

## THE BIG FIVE PERSONALITY TRAITS, GENERAL MENTAL ABILITY, AND CAREER SUCCESS ACROSS THE LIFE SPAN

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The present study investigated the relationship of traits from the 5-factor model of personality (often termed the "Big Five") and general mental ability with career success. Career success was argued to be comprised of intrinsic success (job satisfaction) and extrinsic success (income and occupational status) dimensions. Data were obtained from the Intergenerational Studies, a set of 3 studies that followed participants from early childhood to retirement. The most general findings were that conscientiousness positively predicted intrinsic and extrinsic career success, neuroticism negatively predicted extrinsic success, and general mental ability positively predicted extrinsic career success. Personality was related to career success controlling for general mental ability and, though adulthood measures of the Big Five traits were more strongly related to career success than were childhood measures, both contributed unique variance in explaining career success.

Considerable evidence has accumulated regarding the antecedents of career success. A recent review of the career success literature (Tharenou, 1997) identified several categories of influences on career success. The most commonly investigated influences were human capital attributes (training, work experience, education) and demographic factors (age, sex, marital status, number of children). Although these classes of influences have provided important insights into the determinants of career success, there is room for further development. Specifically, little research has entertained the idea that career success may have dispositional causes. There have been a few exceptions, such as Howard and Bray's (1988, 1994) study of the career advancement of AT&T managers. However, as Tharenou noted, few studies have taken a more comprehensive, personological approach to career success.

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The purpose of this study is to examine the dispositional correlates of career success. Specifically, we link traits from the 5-factor model of personality to multiple dimensions of career success. Because career success is a gradual process that unfolds over time, the present study reports on individuals throughout the course of their careers, and compares the relative predictive validity of childhood and adulthood individual difference measures. This approach has important advantages over cross-sectional studies relating dispositions to career outcomes, as the utilization of a longitudinal design allows for the examination of the effects of dispositions on career success over time (Tharenou, 1997). We also examine the relationship between general mental ability and career success, and the degree to which personality explains career success beyond cognitive ability. In the remainder of the introduction, we define career success, briefly discuss the 5-factor model of personality, and hypothesize linkages between traits from the 5-factor model and general mental ability with career success.

#### *Definition and Dimensionality of Career Success*

Career success can be defined as the real or perceived achievements individuals have accumulated as a result of their work experiences (Judge, Cable, Boudreau, & Bretz, 1995). Consistent with previous research (Gattiker & Larwood, 1988; Judge et al., 1995), we chose to partition career success into extrinsic and intrinsic components. Extrinsic success is relatively objective and observable, and typically consists of highly visible outcomes such as pay and ascendancy (Jaskolka, Beyer, & Trice, 1985). Conversely, intrinsic success is defined as an individual's subjective reactions to his or her own career, and is most commonly operationalized as career or job satisfaction (Gattiker & Larwood, 1988; Judge et al., 1995). Research confirms the idea that extrinsic and intrinsic career success can be assessed as relatively independent outcomes, as they are only moderately correlated (Bray & Howard, 1980; Judge & Bretz, 1994).

Judge et al. (1995) defined extrinsic success in terms of salary and number of promotions. Although these are certainly relevant aspects of career success, we expand the definition of extrinsic success to encompass occupational status. Occupational status is related to societal perceptions of power and authority afforded by the job (Blaikie, 1977; Schooler & Schoenbach, 1994). Occupational status has a rich tradition of research in sociology as a measure of occupational stratification (the sorting of individuals into jobs and careers of differential power and prestige). In fact, sociologists have gone so far as to conclude that occupational status measures "reflect the classical sociological hypothesis

that occupational status constitutes the single most important dimension in social interaction" (Ganzeboom & Treiman, 1996, p. 203), and to term occupational status as sociology's "great empirical invariant" (Featherman, Jones, & Hauser, 1975, p. 331). Required educational skills, potential extrinsic rewards offered by the occupation, and the ability to contribute to society through work performance are the most important contributors to occupational status (Blaikie, 1977). As a result, sociologists often view occupational status as the most important sign of success in contemporary society (Korman, Mahler, & Omran, 1983). Viewed from this perspective, occupational status is a positive outcome because of its association with increased job-related responsibilities and rewards (Poole, Langan-Fox, & Omodei, 1993; Weaver, 1977), as well as higher job satisfaction (Ronen & Sadan, 1984; Vecchio, 1980). Thus, we expanded our definition of extrinsic career success to include the attainment of high-status and prestigious jobs.

In terms of intrinsic success, it would appear that job satisfaction is the most relevant aspect. Individuals who are dissatisfied with many aspects of their current jobs are unlikely to consider their careers, at least at present, as particularly successful. Thus, consistent with previous career success research (Judge & Bretz, 1994), we consider job satisfaction as the most salient aspect of career success. In the following sections, we summarize the existing literature involving associations between personality and career success, and offer hypotheses relevant to the current study.

#### *Five-Factor Model of Personality*

Evidence is accumulating which suggests that virtually all personality measures can be reduced or categorized under the umbrella of a 5-factor model of personality, which has subsequently been labeled the "Big Five" (Goldberg, 1990). The 5-factor structure has been recaptured through analyses of trait adjectives in various languages, factor analytic studies of existing personality inventories, and decisions regarding the dimensionality of existing measures made by expert judges (McCrae & John, 1992). The dimensionality of the Big Five has been found to generalize across virtually all cultures (McCrae & Costa, 1997; Pulver, Allik, Pulkkinen, & Hamalainen, 1995; Salgado, 1997) and remains fairly stable over time (Costa & McCrae, 1992a, 1988). In addition, research suggests that the Big Five traits have a genetic basis (Digman, 1989), and the heritability of its dimensions appears to be quite substantial (Jang, Livesley, & Vernon, 1996). The dimensions composing the 5-factor model are neuroticism, extraversion, openness to experience, agreeableness, and

conscientiousness. Three of the Big Five dimensions—neuroticism, extraversion, and conscientiousness—appear to be most relevant to career success. Thus, we discuss these constructs in somewhat more detail.

As Costa and McCrae (1988) note, neuroticism is the most pervasive trait across personality measures; it is prominent in nearly every measure of personality. Neuroticism leads to at least two related tendencies; one dealing with anxiety (instability and stress proneness), the other addressing one's well being (personal insecurity and depression). Thus, neuroticism refers generally to a lack of positive psychological adjustment and emotional stability. Costa and McCrae's (1992b) measure of the Big Five traits breaks neuroticism into six facets: anxiety, hostility, depression, self-consciousness, vulnerability, and impulsiveness. Like all of the Big Five traits in Costa and McCrae's (1992b) model, these facets indicate a higher-order construct. Individuals who score high on neuroticism are more likely to experience a variety of problems, including negative moods (anxiety, fear, depression, irritability) and physical symptoms. Evidence even indicates that neurotic individuals are likely to be especially affected by negative life events, and to have bad moods linger (Suls, Green, & Hills, 1998).

