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A Repertory Grid Assessment of Traitedness and Its Relation to the Validity of the NEO PI-R Conscientiousness Scale

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A REPERTORY GRID ASSESSMENT OF TRAITEDNESS AND ITS RELATION

TO THE VALIDITY OF THE NEO PI-R CONSCIENTIOUSNESS SCALE

by

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ABSTRACT

A REPERTORY GRID ASSESSMENT OF TRAITEDNESS AND ITS RELATION TO THE VALIDITY OF THE NEO PI-R CONSCIENTIOUSNESS SCALE.

Susan Nancy Heidal-Schiltz
Virginia Consortium Program in Clinical Psychology, 1997
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Since Allport (1937) first introduced the idea that traits may vary in their relevance for particular individuals, several investigators have explored ways to operationalize the construct of traitedness in order to improve the criterion-related validity of a trait-based approach to personality assessment. Specifically, these investigators have examined the utility of traitedness indicators as moderators of trait-criterion correlations, seeking to separate those individuals who are predictable on a given trait dimension from those who are not. This study attempted to determine whether the criterion-related validity of the Conscientiousness scale from the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) varies as a function of traitedness, i.e., the relevance of the trait of conscientiousness for particular individuals.

In order to operationalize traitedness, a modified version of Kelly's (1955) Role Construct Repertory Test (Reptest) was administered to 72 undergraduate students to assess both the organization and meaningfulness of the trait of conscientiousness within their personal construct systems. Participants also completed the NEO PI-R and some alternative measures of traitedness used in previous research. It was hypothesized that the traitedness index derived from the Reptest would significantly moderate the relation between participants' scores on the NEO PI-R Conscientiousness scale and 4 objective behavioral measures.

Although results failed to support the use of the traitedness index as a moderator of trait-criterion correlations, some interesting findings were obtained for the use of the

Reptest measures as direct predictors of behavior. Among the other traitedness indicators examined, only the nonipsatized variance index displayed a significant moderator effect consistent with expectations. It is concluded that the acceptable test-retest reliability coefficients and significant direct effects obtained for the Reptest measures suggest that these personal construct-based indices reflect meaningful individual differences worthy of further investigation.

To my husband Kevin who knew I was

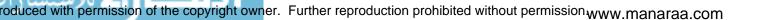going to graduate school and married me anyway

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There are several special people I would also like to thank who have made perhaps less obvious, but no less important, contributions to the completion of this
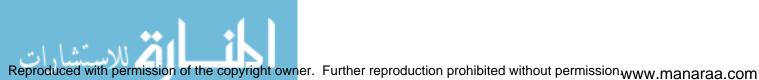
project. First among these individuals is my husband Kevin, whose selflessness in leaving his family and friends (not to mention the fishing) in Minnesota has made it possible for me to pursue my dreams. He has postponed his own education for mine, taken whatever odd jobs were available to make ends meet, and shouldered more than his share of the household responsibilities. All of this he has done with a sense of humor that lifts me, friendship that sustains me, and love that overwhelms me.

My parents have also played an immeasurable role in providing me with so many of the tools I have needed for graduate school and other adventures in life. Their faith, humility, and strength in adversity have given me the foundation from which to reach for my goals, while their confidence in my abilities has inspired me to do so. Although my father is no longer here to see me complete this challenge, his words of encouragement and pride in my achievements from a decade ago still echo in my head.

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CHAPTER I

INTRODUCTION

According to the Standards for educational and psychological testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1985), validity is the most crucial consideration in test evaluation and refers to the "appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores" (p. 9). Traditionally, various procedures for accumulating evidence to support such inferences have been classified under three principal categories: content validity, criterion-related validity, and construct validity. Of these three types of validity, only criterion-related validity is directly concerned with the effectiveness of a test in predicting an individual's behavior (Anastasi, 1976). As such, evidence of criterion-related validity is critical to the evaluation of personality inventories, as it demonstrates the systematic relation of test scores to one or more criteria of interest. It is this type of validity that constitutes the primary focus of the current study.

In particular, this study attempted to determine whether the criterion-related validity of the Conscientiousness scale from the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) varies as a function of "traitedness," or the relevance of the trait of conscientiousness for particular individuals. A modified version of Kelly's (1955) Role Construct Repertory Test was employed to operationalize traitedness, and the effectiveness of this variable in moderating the relation between participants' scores on the NEO PI-R Conscientiousness scale and several objective behavioral measures was assessed.

Efforts to improve the criterion-related validity of personality inventories have

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The model used for this dissertation was the Publication manual of the American Psychological Association (4th ed.).

been made for decades in personality assessment. One major avenue of research that can be considered relevant in this respect is comprised of the traditional "validity scales" adopted by many inventories. According to Tellegen (1988), these scales attempt to detect "deviant responding" that may indicate a technically invalid protocol (i.e., a protocol that is unlikely to be useful for criterion-related validity purposes). For example, such measures as the Minnesota Multiphasic Personality Inventory (MMPI) F scale (Dahlstrom, Welsh, & Dahlstrom, 1972) and the Personality Research Form (PRF) Infrequency scale (Jackson, 1984) yield direct counts of infrequent responses to single items that are used to screen out those individuals who respond in a statistically aberrant way (i.e., those individuals who endorse a large number of infrequently endorsed items).

A related group of measures that also attempt to detect and eliminate deviant responders includes consistency scales. As reported by Tellegen (1988), such measures as the MMPI Test-Retest Index (TR; Buechly & Ball, 1952; Greene, 1979), the MMPI Carelessness Scale (CS; Greene, 1978), and the Variable Response Inconsistency (VRIN) and True Response Inconsistency (TRIN) scales which first appeared on the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) and were later incorporated into the MMPI-2 (Greene, 1991) are composed of several two-item "miniscales" identified for their similar item content. Responses to these miniscales are assessed for their degree of consistency versus variability, and those individuals who respond in a largely inconsistent fashion are considered to have produced technically invalid protocols. As a final example of measures employed to detect deviant responding, the MMPI and MMPI-2 L and K scales attempt to identify individuals who approach the test in a defensive manner and avoid answering items frankly and honestly (Greene, 1991). As with the scales discussed above, such individuals' protocols would be considered technically invalid and, therefore, ineffective for diagnostic or predictive purposes.

In addition to the problem of technical invalidity discussed above, more general criticisms have been made of the criterion-related validity of a trait-based approach to personality assessment. For example, Mischel observed that "with the possible exception of intelligence, highly generalized behavioral consistencies have not been demonstrated, and the concept of personality traits as broad predispositions is thus untenable" (1968, p. 146) Investigators in different fields have attempted to address these criticisms of cross-situational behavioral consistency in various ways. For example, some researchers within the field of clinical psychology have sought to separate those clinical variables which are relatively enduring or "trait-like" in nature from those which are more situation specific or "state-like" (e.g., Exner, 1993; Spielberger, 1966). In many of these cases, the presence of a trait (e.g., trait anxiety) within an individual is believed to reflect a predisposition toward the experience of a psychopathological state (e.g., state anxiety) in the presence of certain situational features (e.g., perceived threat) (Spielberger, Gorsuch, & Lushene, 1970). In this way, clinical researchers have attempted to account for cross-situational variability while still allowing for more enduring characteristics of personality.

Other researchers within the fields of personality and social psychology have addressed the criticisms noted above by attempting to improve the criterion-related validity of personality inventories through a moderator variable approach (Chaplin, 1991). According to Anastasi (1976), classic psychometric theory assumes that statistical prediction errors are a property of the test rather than the test taker and that these errors are randomly distributed among persons. However, the moderator variable approach eschews this assumption and employs prediction models that examine interactions between persons and tests, implying that the same test may be a better predictor for certain subsets of persons than it is for others (Anastasi, p. 177). This approach can be distinguished from the aberrancy indicators discussed above, in that moderator variables are generally thought to reflect relatively enduring and/or

meaningful characteristics of individuals while measures of deviant responding are believed to tap "faultiness" factors (e.g., poor reading ability, deliberate random responding) that are not necessarily enduring or meaningful (Tellegen, 1988, p. 632).

The search for moderator variables that qualify the relation between trait measures and relevant behavioral criteria has included such examples as self-monitoring (Snyder, 1974) and public and private self-consciousness (e.g., Cheek, 1982). As discussed by Chaplin (1991), investigators in this tradition have sought to separate individuals who are predictable on all trait dimensions from those whose behavior is apparently unpredictable across traits and more likely to be determined by situational variables. Another line of research has endeavored to identify moderators that specify within each person which traits or behaviors will show the highest consistency (Zuckerman, Bernieri, Koestner, & Rosenthal, 1989). These studies assume that for each trait measure and its associated behavioral criteria, some individuals will be more predictable than others. The task thus becomes one of identifying the predictable individuals and eliminating the others from the sample in order to reap the benefits of improved predictive validity coefficients.

The term "metatrait" was first put forth by Baumeister and Tice (1988) to refer to a moderator variable that could supposedly separate predictable individuals from unpredictable ones and was thought to derive from the relevance of a particular personality trait dimension for a particular individual. Specifically, a metatrait was defined as "the trait of having versus not having a trait" (p. 571), and thus as a separate issue (at least theoretically) from an individual's self-reported standing on a given trait dimension. According to Baumeister and Tice's metatrait hypothesis, "traited" individuals are those whose personalities contain the trait dimension of interest, while "untraited" individuals are those whose personalities lack this trait dimension. "Traitedness," therefore, refers to the degree to which an individual is traited for any particular trait dimension.

Although the terminology introduced by Baumeister and Tice (1988) was new to personality research, the concepts were not. Indeed, these authors cited Allport (1937) as the first theorist to suggest the idea that not all trait dimensions are equally applicable to all individuals. Specifically, Allport advocated an idiographic perspective in which emphasis was placed on the unique constellation of traits within individuals, as well as the relevance of particular traits for particular individuals. Although investigators of traitedness and similar moderator variables have generally credited Allport's notion of trait relevance as the original conceptual foundation for their work, their attempts to operationalize this construct have taken a number of different routes.

Operational Definitions of Traitedness

Bem and Allen (1974) were the first to operationalize Allport's (1937) concept of trait relevance through measures of cross-situational consistency. They hypothesized that the cross-situational correlation coefficients (i.e., criterion-related validity coefficients) for the group of individuals who identify themselves as consistent on a particular trait dimension should be significantly higher than the coefficients for the self-identified low consistency group. This study will be reviewed in detail because it became the prototype for a number of studies that followed and can be used to illustrate some important points regarding the traitedness literature in general.

In their study, Bem and Allen (1974) used two measures of cross-situational consistency—one global self-rating of variability (e.g., "How much do you vary from one situation to another in how friendly and outgoing you are?") and one intraindividual variability measure called the "ipsatized variance index." This latter measure was derived by calculating each participant's variance across a 23-item measure of conscientiousness and dividing it by his or her variance across all 86 items of the questionnaire in which the conscientiousness scale was embedded. Conceptually, this measure reflects the extent "to which an individual 'extracts' the particular trait-scale items from the total pool of items and 'clusters' them into an equivalence class" (p. 515).

These two measures of cross-situational consistency were used separately to divide participants into high and low variability groups, and intercorrelations were examined for each of these groups among self-report, mother's report, father's report, and peer's report measures for two traits (friendliness and conscientiousness) and several trait-related behavioral measures (e.g., spontaneous friendliness with an experimental confederate, promptness in returning evaluation forms, neatness, completion of course readings, etc.).

When measured by the global self-rating of variability, results demonstrated that 13 of the 15 intercorrelations among the measures for friendliness were higher for low-variability than high-variability individuals, although only six of them were significantly so. Because Bem and Allen (1974) were unable to replicate these results for the trait of conscientiousness when using global self-ratings of variability, they turned to the ipsatized variance index to classify individuals into high and low variability groups. Using this procedure, results paralleled the findings for friendliness, with 15 of the 21 intercorrelations being higher for low-variability than high-variability participants, and nine of them significantly so. Unfortunately, the authors failed to employ this latter measure for the trait of friendliness. Thus, although some encouraging results were found for the use of global self-ratings of variability and intraindividual variability measures as moderator variables, each of the two measures employed was only demonstrated to be effective for one of the two traits studied.

In general, subsequent studies have employed operational definitions of traitedness modeled after Bem and Allen's (1974) two measures, utilizing either a single-item global self-rating or some type of intraindividual variability index. These studies will be reviewed shortly along with two studies that have used an alternative measure of traitedness--participant-generated self-descriptors. First, however, it may be instructive to comment on an important aspect of Bem and Allen's study, as this point will help set the stage for the review to follow.

In discussing Allport's (1937) idiographic perspective and the construct of cross-situational consistency, Bem and Allen (1974) draw an important distinction between the consistency that exists "in the head of the investigator" and that which exists in the minds of the participants themselves (p. 509). Traditional trait-based research paradigms will yield evidence of cross-situational consistency only to the extent that participants agree with the investigator's a priori selection of the behaviors and situations to sample in assessing a trait. It is the difference between the experiencing and the observing individual's point of view. When placed in this context, findings of inconsistency on a multiple item self-report measure designed to assess a single trait (as measured by the intraindividual variability index) or on a group of objective trait-based behavioral measures may indicate no more than "a disagreement between an investigator and a group of individuals and/or a disagreement among the individuals within the group" concerning the behaviors and situations that belong together in defining a trait (p. 510).

If this is a valid argument, then it seems imperative that an investigator seeking to identify individuals who are predictable on a trait dimension of interest determine the degree to which those individuals agree with his or her definition of the trait. This is precisely why Bem and Allen (1974) chose to employ the ipsatized variance index when they failed to replicate their positive findings using a global self-rating of variability for conscientiousness (see discussion above). In essence, they reasoned that participants' definitions of conscientiousness were too discrepant with their own (and with each other's) to yield meaningful results for a single-item measure. Thus, they turned to an intraindividual variability measure to determine which participants agreed with their definition and which did not. Not surprisingly, the former participants proved to be more predictable than the latter.

