350*	.122	.004

* All values significant at the .01 level

Table 9

Fisher's Z Test for the Difference Between 2 Independent Correlations for Males and Females at Time One, Time Two and Time Three.

	Time One	Time Two	Time Three
Agreeableness	0	-.322	-.142
Assertiveness	.933	.879	.516
Career Decidedness	.548	.586	-.773
Conscientiousness	-1.152	1.568	1.469
Emotional Stability	1.755	1.993**	1.366
Extraversion	1.152	1.069	1.469
Openness	.566	.146	1.817
Optimism	-.201	.322	.657
Work Drive	-2.469*	-.161	1.263

* $p < .01$

** $p < .1$

Table 10

Fisher's Z Test for the Difference Between 2 Independent Correlations for Males and Females at Time One for Each Grade Individually.

	6 th grade	9 th grade	12 th grade
Agreeableness	.498	.669	.885
Assertiveness	-2.12*	-.1046	.283
Career Decidedness	-.463	.105	.183
Conscientiousness	.197	-1.099	-1.588
Emotional Stability	.127	1.413	.484
Extraversion	-.127	.973	-.183
Openness	.475	0	.657
Optimism	0	-.345	-1.442
Work Drive	.637	-2.491*	-3.094*

* $p < .01$

** $p < .1$

Vita

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