Like neuroticism, extraversion is a prominent factor in personality psychology, as evidenced by its appearance in most personality measures, and its important role in major taxonomies of personality (even those preceding the 5-factor model). Typically, extraversion is thought to consist of sociability. However, extraversion is a broad construct that also includes other factors. As Watson and Clark (1997) note, "extraverts are more sociable, but are also described as being more active and impulsive, less dysphoric, and as less introspective and self-preoccupied than introverts" (p. 769). Thus, extraverts tend to be socially oriented (outgoing and gregarious), but also are surgent (dominant and ambitious) and active (adventuresome and assertive). Extraversion is related to the experience of positive emotions, and extraverts are more likely to take on leadership roles and to have a greater number of close friends (Watson & Clark, 1997).

Conscientiousness, which has emerged as the Big Five construct most consistently related to performance across jobs (Barrick & Mount, 1991; Salgado, 1997), is manifested in three related facets—achievement orientation (hardworking and persistent), dependability (responsible and careful), and orderliness (planful and organized). Thus, conscientiousness is related to an individual's degree of self-control, as well as need for achievement, order, and persistence (Costa, McCrae, & Dye, 1991). As one examines these hallmarks of conscientiousness, it is not surprising that the construct is a valid predictor of success at work. Recent empirical evidence supports the importance of conscientiousness at work,

linking the construct to counterproductive work behaviors (Hogan & Ones, 1997), effective job seeking behavior (Wanberg, Watt, & Rumsey, 1996), retention (Barrick, Mount, & Strauss, 1994), and attendance at work (Judge, Martocchio, & Thoresen, 1997), in addition to its link with job performance. Evidence even indicates that conscientious individuals live longer, though the causal processes that bring this about are not well understood (Friedman et al., 1995).

The other two facets from the 5-factor model are openness to experience and agreeableness. Openness to experience is characterized by intellectance (philosophical and intellectual) and unconventionality (imaginative, autonomous, and nonconforming). Agreeable persons are cooperative (trusting of others and caring) as well as likeable (good-natured, cheerful, and gentle). It certainly seems *possible* that these traits are related to career success. For example, the flexibility, creativity, and intellectual orientation of open individuals may be instrumental to success in many occupations. Similarly, the cooperative nature of agreeable individuals may lead to more successful careers, particularly in occupations where teamwork or customer service is relevant. However, unlike the other Big Five traits, one can also think of careers in which high levels of openness and agreeableness would be of little help or even a hindrance (e.g., open individuals may be prone to job hopping or may be unhappy in conventional occupations, extremely agreeable individuals may sacrifice their success in pleasing others). Accordingly, we do not hypothesize a linkage between these two traits and career success, but we will investigate the relationships.

### *Hypotheses*

#### *Personality and Intrinsic Career Success*

Consistent with our conceptualization of intrinsic career success, the majority of the empirical literature relating personality to intrinsic elements of career success has focused on antecedents to job satisfaction. Studies investigating the relationship between neuroticism and job satisfaction have consistently found a significant negative correlation between these two variables (e.g., Furnham & Zacherl, 1986; Smith, Organ, & Near, 1983; Tokar & Subich, 1997). The robustness of this finding is likely the result of cognitive processes associated with high neuroticism levels. Judge and Locke (1993) found that employees prone to negative emotions were also more likely to experience dysfunctional job-related thought processes (overgeneralization, perfectionism, dependence on others), and hence, lower job satisfaction. Similarly, negative affectivity (commonly seen as a facet of neuroticism) has been shown to lead to

the increased recall of negative job-relevant information (Necowitz & Roznowski, 1994). Furthermore, people experiencing frequent negative emotions at work tend to dwell excessively on their failures (Watson & Slack, 1993), and act in ways that estrange them from coworkers (Brief, Butcher, & Roberson, 1995).

Whereas theory and evidence suggest a negative relationship between neuroticism and job satisfaction, the opposite is true with respect to extraversion. As Watson and Clark (1997) note, extraversion is closely linked to positive emotionality (also known as positive affectivity), which in turn expresses itself in positive moods, greater social activity, and more rewarding interpersonal experiences. Indeed, research indicates that positive affectivity is a significant predictor of job satisfaction (Watson & Slack, 1993), as is extraversion itself (Furnam & Zacherl, 1986; Tokar & Subich, 1997).

*Hypothesis 1a:* Neuroticism will be negatively related to intrinsic career success.

*Hypothesis 1b:* Extraversion will be positively related to intrinsic career success.

### *Personality and Extrinsic Career Success*

Because relatively little research has considered relationships between the 5-factor model of personality and extrinsic success, research summarizing personality relationships with outcomes relevant to our model of extrinsic success (income and occupational status) will be considered simultaneously. A number of studies have uncovered a negative association between neuroticism and extrinsic success. Rawls and Rawls (1968) found that successful and unsuccessful executives (in terms of salary and job type) differed significantly on levels of self-acceptance (low neuroticism) in an early cross-sectional study. Self-confidence (again, low neuroticism) was associated with higher occupational status and job levels (the latter effect was observed for women only) in two cross-sectional examinations of personality and career success in Great Britain (Melamed, 1996a, 1996b). Longitudinal studies of personality-career success relations provide even stronger evidence for the effects of neuroticism on extrinsic career success. In the case of salary, self-confidence predicted earnings in a sample of MBA graduates 5 and then 20 years after the original personality data were collected (Harrell, 1969; Harrell & Alpert, 1989). Finally, clinical ratings of "explosive personality" (high neuroticism) were negatively correlated with adult occupational status in a longitudinal study examining the effects of personality variables across the life course (Caspi, Elder, & Bem, 1987). One

can only speculate as to why these results were observed so consistently across these studies. However, a recent meta-analysis established a negative relationship between neuroticism and job performance (Salgado, 1997). Because it is conceivable that performance is one of the many determinants of extrinsic career outcomes (pay, job level and complexity, occupational status), part of the influence of neuroticism on extrinsic success may occur indirectly through the influence of neuroticism on job performance.

Extraversion and its facets appear to be positively related to extrinsic career success. In an early study, Rawls and Rawls (1968) found that measures of dominance and sociability differentiated successful and unsuccessful executives, when pay and job title were considered as indices of success. Extraversion was also predictive of salary and job level in two recent studies conducted in the United Kingdom, even after partialling out the positive association between career success and age (Melamed, 1996a, 1996b). Well-controlled longitudinal studies also have supported a link between extraversion and extrinsic success. For example, Caspi, Elder, and Bem (1988) found that childhood ratings of shyness were negatively associated with adult occupational status. Likewise, Howard and Bray (1994) noted that assessment center ratings of strong social skills (a characteristic of extraverts) predicted managerial promotions in their analysis of data from the Management Progress Study conducted at AT&T.

Conscientiousness is linked to extrinsic career and life success most strongly through the achievement orientation of conscientious persons (Barrick & Mount, 1991; McCrae & Costa, 1991). A number of studies have linked conscientiousness or its indicators to salary and earnings. For example, Orpen (1983) found that need for achievement predicted 5-year salary growth in a sample of South African managers. Furthermore, Barrick and Mount (1991) found a small, positive correlation ( $\rho = .17$ ) between conscientiousness and salary in five studies they were able to locate examining this relationship. Conscientiousness also seems to enable persons to obtain promotions into more complex and prestigious jobs. A consistent finding from the assessment center literature is that ratings of achievement orientation effectively predict promotions (e.g., Howard & Bray, 1994; Jones & Whitmore, 1995). As with neuroticism, conscientiousness may influence extrinsic career success through its influence on job performance (Barrick & Mount, 1991; Salgado, 1997). Based on these findings, we advanced the following hypotheses with respect to the Big Five and extrinsic career success:

*Hypothesis 2a:* Neuroticism will be negatively related to extrinsic career success.