A related point that can be mentioned in connection with Bem and Allen's (1974) study concerns the choice of criterion measures to employ when studying

traitedness. In my view, it is somewhat ironic that Bem and Allen, who spoke so cogently about the need to account for the participant's own definition of the trait dimension in question, proceeded to use the measures of mother's, father's, and peer's report without acknowledging these individuals as observers who may have their own definitions of the trait. This, of course, could lead them to evaluate the participant's consistency across scale items in terms of their own cognitive organization of the behaviors and situations presented. For example, the item "How carefully do you double-check your term papers for typing or spelling errors?" may be cognitively related to the trait of conscientiousness for the participant but to the trait of compliance/approval-seeking for the participant's friend, thus leading them to evaluate the participant differently on this item, regardless of how consistent the participant has reported him or herself to be on the trait of conscientiousness.

Although the use of peer ratings as criterion measures does not preclude the possibility of finding significant effects (e.g., Zuckerman et al., 1988), it seems likely that objective measures of very specific, concrete behaviors, which avoid the problem of bringing in another individual's definition of the trait in question, will prove to be more useful in detecting any moderator effects of traitedness that may be present. It is interesting to note in this respect that the ipsatized variance index employed in Bem and Allen's (1974) study tended to display stronger moderating effects for the relationship between self-report and objective behavioral criteria than for the relationship between self-report and other report. Unfortunately, most of the studies of traitedness to date (that have frequently failed to find significant moderating effects) have relied exclusively on peer ratings as criterion measures.

Single-item measures. Following Bem and Allen's (1974) lead, several investigators have utilized single-item global self-ratings to operationalize the construct of traitedness. For example, Zuckerman et al. (1988) examined the moderating effects of self-reported trait relevance, consistency, and observability on the correlation

between self-ratings and peer ratings across 11 personality traits. In this study, consistency and observability of behavior were rated on two 9-point scales (e.g., "How publicly observable is your behavior on the emotional-calm dimension?"), and a rank order scale was used to measure trait relevance by instructing participants to rank the 11 trait dimensions with respect to their importance or relevance to the participant's behavior. Results of moderated multiple regression analyses displayed significant moderator effects for all three of these measures when they were entered into the analyses alone. However, only trait relevance and consistency showed significant moderator effects when all variables were entered into the same regression analysis, leading the authors to suggest more limited support for the measure of observability.

In a similar study of the correlation between self-ratings and peer ratings across ten 9-point bipolar adjective scales, Zuckerman et al. (1989) employed both ranking and rating procedures for the moderator variables of trait relevance, consistency, and observability. Using the ranking procedure, the moderator effects of trait relevance and consistency approached significance, while observability was significant. When the three moderators were measured by rating scales, their effects were smaller and nonsignificant, leading the authors to conclude that moderator effects are more likely to be found using ranking measures. Additionally, Koestner, Bernieri, and Zuckerman (1994) found that the moderator effects of trait relevance (using a ranking procedure) were present only for those individuals who rated a given trait as low in social relevance (i.e., "How important is this trait to whether others will like you and want to be with you?") (p. 28). The authors interpreted this finding to indicate that individuals will behave more variably across situations which arouse their need to be liked, regardless of how relevant a particular trait is to their identity.

Although the results of the three studies reported above demonstrate at least somewhat favorable findings for the moderator effects of self-reported trait relevance, consistency, and observability on the correlation between self-ratings and peer ratings,

the majority of studies utilizing this methodology have reported disappointing results (e.g., Chaplin & Goldberg, 1985; Cheek, 1982; Paunonen & Jackson, 1985). Additionally, the few studies that have employed single-item self-report measures as moderators of the relation between self-ratings and objective behavioral measures or among several objective behavioral measures have also yielded mixed or negative results (Bem & Allen, 1974; Chaplin & Goldberg, 1985; Mischel & Peake, 1982).

Several criticisms have been leveled against the single-item approach to assessing traitedness that may help account for the apparent inability of researchers to replicate findings when using these measures. First of all, a number of investigators have emphasized the unreliability of psychometric measurement that comes with reliance on a single item (Baumeister & Tice, 1988; Bem & Allen, 1974; Rushton, Jackson, & Paunonen, 1981). Thus, the classification of participants into high consistency and low consistency or traited and untraited groups may be highly unstable across measurement occasions when utilizing this method.

Secondly, according to Baumeister and Tice, a single item judgment of consistency "requires the individual to integrate, evaluate, and synthesize what may be a diverse aggregate of behavioral recollections, while tempted to give the socially desirable answer of high consistency" (1988, p. 580). Similarly, Mischel and Peake (1982) present empirical evidence to demonstrate that an individual's overall impression of consistency in his or her trait-related behaviors may be based on the temporal stability of a few behaviors that the individual considers to be prototypic of the trait rather than on pervasive cross-situational consistencies. This raises questions about the construct validity of single-item consistency measures and underscores the need to use criterion measures that most individuals would consider prototypic of the trait in question when using these indices. Thirdly, although measures of traitedness are theoretically presumed to be independent of an individual's self-rating (i.e., score) on the items that comprise a trait measure, Paunonen (1988) has demonstrated that single-

item measures of traitedness may be confounded with an individual's self-reported standing on a given trait dimension.

To test the hypothesis that measures of traitedness and trait level are correlated, Paunonen (1988) utilized four single-item indices of traitedness--behavior consistency (e.g., "How much do you vary from one situation to another in how Meek or Arrogant you are?"), trait importance (e.g., "How important or central to your self-description is the dimension Meek versus Arrogant?"), behavior frequency (e.g., "On a weekly basis, how frequently do you engage in behaviors related to Meek or Arrogant?"), and behavior observability (e.g., "Generally, how publicly observable or visible to others are your behaviors on the dimension Meek versus Arrogant?") (p. 607). Results confirmed his hypothesis, demonstrating that all four indices of traitedness were nonlinearly related to measures of trait level across 20 personality dimensions. Paunonen reasoned that those individuals who are furthest from the midpoint on a bipolar dimension, whether at the upper or lower extreme, are likely to judge themselves as consistent in trait-related behaviors, to perceive the trait as being important to their self-description, to frequently engage in trait-related behaviors, and to view their trait-related behaviors as being highly visible to observers. This curvilinear relationship with self-reported trait level raises the possibility of spurious moderator effects due to restriction and inflation of range effects--an issue that will be discussed in greater detail below, as it is an especially pertinent criticism of intraindividual variability measures.

A fourth criticism that can be mentioned for single-item measures of traitedness is poor convergent validity. Summarizing the results of several studies that have investigated the correlations among trait relevance, consistency, and observability, Zuckerman et al. (1989) reported relatively weak relations among all three moderators indicating that they are "relatively independent variables" (p. 283). This is somewhat disconcerting given that these indices have been used somewhat interchangeably to operationalize traitedness. Based on these and similar findings of poor convergent

validity, Zuckerman et al. (1988) and Zuckerman et al. (1989) recommended combining these single-item moderators in the same regression analysis and demonstrated that criterion-related validity coefficients may increase linearly as a function of the number of contributing moderator effects. However, other attempts to evaluate joint moderator effects for traitedness have been less successful (Chaplin, 1991). Finally, as discussed above, single-item measures of traitedness assume that participants agree with the investigator (and with one another) concerning the definition of the trait in question. As argued by Bem and Allen (1974), however, this assumption may often be erroneous.

In summary, single-item approaches to the assessment of traitedness require individuals to provide a global self-rating (or ranking) of the importance or relevance of a particular trait to their personality. Such measures as trait relevance, consistency, and observability have yielded a mix of positive and negative results when employed as moderators of the relation between self-ratings and peer ratings, between self-ratings and objective behavioral measures, and among several objective behavioral measures. Problems of unreliability, questionable validity, and differing definitions of the trait dimension between participant and investigator have undoubtedly contributed to these equivocal findings and make the utility of single-item measures seem doubtful for the assessment of traitedness.

Intraindividual variability measures. In addition to single-item measures, the intraindividual variability index is another measure of traitedness that can be traced back to Bem and Allen's (1974) study. As discussed earlier, these investigators utilized an ipsatized variance index derived by dividing each participant's variance across items on a specific scale by his or her variance across items on the entire questionnaire in which the scale was embedded. Although Bem and Allen found a significant moderating effect for this measure when examining the correlation between self- and peer ratings and between self-ratings and objective behavioral criteria for the trait of conscientiousness, other investigators have either failed to replicate this finding

(Paunonen & Jackson, 1985) or have reported mixed results depending on the trait studied (Chaplin, 1991; Chaplin & Goldberg, 1985) or the criterion measures employed (Mischel & Peake, 1982). These latter studies have tended to use more rigorous methodology than the Bem and Allen study (e.g., larger sample sizes, a greater number of traits, more criterion measures, etc.) and therefore pose some serious questions concerning the utility of the ipsatized variance index as a moderator of trait-criterion correlations. Additionally, as Paunonen and Jackson point out, because this index is derived by dividing a participant's variance across items on a specific scale by his or her variance across items on the entire questionnaire, it confounds the variability of item responses within a scale with the variability of item responses across scales--a fact that undermines its validity as a measure of single-trait consistency.

To illustrate this problem, Paunonen and Jackson (1985) give the example of two participants who endorse the 23 items of Bem and Allen's conscientiousness scale with the exact same responses, using, alternately, both extreme end points of the 7-point rating scale. This would produce identical numerators for each participant's ipsatized variance score. If one participant then went on to endorse the 24 items of the friendliness scale with consistent ratings of 7, while the other endorsed all of these items with a rating of 1, and if their responses to all other items on the questionnaire were identical, the ipsatized variance scores for conscientiousness would be 1.03 for the first participant and 2.08 for the second, despite the fact that their response consistency was identical on all of the traits assessed by the questionnaire. The cause of the difference in their estimated level of traitedness for conscientiousness would be their differing levels of friendliness (i.e., the denominator of the ipsatized variance index). Accordingly, Paunonen and Jackson state that they "can conceive of no theoretical rationale for incorporating such a confound into a measure of single-trait consistency" (p. 491).

Given this criticism that the denominator of the ipsatized variance index clouds its interpretability, some investigators have simply dropped the denominator to derive a "nonipsatized" variance index (i.e., the interitem variance of scale responses on the scale of interest) (e.g., Baumeister & Tice, 1988; Britt, 1993). Using this measure, participants who show low interitem variance (i.e., high consistency) are considered to be traited for the dimension of interest, while participants with high interitem variance (i.e., low consistency) are considered untraited. Baumeister and Tice successfully used this index with Rotter's (1966) Locus of Control scale, demonstrating that the duration of practice for a performance task depending on "skill and effort" was significantly related to locus of control scores for traited but not for untraited participants (p. 590). Similar (though marginal) results were also found for the relation between locus of control scores and attributions for the causes of performance.

Britt (1993) also successfully used the nonipsatized variance index as a moderator variable in his investigation of the relation between self-report measures of personal identity and private self-consciousness, between self-report measures of social identity and public self-consciousness, and between self-report measures of extraversion and interpersonal locus of control. Based on the positive findings of this investigation, Britt concluded that the "implications of the metatrait construct for measurement theory are profound" (p. 561). For example, he stated that researchers attempting to validate a trait construct should obtain validity coefficients separately for traited and untraited individuals, thus allowing them to examine the relation between the trait construct and other variables in the nomological net for those individuals for whom the trait is applicable. Additionally, because the average interitem variability of a trait scale (across individuals) is likely to be related to its internal consistency, scales measuring different traits may display different internal consistency coefficients not only because of variable item quality, but also because the traits being measured may be differentially applicable within a sample of individuals (i.e., the more individuals who are traited for

a particular trait dimension, the higher the internal consistency coefficients are likely to be for scales that measure that trait dimension).

Evaluating the effect of the nonipsatized variance index on the correlation between a composite of self-report measures and a composite of other-report measures across eight different traits, Chaplin (1991) obtained an average moderator effect size of only .05 (reflecting the partial correlation of the cross-product between self-reported trait level and the nonipsatized variance score) using moderated multiple regression. Although this finding challenges the positive results reported above for the nonipsatized variance index, it may be important to keep in mind the use of other-report measures as validity criteria in this study as opposed to the self-reports and objective behavioral measures employed by Baumeister and Tice (1988) and Britt (1993). As discussed earlier, only these latter measures eschew the problem of differing trait definitions between the participant and his or her peers, and thus may be more likely to yield significant moderating effects for traitedness measures.

Although intraindividual variability as assessed by the nonipsatized variance index would seem to represent the most ideal measure of traitedness discussed thus far, it has not been without its criticisms. Perhaps the most serious stumbling block encountered by this measure (and indeed, by all intraindividual variability measures) has been its demonstrated relation to trait extremity (i.e., the extremity of an individual's self-rating on a trait measure) (Paunonen & Jackson, 1985; Rushton et al., 1981). As mentioned earlier, measures of traitedness are theoretically presumed to be independent of an individual's self-rating (i.e., score) on the items that comprise a trait measure. In practice, however, Paunonen and Jackson have demonstrated a curvilinear relation between intraindividual variability and trait level, such that variability is smallest for the extreme scores and greatest for scores near the mid-point. This, of course, makes sense, because an individual can only earn an extremely high or low score on a trait measure if he or she consistently endorses the most extreme responses for each item. However, the

flipside of this argument, that an individual can only obtain a moderate score on a trait measure by responding inconsistently across items, does not necessarily hold. Although such individuals would indeed tend to earn moderate scores, such scores could also be obtained by individuals who consistently endorse moderate responses across items (Rushton et al.).

Nevertheless, even modest statistical associations between trait level and variability can pose difficulties for the use of intraindividual variability measures as moderator variables. First of all, such associations raise questions about the validity of the intraindividual variability construct. Secondly, they can lead to the identification of spurious moderator effects due to restriction and inflation of range effects. In other words, the correlation of trait scores with outcome criteria will be inflated for those individuals who show a greater range on the trait dimension of interest (i.e., those individuals who fall at the extremes) and attenuated for those individuals who show a smaller range because they tend to cluster at the mid-point of the scale. This phenomenon could mimic a significant moderator effect for intraindividual variability measures, because the individuals who fall at the extremes of the scale would tend to display less intraindividual variability than those at the mid-point (Paunonen, 1988; Paunonen & Jackson, 1985). Consequently, any study that employs intraindividual variability measures as moderators of the predictability of behavior must utilize experimental or statistical safeguards to control for potential curvilinear relations with trait level (Paunonen, 1988). Indeed, most of the studies reviewed above have attempted to control for this potential confound through such methods as matching traited and untraited participants according to trait level.

Although the potential confound with trait level is perhaps the most serious criticism of intraindividual variability measures as indicators of traitedness, other criticisms have also been made. For example, Tellegen (1988) emphasizes that these measures are subject to substantial sources of variation other than traitedness, that is,

variation due to technical invalidity (e.g., deliberate random responding, poor reading ability, losing one's place, etc.). Accordingly, Tellegen argues that intraindividual variability is likely to be unreliable as a measure of traitedness. He concludes that "even though increased intra-individual variability is the cardinal consequence of decreased traitedness, it is affected by too many things to be a strong indicator of any one thing, including traitedness" (p. 659).

Baumeister (1991) has addressed the issue of reliability empirically by examining the stability of the nonipsatized variance index for three separate scales across a 2-week interval. Results demonstrated a test-retest correlation coefficient of .74 for the nonipsatized variance index derived from a self-esteem measure; .66 for a self-consciousness measure; and .69 for a locus of control measure, indicating adequate reliability for this index. Moreover, these reliability coefficients did not appear to differ as a function of traitedness (i.e., both traited and untraited participants displayed similar levels of stability on the nonipsatized variance index across all three scales). Baumeister concludes that these levels of stability reflect a meaningful construct and contradict the notion that the scores of untraited individuals are merely due to random or erratic responding (at least for the nonipsatized variance index--the reliability of the ipsatized variance index remains untested). However, these coefficients are still low enough to leave substantial room for error variance due to technical invalidity. Indeed, the notion that such faultiness factors as low intelligence and poor reading ability contribute to high interitem variance is given credence by the demonstration of a linear relation between individual consistency scores on several personality scales and the education level of the samples (McFarland & Sparks, 1985).

To summarize the review of intraindividual variability measures, two indices have been employed to capture the interitem consistency versus variability of individuals' responses on a trait scale. The ipsatized variance index is derived by dividing a participant's variance across items on a specific scale by his or her variance

across items on the entire questionnaire in which the scale is embedded. This index has been criticized for confounding the variability of item responses within a scale with the variability of item responses across scales, thus leading most investigators to abandon its use in favor of the nonipsatized variance index, which is simply the variance of an individual's responses across a single scale. This latter measure has tended to yield more promising results than the ipsatized variance index, arguing for its greater utility in moderating trait-criterion correlations. However, both of these measures are subject to criticisms that they display a curvilinear relation with trait level, and both thus require statistical or experimental safeguards to control for this potential confound. Both measures are also subject to the criticism that they may reflect sources of variation other than traitedness (i.e., technical invalidity). However, Baumeister (1991) has demonstrated that the nonipsatized variance index may indeed be stable over time, thus reflecting something more meaningful than random or erratic responding.

Overall, therefore, intraindividual variability measures appear to have better psychometric properties than single-item measures of traitedness, although both share the problem of being at least somewhat confounded with an individual's self-reported standing on a given trait dimension. Intraindividual variability measures also have the added advantage of explicitly determining the degree to which participants agree with the investigator's definition of a given trait dimension, rather than assuming this agreement as the single-item measures do. Therefore, it seems that intraindividual variability (as assessed by the nonipsatized variance index) is the most promising measure discussed thus far for the assessment of traitedness.

One general methodological issue that can be mentioned at this point before reviewing the final operational definition of traitedness is the type of analytic technique to employ in testing for significant moderator effects. The two techniques that are widely used and that have already been mentioned briefly in connection with some of the studies above are the median split approach (e.g., Bem & Allen, 1974; Zuckerman

et al., 1989; Zuckerman et al., 1988) and the moderated multiple regression approach (e.g., Chaplin, 1991; Paunonen & Jackson, 1985). The median split approach involves dichotomizing individuals into traited and untraited groups on the basis of the median value of the moderating variable. For example, individuals who score above the median value on a single-item measure of consistency would be considered traited for the trait dimension of interest, while individuals who score below this value would be considered untraited. Evidence of a moderating effect would then be claimed if correlations between the trait rating and the criterion were significantly higher for the traited group (Bissonnette, Ickes, Bernstein, & Knowles, 1990).

The moderated multiple regression approach (Saunders, 1956), on the other hand, involves a test of whether the interaction of the trait score and the moderating variable adds significantly to their separate effects in the prediction of the criterion variable. According to Bissonnette et al. (1990, p. 570), a significant increase in R^2 when the interaction term is added to the regression equation indicates that the strength of the trait-criterion relationship varies significantly as a function of the moderating variable. The moderated multiple regression approach has several advantages over the median split approach in analyzing the moderating effects of traitedness. First of all, whereas the median split approach assumes that the moderator is a dichotomous variable that can be used to divide participants into two natural groups, the moderated multiple regression approach preserves the presumed continuous nature of the traitedness variable. Secondly, because all participants are included in the moderated multiple regression analysis whereas two subsets of participants are analyzed separately in the median split approach, the former enjoys greater power for its statistical tests. Finally, any relation between trait extremity and the measure of traitedness (as researchers have demonstrated for both the single-item and intraindividual variability measures [see above]) is statistically controlled through partial regression using the

moderated multiple regression approach (Baumeister & Tice, 1988; Bissonnette et al., 1990; Paunonen & Jackson, 1985).

Using data created by a computer simulation program to assess the performance of the median split and moderated multiple regression approaches in detecting the moderating effects of an intraindividual variability index, Bissonnette et al. (1990) demonstrated that when the median split approach was applied to confounded data in which no real moderating effect existed, it produced a high rate of spurious moderator effects. This rate was reduced to that expected by chance when the moderated multiple regression technique was applied to the same data. Furthermore, the moderated multiple regression approach consistently displayed greater power (i.e., fewer Type II errors) than the median split approach when applied to simulated data which contained genuine moderating effects. Thus, these investigators were able to empirically demonstrate the superiority of the moderated multiple regression approach over the median split approach in detecting moderator effects, adding to arguments that the former is the analysis of choice in research on traitedness (e.g., Paunonen & Jackson, 1985; Tellegen, 1988; Tellegen, Kamp, & Watson, 1982)

Participant-generated self-descriptors. One final measure that has been used to operationalize the construct of traitedness will be mentioned at this point because of its similarity to one of the measures employed in the present study. Specifically, some investigators have utilized participant-generated self-descriptors in their assessment of traitedness (Turner & Gilliam, 1979; Turner & Gilliland, 1981). In both of these studies, participants completed a self-description form that asked them to list the traits that best described themselves. These self-descriptors were then compared to the Layman-McDonald trait taxonomy (Goldberg, 1976) in order to categorize them into common trait dimensions. Using this method, Turner and Gilliland reported that only a few of the Layman-McDonald dimensions were employed by more than half of the participants in generating lists of relevant self-descriptors. Additionally, they found that

the presence versus absence of a descriptor related to assertiveness in participants' self-generated lists moderated participants' cross-situational consistency in assertive behavior. Participants who described themselves as assertive (or unassertive) behaved consistently across two experimental situations with minimal and maximal demands for assertiveness, while participants who failed to generate descriptors related to assertiveness behaved differently depending on the demands of the situation.

Although the use of participant-generated descriptors is an intuitively appealing approach for determining which traits are particularly meaningful or relevant to an individual, Turner and Gilliland's (1981) attempt to categorize these descriptors into common trait dimensions (i.e., semantically related categories) ignored the possibility that participants may have differed from one another and from the investigators in their definition of a particular trait term. Thus, for one participant, the descriptor "friendly" may have been based on her warm and empathic behaviors; while a second participant may have used the same self-descriptor to refer to his gregarious and outgoing nature. When used in combination with a standard categorizing procedure, therefore, this measure shares the criticism of single-item measures concerning their failure to determine the degree to which participants agree with the investigator (and with one another) concerning the behaviors and characteristics that belong together in defining a trait. However, if participants were allowed to categorize their own descriptors, thus defining their own trait dimensions, it appears that this measure may be particularly useful in the assessment of traitedness because it involves trait terms that are self-generated and presumably particularly meaningful to participants.

In conclusion, attempts to operationalize the construct of traitedness have taken at least three distinct routes, two of which can be traced back to Bem and Allen's (1974) study which is now cited as a classic in this area of research. Single-item measures require participants to provide a global self-rating of the importance (i.e., consistency, observability, relevance, etc.) of a particular trait to their personality. Studies utilizing

these measures as moderators of trait-criterion correlations have yielded inconsistent findings, which are at least partially attributable, no doubt, to the questionable reliability and validity of these measures.

Intraindividual variability measures, on the other hand, are generally thought to have better psychometric properties than single-item measures, although both measures are at least somewhat confounded with an individual's self-reported standing on a given trait dimension. Additionally, as indicators of the degree of interitem variability of individuals' responses on a trait scale, intraindividual variability measures may reflect faultiness factors (e.g., deliberate random responding) that have little to do with traitedness (Tellegen, 1988). One of the intraindividual variability measures, the ipsatized variance index, has the added disadvantage of confounding the variability of item responses within a scale with the variability of item responses across scales, a fact that has led many investigators to abandon its use in favor of the nonipsatized variance index. This latter measure appears to be the most promising indicator of traitedness developed thus far.

Finally, the use of participant-generated self-descriptors in the assessment of traitedness involves categorizing participants' self-generated characteristics into common trait dimensions to determine which traits are particularly meaningful to their self-descriptions and thereby identify those dimensions along which their behavior is most likely to be predictable. This measure has proven to be a successful moderator of cross-situational consistency (Turner & Gilliland, 1981) and possesses intuitive appeal because of its high probability of capturing those traits that are most meaningful to participants (although the categorization of these traits into common trait dimensions seems to negate this advantage somewhat).

In returning to the point originally emphasized by Bem and Allen (1974) concerning the difference between the experiencing and the observing individual's point of view, it is clear that out of these three diverse measures of traitedness, only the

intraindividual variability measure seeks to determine the extent of agreement between these two perspectives by assessing the degree to which participants agree with the investigator's definition of the trait in question or the specific organization of behaviors and characteristics that are related to one another in defining a trait. The fact that the intraindividual variability measure has enjoyed the greatest success in moderating trait-criterion correlations speaks to the importance of this organization component.

On the other hand, another distinct line of reasoning regarding the construct of traitedness can be seen in investigators' attempts to determine the meaningfulness of a particular trait for an individual's personality through such means as global self-ratings (i.e., single-item measures) and participant-generated descriptors. These measures capture an aspect of traitedness that intraindividual variability measures simply cannot, and seem to represent a second distinct component of traitedness. Thus, for example, although the intraindividual variability measures can determine whether participants agree with the investigator's organization of the trait of dominance (i.e., the behaviors and situations that belong together in defining this trait), only the second group of measures can ascertain whether or not the trait of dominance is meaningful in guiding participants' behaviors. In sum, it seems logical that questions concerning both the organization and meaningfulness of a particular trait may be essential to the assessment of traitedness. As of yet, no studies have attempted to combine these two components in a single investigation, perhaps accounting for some of the inconsistent findings in this area of research. Thus, in an effort to assess the moderating effects of traitedness, this study attempted to wed the two distinct lines of reasoning that have spawned measures of organization and meaningfulness.

Present Study

The present study utilized a modified version of Kelly's (1955) Role Construct Repertory Test to assess both the organization and meaningfulness of the trait of conscientiousness within participants' personal construct systems. Scores on these two

measures were then combined to yield a single traitedness score, and the utility of this composite score in moderating the relation between participants' scores on the NEO PI-R Conscientiousness scale and four objective behavioral measures was determined through moderated multiple regression analyses.

Repertory Grid Test. Devised in 1955 by George Kelly, the Repertory Grid Test (Reptest) has been used in more than 1000 published studies and was recently described by Neimeyer as the "Rorschach or MMPI of constructivist assessment" (1993, p. 72). Based in personal construct theory, the Reptest allows participants to generate a set of elements (e.g., people they know), as well as constructs on which to rate those elements, thus resulting in a matrix of ratings where each element has a numerical rating on each construct dimension. For example, in the current study, elements consisted of a sample of people whom the participant knew well, and constructs consisted of participant-generated personality characteristics (as well as a few researcher-supplied characteristics) on which to rate those people. Quantitative analyses of the resultant matrix could then be performed to determine the structure of an individual's construing within the domain of interest.

In the current study, intraindividual principal components analyses of participants' grids allowed for a determination of the organization of self-generated descriptors within their personal construct systems, and particularly for an analysis of how closely their organization of the markers for conscientiousness (i.e., the supplied characteristics) approximated the organization of those same markers within the NEO PI-R. This constituted the measure of organization discussed above and served to assess the degree to which participants agreed with the NEO PI-R's definition of conscientiousness. Thus, this measure is conceptually similar to the measures of intraindividual variability that have been used for the same purpose. Additionally, it is empirically similar to the intraindividual variability index, as well, in that both indices examine the covariation of items or markers employed to define a trait (i.e., the degree

of consistency of participants' responses to the items comprising a single trait scale). However, the measure of organization used in the current study differs from the intraindividual variability index in its "sampling" technique. Specifically, whereas the intraindividual variability index is based exclusively on items used to describe the self, the organization score derived from the Reptest is based on participants' descriptions of self and others. This is consistent with the belief in personal construct theory that the organization and meaningfulness of one's personal constructs are based not only on the construal of one's own behavior but on one's construal of others' behavior, as well, and particularly on one's construal of the behavior of those people who are most important in one's life (Kelly, 1955). It should be noted that this extended range of sampling allows for a much larger number of items on which to base the organization score.

The measure of meaningfulness for the trait of conscientiousness was also derived from the intraindividual principal components analyses and was defined by the average factor loading of participant-generated characteristics (i.e., personal constructs) on the factor on which the conscientiousness markers loaded most highly. Thus, the relation of participants' self-generated descriptors to the trait of conscientiousness was determined empirically rather than semantically (cf. Turner and Gilliland's [1981] method discussed above). This was essential, because according to personal construct theory, the words used to describe a construct may inadequately represent the underlying discrimination involved (Bannister & Mair, 1968, p. 29). This discrimination can only be determined by the manner in which an individual actually applies the construct (i.e., through the ratings of elements on the constructs).