*Hypothesis 2b:* Extraversion will be positively related to extrinsic career success.

*Hypothesis 2c:* Conscientiousness will be positively related to extrinsic career success.

### *Temporal Stability of Personality-Career Success Relationships*

As Hulin, Henry, and Noon (1990) have noted, most studies of the validity of individual differences such as general mental ability have ignored the issue of time. Indeed, Hulin et al.'s (1990) results suggested that predictive validities of ability tests showed a time decrement. Hulin et al. concluded, "Validities vary across time; with few exceptions, they decrease monotonically" (p. 333). Whether there is a validity decrement in the predictive validity of ability has been debated in the literature (Austin, Humphreys, & Hulin, 1989; Barrett & Alexander, 1989). Noticeably absent from this debate, however, have been personality traits. Although some of the research on the validity of personality traits has been longitudinal (Helmreich, Sawin, & Carsrud, 1986), most has not, and we are aware of no studies that have directly compared the relative validity of traits over a number of years. Nevertheless, based on the results for ability tests, we believe that the predictive validity of personality scores will be stronger the closer the scores are to measurement of the criteria. In the case of this study, this suggests that personality scores measured in adulthood will better explain adulthood career success than will childhood measures. Because Hulin et al. (1990) did not show that the predictive validities vanish completely, we still expect childhood evaluations to predict adult career success. Furthermore, other longitudinal personality research (Howard & Bray, 1988), though not classified into the Big Five traits, suggests that traits do retain some power to predict career success over time.

*Hypothesis 3a:* Personality measures collected in adulthood will explain more variance in career success than will childhood measures.

*Hypothesis 3b:* Childhood and adult personality measures will each explain significant incremental variance in career success, controlling for the other source.

### *General Mental Ability and Career Success*

General mental ability has a rich heritage of research in psychology, but like the Big Five, its most noteworthy application to industrial-organizational psychology is in the area of job performance. Research has clearly demonstrated that scores on a general mental ability



test are one of the most consistently positive predictors of job performance (Schmidt, Ones, & Hunter, 1992). Thus, evidence suggests that general mental ability positively affects job performance consistently throughout a career. As with personality, however, relatively little research has specifically linked general mental ability to career success. Several studies have found that general mental ability is predictive of earnings (see Gottfredson & Crouse, 1986; Siegel & Ghiselli, 1971) and career advancement (Dreher & Bretz, 1991; Howard & Bray, 1988). Another study found that general mental ability was not significantly related to earnings or promotions (O'Reilly & Chatman, 1994). Finally, Wilk and Sackett (1996) reported that general mental ability enhances the likelihood of movement into more complex (and thus probably higher paying) jobs.

Research linking general mental ability to intrinsic success also is limited. One small-sample study reported a negative correlation between intelligence and job satisfaction (Barrett & Forbes, 1980), while three other studies reported a small, nonsignificant relationship (Bagozzi, 1978; Colarelli, Dean, & Konstans, 1987; Stone, Stone, & Gueutal, 1990). As Ganzach (1998) noted, "All three studies showed that the relationship between intelligence and job satisfaction was about zero" (p. 526). In the most complete study conducted on this topic to date, Ganzach provided evidence of a very small ( $r = -.02$ ), nonsignificant relationship between intelligence and job satisfaction. Because Ganzach's findings were in line with his description of previous research, we do not hypothesize a relationship between general mental ability and job satisfaction.

Another issue to be considered is whether the relationship between personality and career success is independent of the effects of general mental ability. In terms of the personality predictors of job performance, research suggests that personality traits contribute to the prediction of job performance, at least some aspects of performance, controlling for general mental ability (McHenry, Hough, Toquam, Hanson, & Ashworth, 1990). Furthermore, the relationship between intelligence and the Big Five is relatively small (Ones, 1993). Thus, we believe it is reasonable to expect that the Big Five traits will contribute to the prediction of career success once the effect of general mental ability is taken into account.

*Hypothesis 4a:* General mental ability will be positively related to extrinsic career success.

*Hypothesis 4b:* Personality will explain incremental variance in career success beyond that explained by general mental ability.

### *Gravitational Hypothesis*

Related to the question of the prediction of career success from personality factors is the gravitational hypothesis. The gravitational hypothesis assumes that "... over the course of their labor market experiences, [people] will sort themselves into jobs that are compatible with their interests, values, and abilities... jobs for which there is a good person-job fit" (Wilk, Desmarais, & Sackett, 1995, p. 79). Wilk et al. (1995) tested the gravitational hypothesis over a 5-year period with respect to general mental ability, and found that high-ability individuals tended to advance into jobs requiring greater cognitive demands (persons lower on ability tended to settle into jobs lower in this hierarchy).

Given that gravitation has been demonstrated with respect to general mental ability, does the same phenomenon hold true for personality? In other words, do persons gravitate to jobs commensurate with their personalities? A great deal of research has focused on the impact of personality on situation choice (see Ickes, Snyder, & Garcia, 1997), and some of this research has been investigated in the organizational context (Caldwell & O'Reilly, 1990). However, no studies of which we are aware have utilized longitudinal data to illustrate the gravitation effect with respect to personality variables in a similar manner to Wilk et al. (1995).

Testing the gravitation effect with respect to personality requires that persons and occupations be assessed along commensurate dimensions. One such model that is applicable to both persons and jobs is Holland's RIASEC typology (Holland, 1996). RIASEC methodology involves generating a profile for an individual based on his or her standing on six career interests: *Realistic* (involves tangible or physical activities), *Investigative* (involves activities requiring thinking, organizing, and understanding), *Artistic* (involves self-expression or artistic creation), *Social* (involves interpersonal activities), *Enterprising* (involves verbal activities to influence others or to attain power and status), *Conventional* (involves rule-regulated activities). In Holland's model, jobs are usually categorized with respect to the three types or dimensions that are most descriptive of the job.

Research has shown substantial convergence between the 5-factor model of personality and individual RIASEC profiles. For example, Tokar and Swanson (1995) demonstrated that extraversion correlated positively with Social and Enterprising. In the same study, openness to experience predicted the RIASEC traits Investigative, Artistic, and Social. However, no research of which we are aware has demonstrated the impact of the five factors with respect to characteristics of attained jobs. Thus, we investigated whether personality (based on the 5-factor model) predicts gravitation to jobs as they are described by Holland's RIASEC

typology. For example, we might expect that extraversion would be positively associated with gravitation to Social occupations, openness would be positively associated with gravitation to Artistic occupations and negatively associated with gravitation to Conventional occupations, agreeableness would be positively associated with gravitation to Social occupations, and conscientiousness would be positively associated with gravitation to Conventional occupations. Because this aspect of the study is exploratory, we do not offer formal hypotheses.