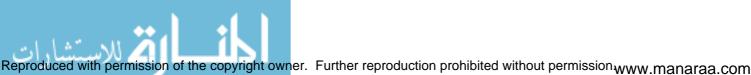Conceptually, the measure of meaningfulness in the present study is thought to reflect the importance of the trait of conscientiousness to participants' construing of self and others. In other words, the more highly their personal constructs load on their idiographic conscientiousness factor, the more important this factor is likely to be within their personal construct system, and the more prominent it is likely to be in their

appraisal of self and others. Factors such as this that subsume a number of personal constructs are called "superordinate constructs" within personal construct theory. Because constructs are what enable individuals "to chart a course of behavior" (Kelly, 1955, p. 9), those constructs that are superordinate within a construct system are likely to guide behavior in many situations. Individuals should therefore be more predictable along such dimensions. This, of course, is the premise of the current study.

In many ways, the Reptest is ideally suited to the assessment of traitedness, as the concept of an individual possessing a particular superordinate construct within his or her personal construct system is quite similar to the concept of having versus not having a particular trait dimension. In fact, references to the idea of traitedness can be seen in the personal construct literature long before Bem and Allen's (1974) classic study. For example, in discussing the implications for an individual of possessing a construct labeled "powerful versus weak," Bannister and Mair (1968, p. 27) state, "Whether he sees himself as powerful or weak is of interest to a psychologist, but it is secondary to the fact that the person has ordered his world and himself with respect to the powerful-weak dimension."

Although several personal construct researchers have examined the organization of personal constructs derived from the Reptest through intraindividual principal components analyses, the majority of these investigators have attempted to measure such individual difference variables as cognitive complexity (e.g., Ashworth, Blackburn, & McPherson, 1982; Cochran, 1977; Crisp & Fransella, 1972; Emerson, 1982; Ryle & Breen, 1972; Space, Dingemans, & Cromwell, 1983; Winter & Gournay, 1987). This typically involves an examination of the variance accounted for by the first one or two factors as a measure of complexity or differentiation. However, no researchers have used the Reptest in the manner in which it was used here or have even attempted to examine all of the factors derived from an individual's principal components analysis.

Once the organization and meaningfulness scores were calculated in the current study, they were combined in a linear fashion to yield a single index of traitedness, such that equal weight was given to each of these two concepts. This score was then entered into moderated multiple regression analyses to determine its effect on the criterion-related validity of the NEO PI-R Conscientiousness scale.

Revised NEO Personality Inventory (NEO PI-R). The NEO PI-R is a self-administered personality inventory that measures the five major domains of normal adult personality traits, labeled Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. This five-factor model of personality has emerged in numerous factor analytic studies across decades of research (e.g., Digman & Takemoto-Chock, 1981; Norman, 1963; Tupes & Christal, 1961). It has been shown by Goldberg (1990) to be robust across different factor analytic procedures, and self-ratings as well as peer ratings. Moreover, John (1990) has described several cross-linguistic studies that have been conducted thus far in which similar structural dimensions have emerged in languages other than English. Finally, McCrae and Costa (1991) point out that the same five factors have been found in children, college students, and older adults. Because the NEO PI-R was developed largely on the basis of factor analysis, the measure of organization described above appears to be a particularly appropriate index of the degree to which participants agree with the test developers' definition of conscientiousness, in that a participant's intraindividual factor is compared to the interindividual factor identified by the test developers.

In addition to factor analytic support for the NEO PI-R, extensive information is available concerning its reliability and validity, most of which is quite impressive (e.g., see Costa & McCrae, 1992). However, relatively few studies have been conducted examining the ability of the NEO PI-R scales to predict objective behavioral criteria, and the few that have been done have focused primarily on the Conscientiousness scale. For example, Dollinger & Orf (1991) found conscientiousness to be a successful

predictor of course grade, objective test performance, and independent credit efforts. Additionally, Digman and Takemoto-Chock (1981) reported the results of some studies that have found a positive relationship between conscientiousness and academic achievement, as measured by high school grades and first year college grades. Because of this trait's demonstrated relation to a number of objective behavioral criteria, and because significant moderator effects had been demonstrated in the past when using this trait in the context of research on traitedness (e.g., see Chaplin, 1991), it was utilized in the present study to examine the utility of the traitedness index in moderating the relation between scores on the Conscientiousness scale and four objective behavioral measures: college grade point average, introductory psychology course grade, punctuality in arriving for the experiment, and compliance with a written instruction to confirm attendance by telephone prior to the experiment.

<u>Hypothesis</u>

The main hypothesis of the current study was that scores on the traitedness index, as operationalized by the Reptest, would significantly moderate the relation between scores on the NEO PI-R Conscientiousness scale and college grade point average, introductory psychology course grade, punctuality in arriving for the experiment, and compliance with a written instruction to confirm attendance by telephone prior to the experiment.

CHAPTER II

METHOD

Participants

Seventy-six undergraduate students taking introductory psychology courses at the College of William and Mary were recruited through posted announcements of a study pertaining to the description of self and others. Seventy-two of these students (37 men and 35 women) completed both sessions of the study. Participants ranged in age from 17 to 31 years (mean age = 18.9 years) and were predominantly Caucasian (87.5%). Five of the participants (6.9%) described themselves as Asian or Asian American, 3 (4.2%) as African American, and 1 (1.4%) as Hispanic American. Prior to conducting the study, the proposed research project was reviewed and approved by the Human Subjects Institutional Review Board within the Department of Psychology at the College of William and Mary. All participants who completed both sessions of the study received course credit for their participation.

Measures

Assessment of traitedness. In order to reflect the conceptual definition of traitedness proposed in the current study, the assessment of traitedness for each participant consisted of two components: a measure of organization and a measure of meaningfulness. All participants completed a computerized version of the Repertory Grid Test (see below) in order to produce the matrix of ratings that was submitted to an intraindividual principal components analysis. Because each individual's matrix included ratings of markers from the NEO PI-R Conscientiousness scale, an analysis of the factor loadings for each of these markers within each participant's idiographic factor structure was possible (see below). This allowed for a determination of both the organization and meaningfulness of these markers within the individual's own construct system. These measures of organization and meaningfulness were then combined to yield a measure of traitedness for each participant.

Organization was assessed by selecting for each participant the factor for which the sum of the Conscientiousness scale marker loadings was greatest and then dividing this sum by the number of markers (i.e., six) to obtain an average marker loading. Markers loading in the direction opposite to that predicted by the NEO PI-R (relative to one another) were subtracted from the total loading rather than added to it. This allowed for a determination of how closely each participant's organization of the markers approximated the organization of those same markers within the NEO PI-R (i.e., the extent to which participants agreed with the NEO PI-R's definition of conscientiousness).

Meaningfulness was assessed by determining the average factor loading of personal constructs on the factor selected as the "best" factor for the NEO PI-R markers (i.e., the factor on which the sum of the marker loadings was greatest [see above]). This number was then multiplied by the organization score to yield a traitedness score for each participant. In this way, the organization and meaningfulness scores were assumed to be weighted equally because both scores can theoretically vary between 0 and 1. Thus, if an individual's idiographic factor contained all of the markers for conscientiousness (yielding a high organization score) but no personal constructs, the individual would be described as having an organized conscientiousness factor that is not personally meaningful. This combination would yield a low traitedness score. Similarly, an individual with a low average marker loading on a factor with a large proportion of personal constructs would also obtain a low traitedness score. In this way, the scoring of traitedness reflected the hypothesized importance of both organization and meaningfulness (see Appendix A for an example of calculating the traitedness index).

Repertory Grid Test (Reptest). The Reptest utilized in the present study is a modified and computerized version of Kelly's (1955) Role Construct Repertory Test that allows respondents to generate their own personal constructs on which to rate

acquaintances. It begins with a practice session that is similar to the test itself and provides respondents with an opportunity to navigate through the different sections of the test and familiarize themselves with the various keyboard responses required. Both the practice session and the actual test provide instructions to the respondent on each screen. Furthermore, the test is "user friendly" in that respondents are notified of any mistakes made (e.g., entering the same personal construct twice) and provided with an opportunity to correct these.

The first section of the test requests respondents to generate a list of 19 people whom they know well by asking them to list individuals who correspond to specific role titles (i.e., mother, father, sister, brother, significant other), as well as people who are different from and similar to these individuals in some important way that is meaningful to the respondent. For example, participants are asked to name their father (or the person who has been most like a father to them), someone they know well who is different from their father in some important way, and someone they know well who is similar to their father in some important way. They are also asked to name people who are different from and similar to their self and their ideal self. Participants are allowed to identify these individuals in whatever manner they choose in order to preserve the confidentiality of their lists. This approach for eliciting individuals was chosen to maximize the variability in participants' lists so that a wide variety of meaningful constructs could be obtained during the second section of the test. Thus, by the end of the first section of the Reptest, each participant generated his or her own personal list of 19 individuals who presumably varied on a number of personally meaningful characteristics. Additionally, the role titles "me" and "ideal me" were included in each participant's list to allow them to characterize themselves as they are now and as they would like to be.

The second section of the Reptest prompts participants to generate 14 personality characteristics that are especially meaningful to them. This is done through

a "triad method" similar to the one used in Kelly's (1955) Role Construct Repertory Test. Specifically, three individuals whom each participant initially listed in connection with one another (e.g., mother, someone who is different from mother in some important way, and someone who is similar to mother in some important way) appear on the screen (see Appendix B for a complete list of triads). For each triad presented by the computer, the participant is instructed to think about the personality characteristics of the individuals named and select some important way that is meaningful to him or her in which two of them are alike and different from the third. For example, a participant may decide that mother and Kari are boisterous while George is quiet. The participant would then be instructed to enter the names of the individuals who are alike (i.e., mother and Kari), followed by the personality characteristic that describes how they are alike (i.e., boisterous). Finally, the computer prompts the participant to enter the opposing characteristic (i.e., quiet) by asking "How is George different from the other two?"

Thus, after completing the seven triads that comprise the second section of the test, all participants had generated a list of 14 personality characteristics that were presumably meaningful and salient to them in describing their own and others' personalities (McDonagh & Adams-Webber, 1987). However, this information still gave no indication of the cognitive organization of these characteristics within a participant's personal construct system. The third and final section of the Reptest is designed to provide the matrix of ratings from which this idiographic cognitive organization can be derived.

The final section requires participants to rate each of the 21 individuals whom they initially listed (including the self and the ideal self) on all of the characteristics that they generated in the second section. Additionally, they are asked to rate these individuals on six supplied characteristics representing items from the NEO PI-R Conscientiousness scale. These items were selected for their strong factor loadings on

the Conscientiousness scale (i.e., all within the upper quartile of factor loadings); for their hypothesized importance to the behaviors to be predicted; and for their representation of as many facet scales as possible given the other constraints (4 out of the 6 facet scales are represented). The additional stipulation that they include an equal number of positively and negatively loading items was put in place in order to control for any tendency on the part of participants to endorse one side of the scale more frequently than the other. Finally, the markers were slightly modified from the original NEO PI-R items in order to fit on the computer screen. Based on these criteria, the following markers were selected (with the original items in parentheses): "never seems to get organized" ("I never seem to be able to get organized"), "not as dependable as should be" ("Sometimes I'm not as dependable or reliable as I should be"), "trouble making self do as should" ("I have trouble making myself do what I should"), "strives for excellence in all" ("I strive for excellence in everything I do"), "strives to achieve all s/he can" ("I strive to achieve all I can"), and "has a lot of self-discipline" ("I have a lot of self-discipline"). The former three items are reverse scored. These markers were randomly interspersed in the list of the participant's own constructs and appeared in the same random order across participants.

The test presents the individuals to be rated one at a time, instructing participants to rate each individual on each characteristic according to a 9-point scale ranging from <u>never or almost never true</u> to <u>always or almost always true</u>. The matrix of ratings produced by this final section of the Reptest was submitted to an intraindividual principal components analysis with varimax rotation in order to generate the factor loadings required to calculate the index of traitedness as discussed above.

<u>Revised NEO Personality Inventory (NEO PI-R).</u> All participants also completed the revised version of the NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992). This instrument measures the five major domains of normal adult personality traits labeled Extraversion, Agreeableness, Conscientiousness, Neuroticism,

and Openness to Experience. The NEO PI-R (Form S) is a self-administered inventory comprised of 240 items that are answered in a 5-point response format with responses ranging from strongly disagree to strongly agree. Each of the five major domains consists of six 8-item facet scales, producing 48 items per domain, and scales are balanced to control for the effects of acquiescence. In addition, there are three questions at the end of the test which ask respondents if they have tried to answer all of the questions honestly and accurately, responded to all of the statements, and entered their responses in the correct areas. According to Costa and McCrae (1992), answers to these items identify a small number of people who acknowledge that their tests may be invalid. Although these items were examined in the current study, none of the participants' inventories were identified as invalid. For each individual, raw scores on the Conscientiousness scale were converted to T scores based on the appropriate normative data for gender and age.

Internal consistency, calculated as coefficient alpha, was found to be .90 for the Conscientiousness scale in a sample of over 1,800 men and women employed by a large national organization (Costa, McCrae, & Dye, 1991). For the six facet scales of the Conscientiousness scale, alpha coefficients were reported to range from a low of .64 for the Dutifulness scale to a high of .86 for the Self-Discipline scale (Piedmont & Weinstein, 1993). In terms of stability, a three-year retest reliability coefficient of .79 was obtained for a "brief" version of the Conscientiousness scale (Costa & McCrae, 1988).

Single-item measures. Three single-item measures of traitedness were employed so that the utility of these measures in moderating the relation between conscientiousness and the objective behavioral measures could be determined. These three measures consisted of the following items: "In general, how consistent are you from one situation to another in how conscientious you are?" (e.g., Zuckerman et al., 1989; Zuckerman et al., 1988), "How relevant is the trait of conscientiousness to your

own view of yourself?" (e.g., Zuckerman et al., 1989; Zuckerman et al., 1988), and "Generally speaking, how publicly observable or visible to others are your conscientious behaviors?" (e.g., Paunonen, 1988; Zuckerman et al., 1989; Zuckerman et al., 1988). All three of these items required participants to respond according to a 9-point scale (see Appendix C).

Nonipsatized variance index. To examine the utility of an intraindividual variability measure in moderating the relation between conscientiousness and the objective behavioral measures, a nonipsatized variance index was computed (e.g., Baumeister, 1991; Baumeister & Tice, 1988; Britt, 1993; Chaplin, 1991). This index was calculated as the standard deviation of a participant's responses across items on the NEO PI-R Conscientiousness scale and was expected to correlate with the measure of organization derived from the Reptest.