### *Method*

#### *Participants and Procedure*

The data for this study were obtained from the Intergenerational Studies, administered by the Institute of Human Development, University of California at Berkeley. The intergenerational studies are a combination of the following three longitudinal studies commissioned by the Institute 7 decades ago:

1. The Berkeley Guidance Study enrolled every third child born in Berkeley, California, from January 1928 to July 1929. Four hundred fifty-four families were eligible for the study and 244 families ultimately agreed to take part (response rate = 54%). Although initially focused on problem behavior of normal children, the study was later continued in an effort to research the interaction of psychological, social, and biological factors in the development of personality.
2. The Berkeley Growth Study enrolled 74 participants through area pediatricians and obstetricians, and included infants born between January 1928 and May 1929 (given the time frame, there was some overlap with the Guidance sample, though most Guidance study members were born at home). Initially, the purpose of the Berkeley Growth Study was to follow the development of intellectual, motor and physical skills, and other characteristics. Eventually, the scope of the study was broadened to include the examination of a wide variety of psychological and social assessments.
3. The Oakland Growth Study, initiated in 1931, recruited 212 participants from five elementary schools in Oakland (thus, members of the Oakland study were 7–9 years older than participants in the other two studies). This study began as an attempt to understand the growth and adaptation of individuals in response to the demands and conduct levels imposed on them by parents, teachers, and society. A wide array of physical, psychological, and social data were collected from and about each participant due to the belief that the processes

of growth and adaptation were a function of a number of interrelated factors.

Because similar measures were collected in the three studies, they were combined in the analyses. The participants included in our study were predominantly white (only the Berkeley Guidance Study contained minorities). The average participant had at least some college education and approximately 60% were born into middle class homes. Fifty-one percent of participants were female. Finally, 85% of the participants were married and had an average of 2.7 children.

Over the 60-year course of the three studies, many measurements were collected, including medical examinations, strength tests, and extensive interviews by trained psychologists (for a more complete description, see Block, 1971 and Clausen, 1993). Many of these measures, such as clinical personality assessments, were collected several times throughout each participant's childhood. There were three major follow-up studies, completed when participants were 30–38 (early adulthood), 41–50 (middle age), and 53–62 (late adulthood).<sup>1</sup> In these follow-up studies, participants were intensively interviewed about their work and family lives. Their personality also was assessed during these follow-up studies. There also was a follow-up mail survey completed in 1990, when the participants were of retirement age (61–70). Although there was some attrition in the sample over time, the adult samples remained generally representative of the earlier samples with respect to demographic and personality characteristics (Block, 1971).

Potential participants in the study were those for whom personality data were available for one or more of the five assessment periods, and for whom at least some career data were available. Three hundred fifty-four individuals met these selection criteria. Of these 354 individuals, the number of individuals for whom complete personality data were available during each time period was as follows: Time 1 = 209; Time 2 = 200; Time 3 = 282; Time 4 = 283; Time 5 = 283. Controlling for alpha inflation due to multiple comparisons, there was only one significant difference between individuals who had complete data across the five time periods versus those who had some incomplete data: Individuals for whom no personality data were available during middle adulthood had significantly higher conscientiousness scores at early adulthood than individuals for whom middle adulthood personality data were available. In general, though there was a fair amount of missing personality data, the patterns of missing data was not related to personality levels.

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<sup>1</sup>The categorization of individuals aged 53–62 as "late adulthood" is archaic given contemporary life expectancies. However, given the absence of an alternative descriptor, we choose to retain the label but wish to note that most people in their 50s today would probably not consider themselves to be in late adulthood.

### Measures

*Big Five personality traits.* The Intergenerational Studies provided a vast amount of personality data on participants, collected at five different points in time. However, although the records were rich with personality data, this information originally was not quantified. In addition, each of the three studies included slightly different personality data. For example, personality data for some participants were collected through interviews with the participants, their parents, and their teachers. For other participants, personality data were collected through observations by the original research teams and through self-reports by the participants. To rectify these limitations, Block (1971) used the California Q-set (Block, 1961) to combine and quantify the personality information available on each participant. Based on the data archives for each participant, expert psychologists trained in personality assessment were asked to sort 104 personality descriptors into nine categories, ranging from most descriptive to least descriptive of the participants' personality. These categories were then numbered, from "9" being the *most descriptive* to "1" being the *least descriptive*. To eliminate the possibility that assessors' subsequent personality ratings of a participant were influenced by earlier ratings, no assessor evaluated the same participant over more than one time period. Because the multiple assessors rated each participant according to the 104 Q-set items, it is possible to estimate interrater reliability of the ratings. Across the 104 items over the five time periods, the average reliabilities ranged from .72 to .78. Thus, the assessors were reliable in their assessment of participants' personality. Participants' score on each Big Five trait was computed as the average assessor rating for each item, summed across the items composing that scale.

We are aware of no research that has classified the Intergenerational Studies personality data into the Big Five. However, McCrae and Costa (1986) completed an analysis of the California Q-set on a sample of 403 adults and found that the items composed a 5-factor model matching the Big Five typology. Furthermore, items in the Q-set demonstrated convergent and discriminant validity against self, peer, spousal, and interviewer ratings. Accordingly, we computed the five factors by adding together the items that loaded .40 or greater on each factor in McCrae and Costa's study. These factors were computed as equally weighted (unit-weighted) composites. The number of items composing each factor was as follows: Neuroticism—30 items; Extraversion—19 items; Openness—14 items; Agreeableness—18 items; Conscientiousness—12 items (11 items did not load clearly on any one factor). Examples of items comprising each factor include "Self-pitying; feels cheated and victimized by life"

and "Has a readiness to feel guilty" (neuroticism), "Is a talkative individual" and "Emphasizes being with others; gregariousness" (extraversion), "Thinks and associates to ideas in unusual ways" and "Values own independence and autonomy" (openness to experience), "Behaves in a giving way toward others" and "Tends to arouse liking and acceptance from others" (agreeableness), and "Behaves in a responsible and dependable way" and "Is productive; gets things done" (conscientiousness).

*General mental ability.* Childhood general mental ability was measured with the Stanford-Binet intelligence test. Developed specifically for administration to children, the Stanford-Binet is one of the oldest, most widely used, and extensively validated standardized intelligence tests. Evidence indicates that the Stanford-Binet test is both a reliable and valid measure of general mental ability (Thorndike & Lohman, 1990). In the IGS, the Stanford-Binet test was completed when participants were 18 years of age. Stanford-Binet test scores correlated .81 with Weschler Adult Intelligence Scale (WAIS) scores completed when participants were in middle adulthood.

*Intrinsic career success.* Overall job satisfaction was assessed with a facet-based measure, collected in middle adulthood, that consisted of an 8-item scale that asked participants to report their satisfaction with various facets of their job (e.g., income, supervision, job security, coworkers). Interviewers coded responses on a 1 = *dislike it very much* to 5 = *like it very much* scale. The reliability of this scale was  $\alpha = .92$ .

*Extrinsic career success.* Total income was measured in the late adulthood interview with an interview question asking the individual to report annual pretax income. Responses were placed in the following categories: 1 = *less than \$15,000*; 2 = *\$15,000-\$19,999*; 3 = *\$20,000-\$29,999*; 4 = *\$30,000-\$39,999*; 5 = *\$40,000-\$49,999*; 6 = *\$50,000 and over*. Income was measured at several times over the course of the study. Thus, missing values were replaced by values from an adjacent time period, if available. (This substitute process only served to increase the sample size, it did not affect the results. The average correlation was .03 higher without the imputation process.) Occupational status was measured in middle adulthood using the Hollingshead Index of Social Position (Hollingshead, 1975), which rates occupations (as opposed to jobs) on a 7-point scale, where 1 = *higher executives, proprietors of large concerns, and major professionals* and 7 = *unskilled employees*. Although the Hollingshead index is not the only measure of occupational status, it correlates .74 with the other primary measure of occupational status, the Duncan Socioeconomic Index (Haug & Sussman, 1971). To make higher scores represent higher status occupations, the occupational status measure was reverse scored.

*Gravitation.* To investigate the gravitational hypothesis, job titles and DOT codes for study participants were matched with RIASEC occupational descriptions found in the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996). Participants were assigned codes only in cases where there was a clear and unambiguous match between the individual's self-reported job title and an existing Holland code. Holland's dictionary characterizes jobs by dimensions or types in descending order of importance. Although continuous scores with respect to each of the six dimensions are typically unavailable in Holland's model, we used Prediger's (1982) scoring scheme to generate dimensional scores for each job. To simplify the analyses, we only used the childhood personality assessments in predicting occupational gravitation.

### Results

Table 1 contains the correlations among each of the Big Five traits across the five time periods over which personality was measured. Also provided are the coefficient alpha ( $\alpha$ ) reliability estimates for each trait over each time period. All measurements were at least moderately reliable, ranging from .72 (openness at pubescence) to .93 (neuroticism at middle and late adulthood). Average reliability across all traits and time periods was .85. The table reveals significant correlations over the life span, though the strength of the correlations varied. Correlations between adjacent time periods (e.g., correlations between middle age and late adult measurements) were relatively strong while, as is to be expected, correlations over very long periods of time (e.g., between pubescent and late adult measurements, roughly 45 years) were less strong, though still statistically significant. There were some differences in the relative stability of the traits—conscientiousness (with an average corrected correlation over time of .59) and openness to experience (average corrected correlation of .56) were more stable than agreeableness (average corrected correlation of .43). Neuroticism and extraversion were somewhat in between, both having an average corrected correlation of .46.

For the analyses relating the Big Five traits to career success, to increase reliability of the ratings, and for parsimony, ratings were collapsed into two categories for each of the Big Five traits: childhood (average of pubescent and adolescent assessments) and adulthood (average of the three adult assessments). Table 2 contains the intercorrelations of the Big Five traits (both time periods) and career success measures. In terms of the relationships among the Big Five traits, the average intercorrelation was somewhat higher than has been found in past research (e.g., the average absolute intercorrelation among the traits in the present study

TABLE 1  
*Stability of Big Five Personality Traits Over the Life Span*

Personality measurement	$\alpha$	1	2	3	4	5
<b>Neuroticism</b>						
1. Pubescent (age 12-14)	.89	-	.66	.38	.41	.34
2. Adolescent (age 15-18)	.91	.59	-	.38	.38	.42
3. Early adult (age 30-39)	.91	.34	.35	-	.61	.45
4. Middle age (age 41-50)	.93	.37	.35	.56	-	.47
5. Late adult (age 53-62)	.93	.31	.39	.41	.43	-
<b>Extraversion</b>						
1. Pubescent (age 12-14)	.85	-	.68	.39	.38	.22
2. Adolescent (age 15-18)	.86	.58	-	.45	.45	.35
3. Early adult (age 30-39)	.83	.33	.38	-	.72	.41
4. Middle age (age 41-50)	.87	.33	.39	.61	-	.54
5. Late adult (age 53-62)	.86	.19	.30	.35	.46	-
<b>Openness to experience</b>						
1. Pubescent (age 12-14)	.72	-	.80	.51	.47	.31
2. Adolescent (age 15-18)	.76	.59	-	.62	.56	.26
3. Early adult (age 30-39)	.81	.39	.49	-	.83	.56
4. Middle age (age 41-50)	.86	.37	.45	.69	-	.68
5. Late adult (age 53-62)	.77	.23	.20	.44	.55	-
<b>Agreeableness</b>						
1. Pubescent (age 12-14)	.88	-	.64	.33	.42	.31
2. Adolescent (age 15-18)	.90	.57	-	.32	.25	.32
3. Early adult (age 30-39)	.87	.29	.28	-	.64	.52
4. Middle age (age 41-50)	.85	.36	.22	.55	-	.53
5. Late adult (age 53-62)	.90	.28	.29	.46	.46	-
<b>Conscientiousness</b>						
1. Pubescent (age 12-14)	.80	-	.89	.55	.45	.42
2. Adolescent (age 15-18)	.80	.71	-	.69	.47	.48
3. Early adult (age 30-39)	.79	.44	.55	-	.71	.61
4. Middle age (age 41-50)	.81	.36	.38	.57	-	.58
5. Late adult (age 53-62)	.91	.36	.41	.52	.50	-

*Note:* Correlations above the diagonal are corrected for unreliability (coefficient alpha); correlations below the diagonal are uncorrected. All correlations are significant at the .01 level.

was .27 compared to .20 for the NEO Personality Inventory; Costa & McCrae, 1992b). However, the general pattern of correlations was similar to those using direct measures of the Big Five traits. The table also displays the relations between the Big Five traits and career outcomes; in general, the correlations of the childhood measures with career success were similar to those with the adult measures. The same situation appeared to be true with respect to general mental ability. Finally, the career success measures were positively, but moderately, correlated.

Before relating the personality and ability measures to career success, it is important to determine whether the structure of the career success data is as assumed, and whether the variables could be reduced.



TABLE 2  
*Intercorrelations Among Study Variables*

Variable	1	2	3	4	5	6	7	8	9	10
1. Neuroticism	1.00	-.43**	-.10	-.62**	-.49**	-.30**	-.22*	-.26**	-.26**	-.34**
2. Extraversion	-.62**	1.00	.07	.26**	-.24**	.09	-.06	.25**	.00	.18†
3. Openness to experience	-.07	.18**	1.00	-.25**	.34**	.51**	.21*	.10	.32**	.26**
4. Agreeableness	-.44**	.24**	-.10	1.00	.25	-.10	.13	-.01	-.02	.01
5. Conscientiousness	-.65**	.18**	.03	.18**	1.00	.53**	.40**	.16†	.49**	.41**
6. General mental ability	-.22**	.14†	.33**	-.07	.29**	1.00	.30**	.31**	.51**	.53**
7. Job satisfaction	-.26**	.12	-.09	-.26**	.20**	.25**	1.00	.26**	.12†	.25**
8. Income	-.32**	.24**	-.01	-.11	.34**	.29**	.26**	1.00	.35**	.82**
9. Occupational status	-.27**	.09	.26**	-.04	.48**	.48**	.12†	.35**	1.00	.83**
10. Extrinsic career success	-.34**	.19*	.14†	-.11	.50**	.53**	.25**	.82**	.83**	1.00

Note: Correlations above the diagonal are for the childhood assessment of personality and general mental ability. Correlations below the diagonal are for the adulthood assessments of personality and general mental ability. Because different sample sizes were available for the variables, correlations were estimated using pairwise deletion (average  $N$  above diagonal = 166, average  $N$  below diagonal = 194).