Criterion measures. Four measures were employed to assess the criterion-related validity of the NEO PI-R Conscientiousness scale. The first criterion consisted of the time at which participants arrived for the study, with early arrivers earning positive scores (reflecting the number of seconds they were early) and late arrivers earning negative scores (reflecting the number of seconds they were late). Punctuality was assessed twice for each participant--once at each of the two study sessions. Chaplin and Goldberg (1985) utilized a similar measure of punctuality in their attempt to replicate Bem and Allen's (1974) findings for the trait of conscientiousness.

The second criterion measure consisted of each participant's final grade in his or her introductory psychology course, and the third measure was comprised of each individual's overall college grade point average at the end of the semester during which the study was conducted. This is consistent with past research, as reported by Digman and Takemoto-Chock (1981), that found a positive relationship between conscientiousness and academic achievement. Furthermore, Dollinger and Orf (1991) found conscientiousness to be a successful predictor of course grade, objective test

performance, and independent credit efforts. Chaplin and Goldberg (1985) also utilized college grade point average in their study of conscientiousness.

Finally, the fourth criterion measure consisted of participants' compliance with a written instruction to confirm their attendance by telephone prior to each of the two sessions. Specifically, sign-up sheets for each of the two sessions instructed participants to call a specified telephone number to confirm their attendance "no earlier than 3 days prior to your scheduled date and no later than 7:00 p.m. the day before." Participants received a score of 0 or 1 on this measure for both sessions, depending on whether or not they called to confirm their attendance. Although this variable was originally designed to be a continuous one (reflecting the total amount of time prior to 7:00 p.m. on the day before participants' scheduled session that they called to confirm their attendance), the number of participants who called within the specified time frame was too small to allow for such an analysis.

Procedure

Sign-up sheets were posted at the College of William and Mary, allowing an equal number of male and female students to sign up for the study. Individuals who volunteered for participation were scheduled for individual testing sessions staggered at 15-minute intervals, such that each participant had his or her own starting time. This format was utilized so that the examiner could provide individual attention to participants while they were taking the computerized Reptest. Testing occurred across two sessions separated by an interval of approximately 2 to 3 weeks (mean interval = 14.5 days).

During the first session, participants were greeted by a research assistant in one room, while a second research assistant unobtrusively recorded the time of their arrival (using a watch with a second hand) as they entered the room. Prior to beginning the testing, individuals were given a brief description of the study and asked to sign a consent form (see Appendix D). This form asked participants to indicate whether or not

they were interested in obtaining a summary of their results from the NEO PI-R. It was hoped that this opportunity would increase participants' motivation to respond honestly and accurately to the inventory. Individuals who indicated an interest in this option were contacted by the investigator at the conclusion of the study to review their results.

After the initial consent form was signed, participants were sent to a second room with several computer terminals where the Reptest was administered. Each participant was instructed to take the Reptest at his or her own pace, and the examiner remained present throughout the session to answer any questions about the computerized test. Following completion of the Reptest, participants were sent back to the first room to complete the NEO PI-R. This test was administered last in order to avoid instilling participants with any ideas about characteristics to employ during the Reptest. Finally, participants were directed to the sign-up sheets for the second session which, once again, instructed them to confirm their attendance by telephone prior to their arrival.

At the second testing session, the time of each participant's arrival was again unobtrusively recorded as he or she entered the room. Participants were then sent to the computer lab to retake the final section of the Reptest. More specifically, they were asked to re-rate all of the individuals they named during the first testing session (along with the self and the ideal self) on all of the characteristics they generated, as well as on the markers from the NEO PI-R Conscientiousness scale (see above). This allowed for an evaluation of the test-retest reliability of the organization, meaningfulness, and traitedness scores. Once participants had completed the Reptest, the three single-item measures of traitedness were administered. Participants were then sent back to the first room where the final consent form was distributed requesting their permission to obtain and utilize their introductory psychology course grade, their college grade point average, the time that they called to confirm their attendance prior to each session, and their time of arrival for each session (see Appendix E). This form was distributed after

participants had completed all of the tests to avoid altering their responses to conscientiousness-related items based on their knowledge of the data that would be collected regarding their behavior. The total time required to complete both sessions was approximately 2 hours, and all participants were debriefed and thanked for their participation at the conclusion of the second session.

CHAPTER III

RESULTS

Moderated multiple regression analyses were used to test the hypothesis that scores on the traitedness index, as operationalized by the Reptest, would moderate the relation between conscientiousness and scores on the criterion measures. As discussed above, this type of analysis has the advantage of statistically controlling for a potential relation between trait extremity and scores on the traitedness index through partial regression. Using hierarchical regression, conscientiousness was entered first, traitedness second, and the interaction between conscientiousness and traitedness last. Evidence to support the hypothesis that traitedness has a significant moderating effect would consist of a significant increase in R^2 when the interaction between traitedness and conscientiousness is added to the regression analysis. Such an increase would indicate that the strength of the trait-criterion relationship varies significantly as a function of traitedness. An alpha level of .05 was used for all statistical tests. Means and standard deviations for each of the predictor and criterion variables are presented in Table 1. These descriptive statistics are presented for men, women, and the total sample.

Table 1

Means and Standard Deviations for the Predictor and Criterion Variables for Men,

Women, and the Total Sample

Variable	Men[a]		Women[b]		Total Sample[c]	
	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$
Predictor variable						
Conscientiousness	48.05	12.37	53.40	9.20	50.65	11.20
Organ1	.65[d]	.15	.68	.13	.67[e]	.14
Organ2	.70	.12	.72[d]	.13	.71[f]	.13
Meaning1	.32[d]	.12	.30	.12	.31[e]	.12
Meaning2	.31	.11	.32[d]	.13	.31[f]	.12
Trait1	.21[d]	.10	.21	.10	.21[e]	.10
Trait2	.22	.10	.23[d]	.10	.22[f]	.10
Single1	6.78	1.03	6.83	1.07	6.81	1.04
Single2	6.65	1.44	7.37	1.00	7.00	1.29
Single3	6.19	1.71	6.94	1.55	6.56	1.67
NVI	1.04	.18	1.01	.19	1.02	.18
Criterion variable						
Psych	2.71	.70	3.01	.78	2.86	.75
GPA	2.91[b]	.48	3.09	.49	3.00[g]	.49
Punctuality	166.35[h]	148.20	164.09[i]	228.54	165.16[j]	193.04
Comp	.32	.38	.34	.36	.33	.37

Note. Organ1 = organization score from first session; Organ2 = organization score

(Continued)

from second session; Meaning1 = meaningfulness score from first session; Meaning2 = meaningfulness score from second session; Trait1 = traitedness score from first session; Trait2 = traitedness score from second session; Single1 = single-item consistency score; Single2 = single-item relevance score; Single3 = single-item observability score; NVI = nonipsatized variance index; Psych = psychology course grade; GPA = college grade point average; Comp = compliance in confirming attendance.

$^a\underline{n}$ = 37 except where otherwise indicated. $^b\underline{n}$ = 35 except where otherwise indicated. $^c\underline{n}$ = 72 except where otherwise indicated. $^d\underline{n}$ = 34. $^e\underline{n}$ = 69. $^f\underline{n}$ = 71. $^g\underline{n}$ = 70. $^h\underline{n}$ = 24. $^i\underline{n}$ = 27. $^j\underline{n}$ = 51.

Because the use of separate analyses for each criterion variable raises the issue of multicollinearity (i.e., the problem of increasing the Type I error rate because of conducting the same analysis on several variables that are highly intercorrelated), Pearson product-moment correlations among the criterion variables were examined prior to conducting the major analyses. As shown in the correlation matrix presented in Table 2, introductory psychology course grade and college grade point average (GPA) were highly correlated with one another. Therefore, only one of these two variables, GPA, was used in subsequent analyses because of its inclusion of a broader sample of behavior than the single course grade in psychology. Additionally, the correlation between GPA and the number of credits on which GPA was based was not significant, $\underline{r}$ (70) = .04, $\underline{p}$ = .769, failing to indicate any need for a residual GPA score to partial out this potential confound. None of the other intercorrelations among criterion variables were large enough to raise concerns about multicollinearity, and separate analyses were therefore performed on GPA, punctuality, and compliance in confirming attendance.

Table 2

Intercorrelations Between Criterion Variables

Criterion variable	1	2	3	4
1. Psychology course grade	--	$.69^{**}$	$-.30^{a*}$	$.09^{b}$
2. College grade point average		--	$-.38^{c**}$	$.05$
3. Punctuality			--	$-.04^{a}$
4. Compliance in confirming attendance				--

Note. $n = 70$ except where otherwise indicated.

$^{a}n = 51$. $^{b}n = 72$. $^{c}n = 50$.

$^{*}p < .05$. $^{**}p < .01$.

Scores on the punctuality and compliance in confirming attendance measures were averaged across the two sessions to yield a single score for each of these two variables. This was done because of the unreliability of measurement inherent in each of these highly specific behavioral acts (e.g., see Epstein, 1979, 1980; Kirkpatrick, 1997). According to Kirkpatrick, aggregation across measurement occasions improves the reliability of behavioral measures by creating a situation in which the "level of generality" of the criterion measure (e.g., punctuality on one occasion) more closely approximates that of the behavioral construct of interest (e.g., punctuality in general) (p. 205). The need for aggregation of the behavioral measures in the current study is clearly reflected in the nonsignificant test-retest reliability coefficient for punctuality, $r(51) = .17$, $p = .247$, and the very low reliability coefficient for compliance in confirming attendance, $r(72) = .26$, $p = .027$. Although such aggregation often increases the magnitude of trait-behavior and behavior-behavior correlations, it should

be noted in Table 2 that the aggregated score for compliance in confirming attendance showed no significant relation to the other criterion measures, while punctuality displayed significant and unexpected negative correlations with both GPA and psychology course grade.

Prior to conducting the regression analyses, tests for violations of the assumptions of linearity, equality of variance, and normality were performed to determine the appropriateness of a linear regression model. An examination of the scatterplots of residuals against individual predictor variables indicated no departure from linearity for any of the analyses, nor was there any departure from the assumption of constant variance of the criterion variables for all values of the predictor variables.

To test for normality, a histogram of the residuals was examined for each of the predictor variables, along with a plot of the observed distribution of residuals against the expected distribution. Using these graphs, outliers were identified as those cases with residuals falling more than 3.16 standard deviations from the mean. These outliers were eliminated from any regression analyses, as well as from the data used to compute the correlations in Table 2, that included the variables on which they were identified as outliers. The criterion measure of punctuality was involved in all cases that required this elimination procedure, and, in every case, improvements in the normality of the residuals were observed following the elimination of outliers. Tests of the assumptions for analyses involving the criterion variable of compliance in confirming attendance revealed significant departures from normality. Although multiple linear regression analysis is robust with respect to this particular violation, results for this variable should be interpreted with some caution.

Preliminary multiple regression analyses were conducted on the three criterion variables to determine whether any significant interactions were present between gender and each of the predictor variables, testing the change in R^2 for the interactions as a block. This was done in order to determine whether any of the major or subsidiary

analyses should be performed separately for men and women. With GPA as the criterion variable and both the single-item consistency measure and the nonipsatized variance index as predictor variables, the gender interactions were significant ($ps < .05$). Additionally, with punctuality as the criterion variable and each of the three measures derived from the Reptest at the first session (i.e., meaningfulness, organization, and traitedness) as predictor variables, the gender interactions were also significant ($ps < .05$). Consequently, each of these analyses was done separately for men and women. All other analyses were collapsed across gender.

The major analyses were hierarchical multiple regression on the criterion variables GPA, punctuality, and compliance in confirming attendance. The predictor variable conscientiousness was entered first, traitedness second, and the interaction between conscientiousness and traitedness last. Results for the relation between conscientiousness and the criterion variables are presented below with the correlations between predictor and criterion variables. In all analyses, the addition of the interaction term failed to produce a significant change in R^2 ($ps > .05$). Thus, there was no evidence that scores on the traitedness index significantly moderated the relation between conscientiousness and scores on the criterion measures. However, as shown in Table 3, scores on the traitedness index at the first testing session showed a significant direct effect in predicting punctuality for women. The sign of the standardized multiple regression coefficient indicates a negative relation between these two variables (i.e., increasing scores on the traitedness index were associated with decreasing punctuality).

Table 3

Summary of Hierarchical Regression Analysis for the Conscientiousness and
Traitedness Variables in Predicting Punctuality in Arriving for an Experiment for
Female Undergraduate Students

Variable	B	SE B	β
Step 1			
Conscientiousness	-6.19	5.40	-.22
Step 2			
Conscientiousness	-2.77	4.75	-.10
Trait1	-1165.62	368.57	-.54**
Step 3			
Conscientiousness	-14.77	14.60	-.53
Trait1	-3708.70	2948.20	-1.73
Conscientiousness x Trait1	44.76	51.48	1.36

Note. $n = 27$. $R^2 = .05$ for Step 1; $\Delta R^2 = .28$ for Step 2 ($p < .05$); $\Delta R^2 = .02$ for Step 3.
Trait1 = traitedness score from first session.
**$p < .01$.