†  $p < .10$  \*  $p < .05$  \*\*  $p < .01$

TABLE 3  
*Factor Analysis of Career Success Measures*

Variable	Factor 1	Factor 2
Satisfaction with income	<u>.74</u>	.02
Satisfaction with degree to which work involves interests	<u>.88</u>	.12
Satisfaction with coworkers	<u>.75</u>	.19
Satisfaction with use of skills and abilities	<u>.91</u>	.03
Satisfaction with supervision	<u>.80</u>	.16
Satisfaction with respect that others give to job	<u>.75</u>	.13
Satisfaction with ability to develop ideas on job	<u>.81</u>	.05
Satisfaction with job security	<u>.68</u>	.12
Occupational status	.03	<u>.84</u>
Income	.17	<u>.78</u>
Eigenvalue	5.23	1.26
Percent variance explained	52.30	12.60

Note: Factor loadings greater than .40 are underlined.  $N$  (listwise) = 142.

Accordingly, we factor analyzed the eight job satisfaction items, and income and occupational status measures. Using a varimax rotation, the factor analysis results are displayed in Table 3. As is shown in the table, the factor analysis identified two factors with Eigenvalues greater than 1.0. Cumulatively, the two factors explained 64.9% of the variance in the measures. Examination of the scree plot showed a distinct break between the slope of the first two factors and those of the subsequent factors whose Eigenvalues were less than 1.0. As can be seen in the table, all the job satisfaction items loaded strongly on Factor 1 (the average factor loading was .79). Thus, this factor can be labeled intrinsic success. Occupational and income loaded strongly on the second factor (the average factor loading was .81). Thus, as was assumed, this factor can be labeled extrinsic success. Because the factor analytic results suggested that these 10 items could be reduced to two factors, the subsequent analyses are confined to the two factors—intrinsic success (job satisfaction<sup>2</sup>) and extrinsic success.

Table 4 describes the relationships between the Big Five traits, cognitive ability, and intrinsic career success (job satisfaction). Considering first the simple correlations, results indicated that neuroticism was

<sup>2</sup>Many definitions of intrinsic career success also include career satisfaction. A measure of career satisfaction was included in one of the interviews in the IGS study. However, because the measure was only included in two of the data sets (reducing the available  $N$  to 65), and because it was a single-item measure, it was not included in the primary analyses. However, it should be noted that the correlations involving career satisfaction were quite similar to those involving job satisfaction. For neuroticism, the correlations were  $-.23$  ( $p < .10$ ) for the childhood measure and  $-.40$  ( $p < .01$ ) for the adulthood measure. For extraversion, the childhood and adulthood correlations were  $.09$  (*ns*) and  $.30$  ( $p < .01$ ), respectively. For conscientiousness, the childhood and adulthood correlations were  $.31$  ( $p < .01$ ) and  $.21$  ( $p < .10$ ), respectively.

TABLE 4  
*Relationship Between Big Five Traits, General Mental Ability,  
 and Intrinsic Career Success*

Individual difference	<i>r</i>	$\beta$	<i>R/R</i> <sup>2</sup>
<b>Big Five trait</b>			
Childhood neuroticism	-.22*	-.02	
Childhood extraversion	-.06	.00	
Childhood openness to experience	.21*	.12	
Childhood agreeableness	.13	.05	
Childhood conscientiousness	.40**	.34**	
<i>R</i>			.42**
<i>R</i> <sup>2</sup>			.18**
$\Delta R^2$			.09**
<b>General mental ability</b>			
Childhood general mental ability	.30**	.11	
<i>R</i>			.30**
<i>R</i> <sup>2</sup>			.09**
$\Delta R^2$			.00
<i>R</i> (traits + general mental ability)			.42**

Note: *r* = simple correlation.  $\beta$  = standardized beta weight from regression. *R* and *R*<sup>2</sup> values are when block of traits or cognitive ability were entered alone. Incremental ( $\Delta$ ) *R*<sup>2</sup> values are when the block of traits was entered after cognitive ability, or when cognitive ability was entered after the block of traits. *N* (listwise) = 118.

\* *p* < .05 \*\* *p* < .01

significantly negatively correlated with job satisfaction, while openness to experience, conscientiousness, and general mental ability were significantly positively correlated with job satisfaction. When these variables were entered into a regression equation, however, only conscientiousness remained a significant predictor of job satisfaction. Thus, Hypothesis 1a was only partially supported by the results (neuroticism was significantly correlated with job satisfaction, but the partial regression coefficient was nonsignificant), Hypothesis 1b was not supported by the results (extraversion was not related to job satisfaction), and an unhypothesized effect—the correlation between conscientiousness and job satisfaction—was the most consistent result. Finally, when one conducts a usefulness analysis (Darlington, 1990) to determine the unique variance explained by the Big Five traits over general mental ability (and vice versa), results indicated that the Big Five traits explained significant incremental variance in job satisfaction controlling for general mental ability, but the reverse was not true. These results support Hypothesis 4b, as the Big Five traits explained significant incremental variance in intrinsic career success controlling for the influence of general mental ability.

Table 5 provides the results linking the Big Five traits and general mental ability to extrinsic career success. As hypothesized (Hypothe-

TABLE 5  
*Relationship Between Big Five Traits, General Mental Ability,  
 and Extrinsic Career Success*

Individual difference	<i>r</i>	$\beta$	<i>R/R</i> <sup>2</sup>
Big Five trait			
Childhood neuroticism	-.34**	-.21*	
Childhood extraversion	.18†	.27*	
Childhood openness to experience	.26*	-.02	
Childhood agreeableness	.01	-.32**	
Childhood conscientiousness	.41**	.44**	
<i>R</i>			.54**
<i>R</i> <sup>2</sup>			.29**
$\Delta R^2$			.13**
General mental ability			
Childhood general mental ability	.53**	.41**	
<i>R</i>			.53**
<i>R</i> <sup>2</sup>			.28**
$\Delta R^2$			.12**
<i>R</i> (traits + general mental ability)			.64**

Note: *r* = simple correlation.  $\beta$  = standardized beta weight from regression. *R* and *R*<sup>2</sup> values are when block of traits or general mental ability were entered alone. Incremental ( $\Delta$ )*R*<sup>2</sup> values are when the block of traits was entered after general mental ability, or when general mental ability was entered after the block of traits. *N* (listwise) = 116.

†*p* < .10 \**p* < .05 \*\**p* < .01

sis 2a), neuroticism was negatively related to extrinsic success. In addition, extraversion and conscientiousness were positively related to extrinsic success (Hypothesis 2b and Hypothesis 2c). Although the effects for neuroticism, extraversion, and conscientiousness were significant regardless of whether the relationship was a simple correlation or partial regression coefficient, results for agreeableness and openness were less consistent. Openness was positively correlated with extrinsic success, but this relationship disappeared once the other variables were controlled. Conversely, agreeableness was uncorrelated with extrinsic success, but the effect became negative and significant when the other variables were controlled. As hypothesized (Hypothesis 4a), general mental ability was positively related to extrinsic success. Finally, both the Big Five traits and general mental ability explained significant variation in extrinsic success, and results from the usefulness analysis revealed that both contributed unique variance in explaining extrinsic career success. This supports Hypothesis 4b.

It was hypothesized that personality measures collected in adulthood will explain more variance in career success than will childhood measures (Hypothesis 3a), but that both measures will explain significant incremental variance (Hypothesis 3b). To test these hypotheses, we conducted a usefulness analysis where the five traits measured during child-

TABLE 6  
*Usefulness Analysis of Childhood and Adulthood Personality Assessments*

Big Five trait	Extrinsic career success	Intrinsic career success
Childhood personality		
<i>R</i>	.54**	.42**
<i>R</i> <sup>2</sup>	.29**	.18**
<i>N</i>	116	118
$\Delta R^2$	.07*	.15**
Adulthood personality		
<i>R</i>	.56**	.51**
<i>R</i> <sup>2</sup>	.32**	.26**
<i>N</i>	178	147
$\Delta R^2$	.10**	.23**
Combined personality		
<i>R</i>	.62**	.64**
<i>R</i> <sup>2</sup>	.39**	.41**
<i>N</i>	112	102

*Note:* All table entries are *R* or *R*<sup>2</sup> coefficients. *R* and *R*<sup>2</sup> values are when block of traits were entered alone into the regression. Incremental ( $\Delta$ )*R*<sup>2</sup> values are when the childhood personality traits were entered after the 5 adulthood traits, or when the 5 adulthood traits were entered after the childhood traits. Combined personality values are when all 10 traits (5 childhood and 5 adulthood measures) were entered into the equation together.

\**p* < .05 \*\**p* < .01

hood were entered into a regression. The Big Five traits measured in adulthood were entered into another regression. A final regression was estimated where all 10 traits (5 childhood and 5 adulthood) were entered into a "combined" equation. The incremental variance explained by the childhood traits is the difference between the *R*<sup>2</sup> in the adulthood and combined equations. The incremental variance explained by the adulthood traits is the difference between the *R*<sup>2</sup> in the childhood and combined equations. Two sets of equations were estimated—one for intrinsic success (job satisfaction) and one for extrinsic success. Results of these analyses are presented in Table 6. As the table shows, both hypotheses were supported. The adult measures of personality explained somewhat more variance in both facets of career success, and 50% more incremental variance, when compared to the childhood measures. However, in all cases—for both the childhood and adulthood assessments—the increments were significant.

#### *Occupational Gravitation*

We conducted both correlation and regression-based analyses of the relationships between each of the Big Five traits and the six job-related dimensions of the RIASEC model. Because general mental ability has been shown to predict gravitation to particular types of jobs (based on job complexity; Wilk et al., 1995), we controlled for it in estimating these

TABLE 7  
*Relationship Between Individual Differences and RIASEC Occupational Membership*

Individual difference	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
General mental ability						
<i>r</i>	-.12	.29**	.02	.09	-.02	-.22**
$\beta$	.06	.13	-.25†	.13	-.17	.07
Neuroticism						
<i>r</i>	.18†	-.11	.01	-.07	-.03	.01
$\beta$	-.07	-.25	.19	.15	-.10	.11
Extraversion						
<i>r</i>	-.20*	-.16†	-.02	.20*	.08	.09
$\beta$	-.30*	-.17	.13	.16	.02	.16
Openness to experience						
<i>r</i>	-.03	.11	.11	.14	.05	-.31**
$\beta$	-.06	-.08	.21†	.18	.14	-.32*
Agreeableness						
<i>r</i>	-.15	-.10	-.01	.09	.02	.13
$\beta$	-.12	-.27*	.08	.26*	-.05	.11
Conscientiousness						
<i>r</i>	-.08	.33**	.06	-.07	-.06	-.15
$\beta$	.09	.16	.21	-.13	-.05	.01

† $p \leq .10$  \* $p \leq .05$  \*\* $p \leq .01$   $N = 109$

regressions. As is shown in Table 7, general mental ability was positively correlated with gravitation to Investigative jobs and negatively correlated with gravitation to Conventional jobs. Extraversion was positively correlated with gravitation to Social jobs and negatively correlated with gravitation to Realistic and Investigative jobs. As expected, openness was negatively correlated with gravitation to Conventional jobs. Conscientiousness was positively correlated with gravitation to Investigative jobs. Neuroticism was positively correlated with gravitation to Realistic jobs. Agreeableness did not correlate with gravitation to any RIASEC job classification.

The regression results tell a slightly different story. Openness remained a significant predictor of gravitation to Conventional jobs, even controlling for ability and the other personality factors. In the regressions, however, openness also predicted gravitation to Artistic jobs. Extraversion still predicted gravitation toward Realistic, but not to Social jobs. Agreeableness positively predicted gravitation to Social jobs and negatively predicted gravitation to Investigative jobs. In the regressions, conscientiousness and neuroticism did not predict gravitation to any RIASEC job classification. In general,  $R^2$  values in these analyses were modest, ranging from .17 ( $p < .01$ ) for Investigative jobs to .03 (*ns*) for Enterprising jobs, but indicated some support for the notion that personality is related to the characteristics of jobs people hold, even after controlling for general mental ability.

### *Discussion*

This longitudinal study demonstrates that relevant personality traits and general mental ability are capable of predicting multiple facets of career success, even over a span of 50 years. Like the longitudinal studies of Howard and Bray (1988, 1994), the present study was able to provide evidence of enduring relationships between personality traits, general mental ability, and career success. Even after accounting for the other Big Five traits and general mental ability, high conscientiousness was associated with intrinsic career success, while low neuroticism, low agreeableness, high extraversion, high conscientiousness, and high cognitive ability were associated with extrinsic career success. Knowledge about one's personality and intelligence early in life proved to be an effective predictor of one's later career success, whether career success was measured through subjective reactions or objective indicators.

An important strength of this study is that it investigated the degree to which childhood and adulthood assessments of the Big Five traits predicted career success. Results suggested that childhood measures of personality explained less variance in adult career success than when such

measures were collected in adulthood (yet even in this case, personality was assessed on average 10–20 years before career success measures were collected). On the other hand, when the childhood and adulthood measures of the Big Five traits were entered into the equation together, both explained unique variance in both extrinsic and intrinsic aspects of career success. Thus, personality measures collected in childhood have utility in explaining career success. This is the first study to use both childhood and adulthood measures to predict career success.

Although these results are important, it is important to note that in a few cases, the significance of the individual coefficients did not follow expectations. For example, neuroticism and extraversion did not predict intrinsic success, controlling for the influence of the other traits. In addition, though not hypothesized, agreeableness negatively predicted extrinsic success. Although this latter finding was unexpected, we should note that Howard and Bray (1988) did find that affability (degree to which an individual is nurturing, not aggressive, sympathetic, and supportive) was negatively related to management potential. As this construct appears to be closely related to agreeableness, it is consistent with the findings reported here. Because so little research has investigated the relationship between agreeableness and career success, future research should attempt to replicate these results with larger, more diverse samples.

In addition to showing that the effect of personality on career success is relatively enduring, these results extend prior research in another way. We are aware of no published studies of the relationship between the Big Five personality traits and multidimensional measures of career success. Most previous research investigating the possible dispositional basis of career success has investigated traits in isolation, or studied a single dimension of career success. Furthermore, although the Intergenerational Studies have been used in one study appearing in the organizational literature (Staw, Bell, & Clausen, 1986), this study investigated only one aspect of personality (affective disposition), and only one of the career outcomes of our study (job satisfaction). Thus, the present results can be of value in theory building regarding the dispositional antecedents of career success.