Subsidiary analyses were conducted to explore whether the components of the
traitedness index (i.e., the meaningfulness score and the organization score) moderated
the relation between conscientiousness and the criterion measures GPA, punctuality,
and compliance in confirming attendance. In these hierarchical analyses, the predictor
variable conscientiousness was entered first, meaningfulness (or organization) second,
and the interaction between conscientiousness and meaningfulness (or organization)

Table 4

Summary of Hierarchical Regression Analysis for the Conscientiousness and
Organization Variables in Predicting College Grade Point Average for Undergraduate
Students

Variable	B	$SE B$	β
Step 1			
Conscientiousness	.01	.01	.29*
Step 2			
Conscientiousness	.01	.01	.23*
Organ1	1.17	.42	.32**
Step 3			
Conscientiousness	.06	.03	1.42*
Organ1	4.96	2.05	1.35*
Conscientiousness x Organ1	-.07	.04	-1.72

Note. $n = 67$. $R^2 = .09$ for Step 1 ($p < .05$); $\Delta R^2 = .10$ for Step 2 ($p < .05$); $\Delta R^2 = .04$
for Step 3. Organ1 = organization score from first session.
*$p < .05$. **$p < .01$.

last. In all analyses, the addition of the interaction term failed to produce a significant
change in R^2 ($ps > .05$). However, as shown in Table 4, scores on the organization
measure at the first testing session showed a significant direct effect in predicting GPA,
along with a tendency toward significance in moderating the relation between
conscientiousness and GPA ($\Delta R^2 = .04$, $p = .064$). The sign of the standardized
multiple regression coefficient indicates a negative relation between the interaction

Table 5

Summary of Hierarchical Regression Analysis for the Conscientiousness and Organization Variables in Predicting Punctuality in Arriving for an Experiment for Female Undergraduate Students

Variable	B	SE B	β
Step 1			
Conscientiousness	-6.19	5.40	-.22
Step 2			
Conscientiousness	-4.92	4.86	-.18
Organ1	-776.92	290.47	-.47*
Step 3			
Conscientiousness	12.08	42.76	.44
Organ1	532.21	3284.12	.32
Conscientiousness x Organ1	-23.89	59.70	-1.05

Note. $n = 27$. $R^2 = .05$ for Step 1; $\Delta R^2 = .22$ for Step 2 ($p < .05$); $\Delta R^2 = .01$ for Step 3. Organ1 = organization score from first session.

*$p < .05$.

term and GPA, rather than the positive relation that was hypothesized, indicating that the relation between conscientiousness and GPA was stronger for those individuals with lower (rather than higher) scores on the organization measure.

Similar to the finding reported above for the traitedness index, both the organization and meaningfulness scores derived from the Reptest at the first testing session displayed significant direct effects in predicting punctuality for women (see

Tables 5 and 6). As with the traitedness index, the direction of these effects was negative. In general, these gender differences should be interpreted with caution because of the small sample sizes and a tendency for the men in the sample to display a more restricted range of scores than the women on the punctuality measure and all three of the predictor variables involved in these analyses (i.e., traitedness, meaningfulness, and organization).

Table 6

Summary of Hierarchical Regression Analysis for the Conscientiousness and Meaningfulness Variables in Predicting Punctuality in Arriving for an Experiment for Female Undergraduate Students

Variable	B	$SE\ B$	β
Step 1			
Conscientiousness	-6.19	5.40	-.22
Step 2			
Conscientiousness	-3.43	5.05	-.12
Meaning1	-819.95	332.22	-.45[*]
Step 3			
Conscientiousness	-13.90	16.37	-.50
Meaning1	-2361.95	2314.51	-1.30
Conscientiousness x Meaning1	27.58	40.96	1.01

Note. $n = 27$. $R^2 = .05$ for Step 1; $\Delta R^2 = .19$ for Step 2 ($p < .05$); $\Delta R^2 = .01$ for Step 3. Meaning1 = meaningfulness score from first session.

*$p < .05$.

Exploratory analyses were also conducted to examine the utility of some of the indices of traitedness used in previous research (i.e., single-item measures and the nonipsatized variance index) in moderating the relation between conscientiousness and scores on the criterion measures GPA, punctuality, and compliance in confirming attendance. In these hierarchical analyses, the predictor variable conscientiousness was entered first, each of the three single-item measures (or the nonipsatized variance index)

Table 7

Summary of Hierarchical Regression Analysis for the Conscientiousness and Single-Item Consistency Variables in Predicting Punctuality in Arriving for an Experiment for Undergraduate Students

Variable	B	$SE\ B$	β
Step 1			
Conscientiousness	-3.62	2.53	-.20
Step 2			
Conscientiousness	-2.03	2.86	-.11
Single1	-35.20	30.06	-.18
Step 3			
Conscientiousness	29.64	15.34	1.62
Single1	173.86	103.77	.91
Conscientiousness x Single1	-4.58	2.18	-2.46[*]

Note. $n = 52$. $R^2 = .04$ for Step 1; $\Delta R^2 = .03$ for Step 2; $\Delta R^2 = .08$ for Step 3 ($p < .05$). Single1 = single-item consistency score.

*$p < .05$.

second, and the interaction between conscientiousness and each of the three single-item measures (or the nonipsatized variance index) last. As shown in Table 7, the significant interaction term in step 3 indicates that the single-item consistency measure (i.e., "In general, how consistent are you from one situation to another in how conscientious you are?") moderated the relation between conscientiousness and punctuality. However, as with the analysis reported above involving GPA as the criterion variable, the sign of the

Table 8

Summary of Hierarchical Regression Analysis for the Conscientiousness and Single-Item Consistency Variables in Predicting College Grade Point Average for Male Undergraduate Students

Variable	B	$SE\ B$	β
Step 1			
Conscientiousness	.02	.01	.41[*]
Step 2			
Conscientiousness	.02	.01	.50[**]
Single1	-.11	.08	-.24
Step 3			
Conscientiousness	-.06	.04	-1.52
Single1	-.66	.29	-1.44[*]
Conscientiousness x Single1	.01	.01	2.71

Note. $n = 35$. $R^2 = .17$ for Step 1 ($p < .05$); $\Delta R^2 = .05$ for Step 2; $\Delta R^2 = .09$ for Step 3.

Single1 = single-item consistency score.

*$p < .05$. **$p < .01$.

standardized multiple regression coefficient indicates a negative relation between the interaction term and punctuality, rather than the positive relation that was hypothesized. This indicates that the relation between conscientiousness and punctuality was stronger for those individuals with lower (rather than higher) scores on the single-item consistency measure.

As shown in Table 8, the single-item consistency measure also displayed a

Table 9

<u>Summary of Hierarchical Regression Analysis for the Conscientiousness and Single-Item Consistency Variables in Predicting College Grade Point Average for Female Undergraduate Students</u>

Variable	B	$SE\ B$	β
Step 1			
Conscientiousness	.00	.01	.08
Step 2			
Conscientiousness	.02	.01	.39
Single1	-.23	.09	-.50[*]
Step 3			
Conscientiousness	.01	.05	.14
Single1	-.31	.29	-.68
Conscientiousness x Single1	.00	.01	.39

<u>Note.</u> $n = 35$. $R^2 = .01$ for Step 1; $\Delta R^2 = .16$ for Step 2 ($p < .05$); $\Delta R^2 = .00$ for Step 3. Single1 = single-item consistency score.

[*]$p < .05$.

tendency toward significance in moderating the relation between conscientiousness and GPA for men ($\Delta R^2 = .09$, $p = .060$). In this case, the sign of the standardized multiple regression coefficient was positive, indicating (as expected) that individuals who rated themselves more highly on the single-item consistency measure showed a tendency toward a stronger (positive) relation between conscientiousness and GPA. Finally, the single-item consistency measure also displayed a significant and negative direct effect in predicting GPA for women (see Table 9). Once again, these analyses involving gender differences should be interpreted with caution because of the small sample sizes involved. It should also be noted that although conscientiousness significantly predicted GPA in analyses involving the whole sample, it did not predict GPA for women ($p > .05$).

As shown in Table 10, the nonipsatized variance index significantly moderated the relation between conscientiousness and GPA for women. The negative sign of the standardized multiple regression coefficient in this analysis is expected because lower scores on the nonipsatized variance index indicate higher consistency (i.e., higher traitedness). Once again, however, these results should be interpreted with caution because of the small sample size.

For all other major and subsidiary hierarchical multiple regression analyses with GPA and compliance in confirming attendance as criterion variables, only the relation between conscientiousness and the criterion variable was significant. These correlations are presented in Table 11. The one exception to this generalization (as noted above) is that conscientiousness did not predict GPA for women for those analyses that were performed separately by gender. Finally, none of the other major or subsidiary hierarchical multiple regression analyses with punctuality as the criterion variable demonstrated significant direct or moderator effects.
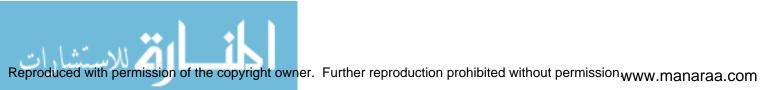
Table 10

<u>Summary of Hierarchical Regression Analysis for the Conscientiousness and</u>
<u>Nonipsatized Variance Index Variables in Predicting College Grade Point Average for</u>
<u>Female Undergraduate Students</u>

Variable	<u>B</u>	<u>SE B</u>	β
Step 1			
Conscientiousness	.00	.01	.08
Step 2			
Conscientiousness	-.01	.01	-.11
NVI	-.94	.49	-.37
Step 3			
Conscientiousness	.10	.04	1.86*
NVI	4.28	2.14	1.69
Conscientiousness x NVI	-.10	.04	-2.06*

<u>Note.</u> $n = 35$. $R^2 = .01$ for Step 1; $\Delta R^2 = .10$ for Step 2; $\Delta R^2 = .15$ for Step 3 ($p < .05$).
NVI = nonipsatized variance index.
*$p < .05$.

Table 11 presents the intercorrelations between the predictor and criterion
variables. As shown in this table, just as punctuality displayed significant negative
correlations with GPA and psychology course grade (see Table 2, p. 42), it also
displayed substantial negative correlations with a number of the predictor variables. It
should also be noted in this table that some of the measures derived from the Reptest
displayed higher correlations with GPA and punctuality than those displayed by the

Table 11

Intercorrelations Between Predictor and Criterion Variables

	Criterion variable		
Predictor variable	GPA	Punc	Comp
Conscientiousness	$.29^{a*}$	$-.16^{b}$	$.32^{**}$
Organ1	$.36^{c**}$	$-.33^{d*}$	$.06^{e}$
Organ2	$.13^{e}$	$-.08^{b}$	$.01^{f}$
Meaning1	$.04^{c}$	$-.43^{d**}$	$.14^{e}$
Meaning2	$-.02^{e}$	$-.22^{b}$	$.12^{f}$
Trait1	$.16^{c}$	$-.49^{d**}$	$.16^{e}$
Trait2	$.01^{e}$	$-.29^{b*}$	$.15^{f}$
Single-item consistency score	$-.16^{a}$	$-.11^{b}$	.21
Single-item relevance score	$.14^{a}$	$-.15^{b}$	$.30^{*}$
Single-item observability score	$.07^{a}$	$-.03^{b}$	$.27^{*}$
Nonipsatized variance index	$-.20^{a}$	$.16^{b}$	-.11

Note. n = 72 except where otherwise indicated. GPA = college grade point average; Punc = punctuality; Comp = compliance in confirming attendance; Organ1 = organization score from first session; Organ2 = organization score from second session; Meaning1 = meaningfulness score from first session; Meaning2 = meaningfulness score from second session; Trait1 = traitedness score from first session; Trait2 = traitedness score from second session.

[a]n = 70. [b]n = 51. [c]n = 67. [d]n = 50. [e]n = 69. [f]n = 71.

$*p < .05$. $**p < .01$.

NEO PI-R Conscientiousness scale. More specifically, the organization score derived from the first testing session displayed a higher correlation with both GPA and punctuality than the Conscientiousness scale did; while the meaningfulness and traitedness scores from both sessions displayed higher correlations with punctuality than the NEO PI-R Conscientiousness scale displayed.
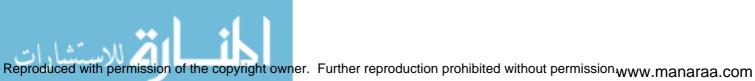
Finally, Table 12 presents the intercorrelations among all of the predictor variables. As an initial caveat in reviewing this table, it should be noted that the high correlations between the traitedness index and scores on the meaningfulness and organization measures reflect the fact that the traitedness index is calculated as the product of these two variables. The meaningfulness and organization scores appear to be fairly independent measures, as indicated by the low correlation coefficients between them. It can also be seen that the three measures derived from the Reptest displayed minimally acceptable test-retest reliability coefficients, ranging from a low of .61 for the meaningfulness score to a high of .69 for the traitedness index (ps < .05).

As shown in Table 12, there appears to be little convergence between the measures derived from the Reptest and the traditional indices of traitedness (i.e., the single-item measures and the nonipsatized variance index). The only significant correlation in this respect was between the traitedness index derived from the Reptest at the second testing session and the single-item consistency score. Among the indices of traitedness used in previous research, only two of the single-item measures--consistency and observability--demonstrated a significant correlation with one another, while the nonipsatized variance index appeared to be fairly independent of the other measures. Finally, Table 12 shows that the nonipsatized variance index and all three of the single-item measures displayed larger correlations with the NEO PI-R Conscientiousness scale than the measures derived from the Reptest displayed.

In conclusion, the only measures of traitedness that displayed significant moderating effects in the current study were the single-item consistency measure and

Table 12

Intercorrelations Between Predictor Variables

Predictor variable	1	2	3	4
1. Conscientiousness	--			
2. Organ1	$.12^a$	--		
3. Organ2	$.10^b$	$.66^{c**}$	--	
4. Meaning1	$.22^a$	$.22^a$	$.18^c$	--
5. Meaning2	$.23^b$	$.11^c$	$.20^b$	$.61^{c**}$
6. Trait1	$.26^{a*}$	$.60^{a**}$	$.41^{c**}$	$.89^{a**}$
7. Trait2	$.26^{b*}$	$.35^{c**}$	$.56^{b**}$	$.63^{c**}$
8. Single1	$.47^{**}$	$.11^a$	$.17^b$	$.06^a$
9. Single2	$.29^*$	$-.08^a$	$.07^b$	$.01^a$
10. Single3	$.54^{**}$	$-.09^a$	$-.08^b$	$-.03^a$
11. NVI	$-.43^{**}$	$-.09^a$	$-.10^b$	$-.06^a$

Predictor variable	5	6	7	8
5. Meaning2	--			
6. Trait1	$.57^{c**}$	--		
7. Trait2	$.91^{b**}$	$.69^{c**}$	--	
8. Single1	$.18^b$	$.14^a$	$.25^{b*}$	--
9. Single2	$.06^b$	$-.03^a$	$.10^b$	.18
10. Single3	$.09^b$	$-.01^a$	$.05^b$	$.31^{**}$
11. NVI	$.22^b$	$-.05^a$	$.10^b$	-.10

Table 12 Continued

Predictor variable	9	10	11
9. Single2	--		
10. Single3	.14	--	
11. NVI	-.17	-.09	--

Note. n = 72 except where otherwise indicated. Organ1 = organization score from first session; Organ2 = organization score from second session; Meaning1 = meaningfulness score from first session; Meaning2 = meaningfulness score from second session; Trait1 = traitedness score from first session; Trait2 = traitedness score from second session; Single1 = single-item consistency score; Single2 = single-item relevance score; Single3 = single-item observability score; NVI = nonipsatized variance index.

$^a n$ = 69. $^b n$ = 71. $^c n$ = 68.

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

the nonipsatized variance index. Although the single-item consistency measure significantly moderated the relation between conscientiousness and punctuality, the direction of this effect was opposite to that predicted, indicating that the relation between conscientiousness and punctuality was stronger for those individuals with lower (rather than higher) scores on the single-item consistency measure. On the other hand, the nonipsatized variance index displayed a significant effect that was consistent with expectations in moderating the relation between conscientiousness and GPA for women. This indicates that female participants who responded consistently across items on the NEO PI-R Conscientiousness scale displayed a stronger relation between conscientiousness and GPA than female participants who responded inconsistently.

CHAPTER IV

DISCUSSION

Results failed to provide support for the main hypothesis of the current study. In particular, scores on the traitedness index, as operationalized by the Reptest, failed to significantly moderate the relation between scores on the NEO PI-R Conscientiousness scale and college grade point average, punctuality in arriving for the experiment, and compliance in confirming attendance. This absence of a moderator effect adds to a number of studies utilizing other measures of traitedness which have found mixed or disappointing results for the use of those measures as moderator variables (Chaplin, 1991; Chaplin & Goldberg, 1985; Cheek, 1982; Koestner et al., 1994; Mischel & Peake, 1982; Paunonen & Jackson, 1985).

Although in the present study no significant moderator effects were observed for the traitedness index derived from the Reptest, scores on the traitedness index at the first testing session showed a significant direct effect in predicting punctuality for women. The direction of this effect was negative, indicating that increasing traitedness for conscientiousness was associated with less punctual behavior. In general, few investigators have explored such direct effects with traitedness indices, opting instead to examine their utility as moderators. This, of course, is consistent with the theoretical impetus that spawned these measures, as they were originally developed to improve trait-criterion correlations by separating predictable from unpredictable individuals. However, at least one study has reported significant results when using a metatrait in the direct prediction of behavior. Specifically, Baumeister and Tice (1988) demonstrated that individuals with lower interitem variance (i.e., higher traitedness) on a self-esteem scale requested significantly less advice than individuals with higher interitem variance when solving puzzles in the presence of the experimenter.

Even if the direct prediction of behavior by metatraits is interpreted as a reasonable and meaningful finding in some instances, it is difficult to explain the

negative relation obtained in the present study between the traitedness index and punctuality. In particular, if any significant relation is present, it would seem that traitedness for conscientiousness would be associated with more, not less, punctual behavior. However, it should be noted that the measure of punctuality in this study was associated with a number of anomalous findings, including its significant and unexpected negative correlations with two of the other criterion measures, GPA and psychology course grade. When coupled with its negative relation to a number of the predictor variables (including conscientiousness), it seems reasonable to conclude that punctuality did not function as a measure of conscientious behavior in the current study.

Although these anomalous findings for the measure of punctuality may be related to the limited sample of behavior obtained (i.e., punctuality on two occasions) or, perhaps, to a faulty operational definition of punctuality (e.g., giving early arrivers higher scores than individuals who arrived on time), the negative correlations with a number of the predictor and criterion variables seem to suggest that punctuality functioned as a measure of low conscientiousness in this study. Although the reason for this aberrant finding is unclear, it may be related to the situational context in which the measure of punctuality took place. Indeed, a recent study of situational-dispositional interactions, which employed a measure of punctuality nearly identical to the one in the present study, found punctuality to be substantially related to situational factors even after general trait variance had been extracted (Murtha, Kanfer, & Ackerman, 1996).

While punctuality showed significant negative correlations with GPA and psychology course grade, the measure of compliance in confirming attendance displayed nonsignificant correlations with all three of the other criterion measures. However, the significant correlation of compliance with the NEO PI-R Conscientiousness scale suggests that this measure should not be discounted because of its weak relation to the other criterion measures. Indeed, the significant correlation with conscientiousness is quite impressive given the limited behavioral sample on which this

measure was based (i.e., compliance on two occasions) and the lack of congruence between this measure and the Conscientiousness scale in terms of level of generality (i.e., specificity of the measure)--two conditions which have repeatedly been found to attenuate observed trait-behavior correlations (e.g., see Epstein, 1979; Kirkpatrick, 1997).

It is noteworthy that gender differences were found for the relation between the traitedness index and punctuality. In particular, traitedness predicted punctuality for women but not for men. Such gender differences have not been reported in previous studies of traitedness measures and should be interpreted with caution because of the small sample size involved. However, if replicated in larger samples, such gender effects for traitedness should be explored more thoroughly, whether they occur within the context of direct prediction by proposed traitedness measures (as noted here) or significant traitedness moderator effects (as described below).

Organization and Meaningfulness Measures

Subsidiary analyses for the organization and meaningfulness components of the traitedness index also failed to demonstrate any significant moderator effects, although the organization score from the first testing session displayed a tendency toward significance in moderating the relation between conscientiousness and GPA. (Of course, this could be a chance finding, but is worth discussing in the event that it is replicated in future studies.) The direction of this moderator effect was opposite to that predicted, indicating that the relation between conscientiousness and GPA was stronger for individuals with less organized conscientiousness constructs. Such anomalous moderator effects have been reported infrequently in the research on traitedness (e.g., Chaplin, 1991) and are difficult to interpret given the implication that untraited individuals are more predictable than traited individuals.

Unlike the aberrant moderator effect noted above, the organization score from the first session showed a significant direct effect in predicting GPA, indicating that

participants with more organized conscientiousness constructs had higher GPAs than participants with less organized constructs. This finding was particularly interesting because the organization score actually displayed a higher correlation with GPA (.36) than the NEO PI-R Conscientiousness scale did (.29), even breaking Mischel's (1968) famous .30 barrier for the correlations between scores on personality inventories and objectively measured behavior.

One interpretation of this direct relation between organization and GPA is that individuals whose personal construct systems contain an organized conscientiousness factor that approximates the nomothetic definition of this trait (e.g., the definition employed by the NEO PI-R) perform better academically. However, a second possibility that must also be considered concerns the nature of the task from which the organization score was derived. Specifically, the attainment of a high organization score on the Reptest requires not only an organized conscientiousness construct, but also the ability and motivation to maintain response consistency through a tedious task requiring hundreds of ratings of self and others. It is possible, therefore, that this task may be a better measure of conscientious behavior than self-reported conscientiousness on the NEO PI-R, leading to its higher correlation with GPA. The relative validity of these two alternative interpretations could be further examined by replicating this study with other traits (e.g., extraversion, agreeableness) which presumably would not affect response consistency on the Reptest. However, in either case, it is an intriguing finding that merits further research.

Similar to the direct effects already reported above, both the organization and meaningfulness scores derived from the Reptest at the first testing session displayed significant direct effects in predicting punctuality for women. As with the relation noted above between the traitedness index and punctuality, the direction of these effects was negative, indicating that female participants with highly organized or highly meaningful conscientiousness constructs were less punctual than female participants

with less organized or less meaningful ones. Once again, these unexpected negative findings for the punctuality measure, as well as the gender effects, should be interpreted with caution.

Overall, results of this study failed to provide any support for the use of the measures derived from the Reptest as moderators of trait-criterion correlations. Indeed, the only moderator effect that even approached significance was in the direction opposite to that predicted. However, some interesting findings were generated for the use of these measures as direct predictors of behavior. It is interesting to note in this respect that some of the correlations between the Reptest measures and two of the criterion measures--punctuality and GPA--not only broke the .30 personality coefficient barrier, but were also higher than the corresponding correlations between the NEO PI-R Conscientiousness scale and these same behaviors. However, it is important to note that in nearly every case, these impressive correlations were found for the Reptest measures derived from the first, but not the second session, suggesting that they may be unreplicable. Further research is needed to examine the reliability of these findings.

Single-Item Measures

Of the three single-item measures employed in this study, only the consistency measure (i.e., "In general, how consistent are you from one situation to another in how conscientious you are?") demonstrated significant results. In particular, this item significantly moderated the relation between conscientiousness and punctuality. However, as with the results reported above for the organization measure, the direction of this effect was opposite to that predicted and, therefore, difficult to interpret. The single-item consistency measure also displayed a tendency toward significance in moderating the relation between conscientiousness and GPA for men. In this case, the direction of the effect was consistent with expectations, indicating that male participants who described themselves as being more consistent on this item had a tendency toward a stronger relation between conscientiousness and GPA (i.e., they had

a tendency to be more predictable). Once again, however, it should be noted that this finding could be due to chance.

In addition to the moderator effects reported above, the single-item consistency measure also displayed a significant negative direct effect in predicting GPA for women, indicating that female participants who described themselves as being less consistent in their conscientious behavior earned higher GPAs. No such direct (or gender) effects have been reported in the past for the single-item consistency measure.

Finally, the single-item measures of trait relevance and observability failed to demonstrate any significant effects. Overall, these results are consistent with past research that has yielded predominantly negative results when examining the utility of single-item consistency, relevance, and observability measures in moderating the relation between self-ratings and objective behavioral criteria or among several objective behavioral criteria (e.g., Chaplin & Goldberg, 1985; Mischel & Peake, 1982).

Nonipsatized Variance Index

The nonipsatized variance index derived from the Conscientiousness scale significantly moderated the relation between conscientiousness and GPA for women. The direction of this effect was consistent with expectations, indicating that female participants who responded more consistently across items on the Conscientiousness scale displayed a stronger relation between conscientiousness and GPA (i.e., they were more predictable). This is consistent with past studies that have reported positive results for the use of this index as a moderator of the relation between self-ratings and behavioral measures and among several self-ratings (Baumeister & Tice, 1988; Britt, 1993). However, the fact that it displayed significant results for only one of the three criterion measures employed and, even then, only for women, somewhat tempers the enthusiasm for this index.

In sum, the nonipsatized variance index was the only traitedness indicator to display a significant moderator effect (in the predicted direction) in the present study,

providing some support for claims that it is the most promising measure of traitedness developed thus far (e.g., Britt, 1993). In addition to its relatively better psychometric properties and tendency to display significant moderator effects more frequently than some of the other measures, Hershberger, Plomin, and Pedersen (1995) recently found scores on this measure to have substantial unique genetic variance apart from the genetic variance held in common with trait level. The authors interpreted this interesting finding to indicate that metatraits (as measured by the nonipsatized variance index) contribute unique variance to the prediction of individual differences in personality, beyond that which is contributed by an individual's standing on a given trait dimension. However, it should be emphasized that support for this index as a moderator of trait-behavior correlations in the current study was limited to one of three criterion variables.

<u>Reliability of the Organization, Meaningfulness, and Traitedness Measures</u>

The three measures derived from the Reptest demonstrated low, but acceptable, test-retest reliability coefficients across an interval of approximately 2 to 3 weeks, ranging from a low of .61 for the meaningfulness score to a high of .69 for the traitedness index. These correlations are comparable in magnitude to those reported by Baumeister (1991) for the nonipsatized variance index and, not surprisingly, generally higher than those obtained by Hershberger et al. (1995) for the same index across a period of several years. This suggests that the indices derived from the Reptest measure meaningful constructs which are at least somewhat stable across time.

In addition to their acceptable reliability, the organization and meaningfulness components of the traitedness index also displayed adequate discrimination from one another (mean r = .21), suggesting that they are fairly independent measures. This is particularly noteworthy given the very similar methods by which these two constructs were assessed (i.e., the average factor loading of personality characteristics based on an individual's ratings of self and others).

Correlations Among Measures of Traitedness

According to a number of investigators (e.g., Tellegen, 1988), it is important to demonstrate discriminant validity between measures of trait level and measures of traitedness in order to establish the relative independence of these two constructs. In the current study, the measures of traitedness derived from the Reptest (i.e., organization, meaningfulness, and traitedness) appeared to be fairly distinct from the measure of trait level (i.e., conscientiousness), with correlation coefficients ranging from .10 to .26. For the other measures of traitedness (i.e., the single-item measures and the nonipsatized variance index), the corresponding correlations were higher and ranged from a low of .29 for the single-item relevance score to a high of .54 for the single-item observability score, suggesting less discriminant validity for these measures.

Among the indices of traitedness used in previous research, only two of the single-item measures--consistency and observability--demonstrated a significant (though low) correlation with one another. This is consistent with past research that has reported relatively weak relations among single-item measures of trait relevance, consistency, and observability (Zuckerman et al., 1989), and suggests that these items should not be used interchangeably to operationalize traitedness. Finally, consistent with the conceptual framework of this study, the nonipsatized variance index appeared to be fairly distinct from the single-item measures. This suggests that these two types of measures assess different aspects of traitedness.

In general, there was little convergence between the traitedness measures derived from the Reptest and those used in previous research, with only one correlation between these measures reaching significance (i.e., between the traitedness index derived from the second session and the single-item consistency score). In particular, there was no evidence to support the expectation that the organization score derived from the Reptest would significantly correlate with the nonipsatized variance index.

One possible explanation for the lack of convergence displayed between the

measures derived from the Reptest and those used in previous research involves the difference in "sampling" technique between these two groups of measures. In particular, whereas the single-item measures and the nonipsatized variance index are based exclusively on self-ratings, the measures derived from the Reptest are based on ratings of self and others, consistent with personal construct theory. Although this extended range of sampling failed to lead to significant moderator effects in the present study, the reliability and significant direct effects obtained for the Reptest measures suggest that these personal construct-based indices reflect individual differences worthy of further investigation. Finally, it is important to note that because the meaningfulness and organization indices used in this study failed to display significant moderator effects, no conclusions can be reached regarding the hypothesis that traitedness measures which combine these two components will be the most successful moderators of trait-criterion correlations.