Results indicated that, as a group, the Big Five traits explained significant incremental variance in both dimensions of career success even after controlling for the influence of general mental ability. Very little research has investigated the validity of the Big Five personality traits controlling for general mental ability.<sup>3</sup> Whereas the variance explained

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<sup>3</sup>A few studies have investigated the incremental validity of personality traits controlling for general mental ability. For example, reporting on Project A results, McHenry et al.



by the Big Five traits did remain significant, controlling for general mental ability did reduce the variance explained by the Big Five traits. This reinforces the need to account for general mental ability in studies investigating the predictive validity of personality traits. This was particularly true in this study, as the correlations of general mental ability with several of the Big Five traits were higher than that often observed, though consistent with the magnitude and pattern of correlations in other research (e.g., Ones, 1993).<sup>4</sup>

Results also revealed that general mental ability was related to career success. We are not aware of any previous research that has linked intelligence to both measures of career success. General mental ability strongly predicted extrinsic career success; intelligent children earned higher salaries and attained higher positions in the social hierarchy later in life. Predictably, there was little unique relationship between general mental ability and intrinsic success. Recently, Ganzach (1998) found that general mental ability was uncorrelated with job satisfaction, despite positive associations between intelligence and education and job complexity. Thus, high general mental ability appears to contribute to extrinsically successful careers, but this does not translate into higher job satisfaction for extrinsically successful individuals. As Ganzach argues, this apparent paradox may be due to offsetting effects—intelligence increases job satisfaction indirectly by contributing to extrinsic success, but this advantage may be offset by the tendency of intelligent individuals to be more critical (perhaps due to higher aspirations) in evaluating their jobs.

The stability of personality is a subject of considerable debate in the personality literature (Heatherton & Wienberger, 1994). We are not aware of any previous studies of the stability of the Big Five traits over as long a period as in this study. Thus, this study provides a relatively unique perspective on the stability of the Big Five traits. All correlations were nonzero, and moderately strong in magnitude. Contrary to popular belief, results did not suggest that personality is more malleable for younger individuals than for older individuals. Furthermore, some

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(1990) found that an omnibus personality/temperament factor contributed little to the prediction of core technical or general soldiering proficiency once general mental ability was controlled. However, in that study, it was not clear what construct this general factor measured, and regardless of what traits were measured, they were not classified according to the Big Five framework, nor were they related to career success.

<sup>4</sup>In light of research by Sackett, Gruys, and Ellingson (1998) investigating personality-ability interactions, we investigated the interaction between general mental ability and the Big Five traits in predicting career success. Whether using childhood or adulthood measures of career success, or subjective or objective facets of success, in no case did the personality  $\times$  ability interaction reach significance. Thus, like Sackett et al. with respect to job performance, we found little support for the ability  $\times$  personality interaction with respect to career success.

of the traits appeared to be more stable than were others. Averaging across all five time periods, agreeableness was the least stable trait (average true  $r = .43$ ) while conscientiousness was the most stable (average true  $r = .59$ ). To our knowledge, this study is the first to investigate the stability of the Big Five traits for children and adults. The longitudinal consistency of these traits helps explain why behaviors reflected in the Big Five constructs are able to predict career success up to 50 years later. The stability and predictive validity of the Big Five traits also challenge a situationalist explanation for attitudes and behaviors in organizations (Davis-Blake & Pfeffer, 1989). If situational effects provide an alternative explanation for the findings, it appears they only could reflect experiences in early childhood.

Results also provided limited support for the gravitational hypothesis. Previously, the gravitational hypothesis has been tested with respect to cognitive ability, showing that individuals tend to be attracted to jobs commensurate with their abilities (Wilk et al., 1995). When occupations were classified according to Holland's RIASEC codes, ability and personality did show some relationship with occupational membership. For example, intelligent individuals tended to be more attracted to investigative occupations, extraverts were less attracted to realistic occupations, and open individuals were less attracted to conventional occupations. The associations that were statistically significant, however, were relatively sparse and the variance accounted for was modest (average  $R^2 = .09$ ). It must be remembered, though, that this was a rigorous test—the individual differences and occupations were measured with independent methods, the results were longitudinal, and there are measurement limitations with Holland's classification (e.g., use of dichotomous categories for dimensions)—which may have reduced the empirical associations. Because the present results are suggestive of some degree of gravitation based on personality, we encourage further research on this issue.

A limitation of this study is the nature and composition of this sample. This sample initially was derived from only one area of the country (San Francisco Bay area) during the late 1920s and early 1930s. Thus, not only is the sample restricted geographically, but the participants grew up during the Great Depression. One might argue that there may be limits to the generalizability of these findings due to the influence of these unique economic and social forces. Furthermore, given the 50-year time frame of the study, sample attrition is a potential concern. Although this is certainly possible, there are reasons to expect these results to generalize. First, although attrition may influence average scores on the personality traits, it would not necessarily moderate the relationship between the traits and career success. In addition, the adult samples were found to be generally representative of the earlier samples

with respect to demographic and personality attributes (Block, 1971). Finally, the attrition rate over the course of the study was quite low (Clausen, 1993).

We should also note that the results do not reveal causal processes (or even causation). As was noted earlier, most of the research in industrial-organizational psychology on the Big Five traits and general mental ability has concerned the degree to which these individual differences correlate with job performance. Because job performance is one likely mediating mechanism between these traits and career success, future research should investigate the degree to which the effects of individual differences on career success are mediated through job performance. Although a mediating effect of job performance would not change the total effect of personality on career success, it would better illuminate the causal nature of the relationship than was possible in this study.

Several practical implications are suggested by the findings. Successful careers are implicated with and, indeed, are often dependent upon, job and organizational success. Thus, though career success is an individual outcome, it is both dependent upon and contributes back to organizational success. Accordingly, traits that make individuals successful in their careers are likely to be the same ones that make individuals successful in their jobs, and help organizations to be successful in their endeavors as well. In this case, organizations will be better off selecting individuals who are conscientious and emotionally adjusted. This implication is buttressed by the finding that conscientiousness and emotional stability are the two Big Five traits most consistently related to job performance (Barrick, Mount, & Judge, 1999).

For the individual, there would appear to be practical implications as well. The general question is, "Is it worthwhile for an individual to know he or she lacks conscientiousness or adjustment, when this deficiency may hinder his or her career?" We would answer in the affirmative. To be sure, there may be limits to what we can do about the causes of our failures, but if we know our tendencies, we are better prepared to counteract their effects. For example, an individual low in conscientiousness may have had his or her career inhibited by being undependable, disorganized, and careless. Surely if this person is to subdue these weaknesses, he or she should know about his or her inherent tendencies to engage in such behaviors. At the very least, knowing oneself can aid in gravitating to occupations commensurate with one's personological orientations, something our results also support.

Finally, the general finding that individual differences assessed in childhood have appreciable stability and substantial predictive validity adds to our knowledge base regarding the nature and implications of

the 5-factor model of personality and general mental ability. The multiple correlation between these individual differences and extrinsic success was .64, and this does not even take into account the downward biasing effects of measurement error. Perhaps the primary reason for the strong, enduring relationships between personality and career success was the means by which personality was measured. Mount, Barrick, and Strauss (1994) showed that observer ratings of the Big Five traits were more strongly related to job performance than were self-reports. In this study, that personality was measured by multiple, trained observers likely contributed to the strong findings. Future research should attempt to replicate these results and develop process models that may explain why conscientiousness, neuroticism, and general mental ability have such apparently enduring associations with career success.

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