Directions for Future Research

The acceptable reliability and significant direct effects reported above for the organization, meaningfulness, and traitedness measures derived from the Reptest suggest that these measures reflect important individual differences that should be investigated in future research. In particular, future studies should attempt to replicate the findings presented here of significant correlations between the Reptest measures and conscientious behaviors, as well as to examine the use of personal construct-based indices with other traits (e.g., friendliness, extraversion, etc.), other behavioral criteria, and other samples. As mentioned earlier, these samples should be large enough to detect any significant gender differences that may be present.

In addition to potential moderator effects that may be obtained when other traits and criterion variables are employed, this study suggests that particular focus should be given to the utility of the Reptest measures in predicting behavior directly. If such direct effects can be found and reliably replicated, they would have important

implications for metatrait theory, as well as for personality assessment. Specifically, such effects would add a personal construct twist to metatrait theory, indicating that individual differences for some behaviors are related to the degree to which individuals possess an organized and/or meaningful representation of a given trait dimension within their personal construct system for describing self and others. Additionally, if the strength of this relation was found to frequently break the .30 personality coefficient barrier (as noted above), the Reptest measures could potentially be used in clinical and other applied settings to assist in the prediction of behavior.

Although it is conceivable that significant moderator effects may be found for certain trait-criterion correlations when utilizing the Reptest measures, the most promising measure developed thus far for this purpose appears to be the nonipsatized variance index. However, more research will be needed to examine the utility of this index with a greater range of traits and criterion variables. Additionally, if the conceptual definition of traitedness proposed in the current study is accurate, future studies should also attempt to combine this index with a reliable measure of trait meaningfulness to achieve more consistent moderator effects.

In selecting criterion variables for future studies of traitedness, it is recommended that emphasis be placed on objective behavioral measures, rather than the self- and peer ratings that have predominated in past research. Highly specific behavioral acts should be aggregated across a sufficient number of situations or measurement occasions to be congruent with the behavior construct of interest, which, in turn, should closely approximate the trait of interest in terms of level of generality (Epstein, 1979, 1980; Kirkpatrick, 1997). It is interesting to note in this respect that a number of investigators have recently called for the use of less global traits in attempts to predict behavioral criteria, specifically indicting the "Big Five" factors as being too broad to yield acceptable correlations with narrowly defined behaviors (Ashton, Jackson, Paunonen, Helmes, & Rothstein, 1995; Kirkpatrick, 1997). Thus, for example,

the facet scales from the NEO PI-R may be more appropriate than the broad factor scales in many instances.

The two criterion measures that were developed for this study (i.e., punctuality and compliance in confirming attendance) appear to warrant further research, with aggregation of these specific behavioral acts across a greater number of occasions. The punctuality measure displayed significant and unexpected negative correlations with a number of the other variables, suggesting that it may have been affected by situational factors worthy of further investigation. Additionally, although the compliance in confirming attendance measure was not involved in any of the significant results found for the traitedness measures, its significant correlation with conscientiousness suggests that it may at least be useful in future studies of this trait, particularly if developed into a continuous (rather than dichotomous) measure. Given the relative paucity of studies examining the ability of the NEO PI-R to predict such objective behavioral criteria, this finding appears to be an important one for the growing body of literature on this inventory.

Finally, GPA appears to be the most promising criterion measure for future research on the metatrait of conscientiousness, given its involvement in both the significant and near-significant moderator results reported above. This measure also displayed a significant positive correlation with the NEO PI-R Conscientiousness scale, consistent with past research that has found a positive relation between conscientiousness and academic achievement (e.g., Digman & Takemoto-Chock, 1981; Dollinger & Orf, 1991).

Summary and Conclusions

Results of this study failed to demonstrate support for the hypothesis that scores on the traitedness index, as operationalized by the Reptest, would moderate the relation between conscientiousness and objective behavioral criteria. However, some interesting results were obtained for the use of this index and its two component
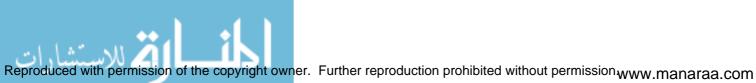
variables, organization and meaningfulness, as direct predictors of behavior. In some cases, these personal construct-based indices derived from the Reptest showed more substantial relations with behavior than the NEO PI-R Conscientiousness scale did, with a few of the correlations breaking Mischel's (1968) famous .30 personality coefficient barrier. However, further research will be needed to examine the reliability and validity of these findings and to further elucidate their meaning within a personal construct framework. If such findings are replicated with other traits and behavioral criteria, they could have important implications for metatrait theory, as well as for personality assessment.

Among the measures of traitedness used in past research, only the nonipsatized variance index displayed a significant moderator effect (in the predicted direction) for the relation between conscientiousness and GPA for women, while the single-item consistency measure demonstrated a tendency toward significance in moderating this relation for men. Neither of the other two single-item measures displayed significant direct or moderator effects. Further research will be needed to examine the utility of the nonipsatized variance index with a greater range of traits and criterion variables, and to examine the possibility of gender differences with larger samples.

Finally, although little convergence was demonstrated in the present study between the measures derived from the Reptest and those used in previous research, the acceptable reliability and significant direct effects obtained for the personal construct-based indices suggest that they reflect potentially important individual differences in the cognitive representation of trait dimensions. This variation in the cognitive representation of traits is very analogous to definitions of traitedness put forth in past research. It remains for future studies to elucidate the defining components of the traitedness construct, to establish the best way to operationalize it, and to determine which types of effects (i.e., direct or moderator) can be expected in examining the relations among traitedness, trait level, and behavior. The answers to these important

questions may finally allow researchers and clinicians to understand and measure important traitedness variations among individuals that have remained a challenging but fascinating topic since Allport (1937) first introduced his idiographic notions of trait structure and relevance.

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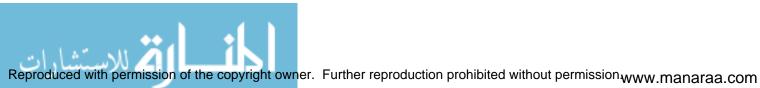
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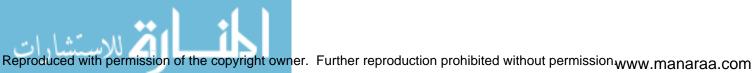
APPENDIX A

EXAMPLE OF CALCULATING THE TRAITEDNESS INDEX

<u>Rotated Factor Matrix</u>

			Factor		
Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Caring	.87107	-.22012	.32742	.08973	.06919
Understands	.85681	-.06248	.45467	.06385	.04464
Arrogant	-.83462	.07778	-.27180	-.20009	.05441
Listens	.83392	-.14396	.31694	.04770	.31339
Immature	-.78199	.32624	.05884	.21233	.09141
Gentle	.75744	-.29118	.15018	.06374	.17321
MARKER1	-.73739	.35724	-.14169	-.24923	-.14038
Superficial	-.73181	.25493	-.37271	-.03375	-.37758
Concerned	.69524	-.15004	.31417	.52981	-.00022
MARKER2	.62535	-.24910	.59390	-.06452	.33924
MARKER3	-.02840	.92378	-.10011	-.06045	.01591
MARKER4	-.26643	.90414	-.18276	.03307	-.08451
MARKER5	.47336	-.76569	.11515	.05731	.14501
MARKER6	.43491	-.56521	.24825	.43073	.25300
Playful	.17876	-.19266	.91246	.02970	-.04936
Outgoing	.49337	-.05177	.71133	.38888	-.00361
Distant	-.37848	.38093	-.66239	.27833	-.12792

| | Factor | | | | |
| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
Variable					
Musical	.17448	-.02402	.00711	.87586	.00354
Withdrawn	-.48213	-.06922	-.46894	.55813	-.13403
Athletic	.11845	-.10172	.00204	-.01743	.96020

Note. All markers represent items from the NEO PI-R Conscientiousness scale. MARKER1 = not as dependable as should be; MARKER2 = strives for excellence in all; MARKER3 = never seems to get organized; MARKER4 = trouble making self do as should; MARKER5 = has a lot of self-discipline; MARKER6 = strives to achieve all s/he can.

Factor 2 was selected for this participant as the factor for which the sum of the Conscientiousness scale marker loadings was greatest. Consequently, both the organization and meaningfulness scores required for the calculation of traitedness were derived from this factor as shown below.

Organization = Average factor loading of Conscientiousness scale markers on Factor 2
$$= 3.76516 / 6 = .62753$$

Meaningfulness = Average factor loading of personal constructs on Factor 2
$$= 2.34705 / 14 = .16765$$

Traitedness = Organization x Meaningfulness
$$= .62753 \times .16765 = .10521$$

APPENDIX B

TRIADS FROM THE REPERTORY GRID TEST

Triads

Triad 1

Mother

Someone you know well who is different from your mother in some important way

Someone you know well who is similar to your mother in some important way

Triad 2

Father

Someone you know well who is different from your father in some important way

Someone you know well who is similar to your father in some important way

Triad 3

Sister

Someone you know well who is different from your sister in some important way

Someone you know well who is similar to your sister in some important way

Triad 4

Brother

Someone you know well who is different from your brother in some important way

Someone you know well who is similar to your brother in some important way

Triad 5

Significant other

Someone you know well who is different from your significant other in some

important way

Someone you know well who is similar to your significant other in some

important way

Triads

Triad 6

Me

Someone you know well who is different from you in some important way
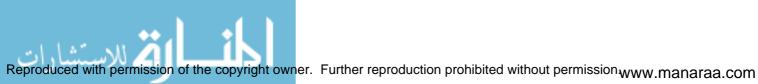
Someone you know well who is similar to you in some important way

Triad 7

Ideal me

Someone you know well who is different from your ideal you in some important way

Someone you know well who is similar to your ideal you in some important way

APPENDIX C

SINGLE-ITEM MEASURES

Name_____

Age_____   Sex_____

Race/Ethnicity_____

Circle the appropriate number for each question:

1. In general, how consistent are you from one situation to another in how conscientious you are?

| Never | | | | | | | | | Always |
| consistent | | | | | | | | | consistent |

    1   2   3   4   5   6   7   8   9

2. How relevant is the trait of conscientiousness to your own view of yourself?

| Never | | | | | | | | | Always |
| relevant | | | | | | | | | relevant |

    1   2   3   4   5   6   7   8   9

3. Generally speaking, how publicly observable or visible to others are your conscientious behaviors?

| Never | | | | | | | | | Always |
| observable | | | | | | | | | observable |

    1   2   3   4   5   6   7   8   9

APPENDIX D

INITIAL INFORMED CONSENT FORM

In this study conducted by Susan Heidal-Schiltz and Neill Watson, Ph.D., I understand that I will be asked to complete a computerized inventory in which I will be asked to list the names or initials of several people I know, to describe their personality characteristics, and to rate the people on the characteristics. I understand that I will also be asked to complete a paper and pencil personality inventory about myself. Furthermore, I understand that I will be asked to return for a second session in 2 or 3 weeks during which I will be asked to retake a portion of the computerized inventory and to answer a few additional questions about myself. I understand that the total time of participation for both sessions will be approximately 2 hours and that I will receive course credit for my participation. I further understand that my responses will be confidential and that my name will not be associated with my responses or any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation at any time. I also understand that any grade, payment, or credit for participation will not be affected by my responses or by my exercising any of my rights. I further understand that upon completion of my participation I will be given a full and complete explanation of this study and that I have the right to withdraw the use of my data at that time. I am aware that I may report dissatisfactions with any aspect of this study to the Psychology Department Chair. I am aware that I must be at least 18 years of age to participate. My signature below signifies my voluntary participation in this experiment.

_____   _____

Date   Signature

If you would like to receive verbal feedback concerning your results on the paper and pencil personality inventory, please provide two telephone numbers where

you can be reached in May and June. You will be contacted by the investigator at the conclusion of the study to set up an individual appointment time to go over a summary of these results.

Telephone Number: Alternative Telephone Number:

(_____)_____   (_____)_____

If you are interested in receiving the results of this study once they become available, please provide the address where you would like to receive them in the space below.

Address:

_____

_____

_____

APPENDIX E

FINAL INFORMED CONSENT FORM

Now that you have completed the personality inventories, providing us with information about yourself and the kinds of personality characteristics that you use in describing people you know, we would like to get some more information about you to determine how well the personality inventories can predict people's actual behaviors. The behaviors that we are trying to predict include your college grade point average (i.e., QPA), your final course grade in introductory psychology, the time that you called to confirm your attendance prior to each session, and the time that you arrived for the study at both sessions (which was recorded as each participant entered the room). The consent form that follows asks for your permission to obtain and utilize this information.

I understand that by signing my name below I am giving permission for the William and Mary Registrar to release my transcript of courses and grades through the end of this semester to the researchers (Susan Heidal-Schiltz and Neill Watson, Ph.D.); for the instructor of my current Psychology 201 or 202 course to release my final grade to the researchers; and for the researchers to utilize information concerning the time that I called to confirm my attendance prior to each session and the time that I arrived for the study today and at the first session. I further understand that this information will be kept confidential and will be used for research purposes only. I understand that my name will not be associated with this information or any results of this study. I know that I may refuse to provide this information. I also understand that any grade, payment, or credit for participation will not be affected by my response or by my exercising any of my rights. I further understand that upon completion of my participation I will be given a full and complete explanation of this study and that I have the right to withdraw the use of my data at that time. I am aware that I may report dissatisfactions with any aspect of this study to the Psychology Department Chair. My

signature below signifies my voluntary permission for the investigators to obtain and utilize the information described above.

_____   _____
Date   Signature

VITA

Susan Nancy Heidal-Schiltz was born in Albert Lea, Minnesota on November 19, 1969. She graduated summa cum laude from the University of Minnesota in December of 1992, earning a Bachelor of Arts degree in psychology. While at the University of Minnesota, she completed an honors thesis under the supervision of Dr. Auke Tellegen, which was entitled "An Idiographic/Nomothetic Study of Natural Language Personality Descriptors." Susan began pursuing her doctorate in clinical psychology in 1993 at the Virginia Consortium Program in Clinical Psychology (3300 South Building, Suite 201, 397 Little Neck Road, Virginia Beach, Virginia 23452). This training culminated in a predoctoral clinical internship at the University of Virginia Health Sciences Center in 1996-97, where she specialized in pediatric psychology and neuropsychology. Susan will obtain her Doctor of Psychology degree in clinical psychology in December of 1997. She has accepted a postdoctoral fellowship in pediatric psychology at The Kluge Children's Rehabilitation Center in Charlottesville, Virginia.