

**An Examination of
Test-Taking Attitudes and Response Distortion
on a Personality Test**

by

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(ABSTRACT)

This study examined test-taking attitudes and response distortion on a personality test. Consistent with our hypotheses, applicants were found to have significantly more positive test-taking attitudes and exhibit a greater degree of response distortion as compared to incumbents. In addition, test-taking attitudes were significantly associated with response distortion. However, test-taking attitudes failed to affect work performance or validity in the incumbent samples. Limitations and implications for future research are discussed.

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Introduction

One of the most important tasks that confronts human resource managers and personnel consultants is the selection of new talent into an organization. This critical function provides new life for an organization and the people that will be responsible for its eventual successes and failures. Paper-and-pencil tests have become a critical part of the selection process for many companies (Lounsbury, Bobrow, & Jensen, 1989). A great deal of research has focused on understanding and utilizing these tests to achieve maximum benefit for selection purposes. However, researchers have overlooked the attitudes and motivations of individuals taking these tests.

Recently, the study of test-taking attitudes has been taken to a new level and systematic attempts have been made to measure the construct and examine the resulting effects on the selection process. Test validity is a major concern for most employers and, as Cascio (1991) pointed out, even minimal gains in validity can have a positive impact on an organization. Estimates of validity can be obtained based on a sample of applicants (predictive validation) or a sample of job incumbents (concurrent validation). However, there has been a paucity of empirical research examining potential differences between applicants and incumbents that may lead to a greater understanding of each validation strategy.

Over the years, a number of authors have pointed to motivation as a potential source of differences between applicants and incumbents with individuals applying for a job posited as being more motivated than those who already have a job (Barrett, Phillips & Alexander, 1981; Guion & Cranny, 1982). However, until recently, this long standing notion has remained untested. Arvey, Strickland, Drauden, & Martin, (1990) provided preliminary evidence that there are indeed motivational differences between applicants and incumbents and that these differences may have

an effect on the validity of employment tests. Additional research has been conducted, by Schmit & Ryan (1992), investigating the relationship between test taking motivations and validity. However, due to a number of limitations in these studies, the research to date is inconclusive (Arvey et al., 1990; Schmit & Ryan, 1992).

The purpose of the present study is to build upon the work of Arvey et al., (1990) and Schmit & Ryan (1992) and examine the relationship between test-taking attitudes, personality test scores and validation in greater detail. A related issue that will be examined is the relationship between test-taking attitudes and response distortion or faking on a personality test. Although it has never been empirically tested, a great deal of literature suggests that individuals with more positive attitudes and greater motivation may be more likely to fake on noncognitive measures.

Literature Review

One of the largest bodies of literature in Psychology and Management pertains to the effect of attitudes and motivation on performance (Hackman, & Oldham, 1980; Latham & Huber, 1992; Locke & Latham, 1990; Stahl & Harrell, 1981; Tubbs, Boehne & Dahl, 1993; Vroom, 1964). A great deal of this research has demonstrated that motivation profoundly affects performance across a wide variety of tasks and situations. However, this line of research has not included test taking situations as an area of inquiry. The attitudes, anxieties and motivation that individuals bring into a testing situation have been largely overlooked. Based on past literature, there is reason to believe that the attitudes and motivation of test-takers would impact their performance on employment tests and the testing situation in general.

Considering all of the attention given to paper and pencil tests in the Psychological and Educational literature, it is surprising that the attitudes and motivations of test takers have been

ignored. There has been a dearth of research examining psychological motives and responses to testing particularly in applied settings. Intuitively, one would expect test-taking attitudes to be very prevalent as tests are utilized to determine which individuals can go to the best colleges and graduate schools, who should be hired for contested jobs and who will gain recognition and promotion within an organization. Considering the important outcomes associated with success on tests, the attitudes and motivations regarding these tests are worthy of detailed examination.

Generally, it is considered good practice to administer tests under standardized conditions to assure that all test-takers are having the same experience (Crocker & Algina, 1986). However, this standardization does not eliminate variability in how individuals perceive the testing situation or their reactions following the test. Over the years, there have been few papers that address the attitudes and reactions of individuals to paper and pencil tests. Fiske (1967) concluded, based on a national survey, that people have markedly different reactions to tests (both ability and personality) and that these reactions are likely to affect an individual's performance on these tests. Nevo & Sfez (1985) make a similar argument that test taking situations elicit profound emotions that could influence future test performance.

Lerner (1986) found the public held favorable attitudes toward testing in general whereas Lounsbury et al., (1989) provided empirical evidence that negative attitudes toward all types of employment tests are prevalent. This research certainly provides no conclusions regarding attitudes toward tests or their eventual effects on performance but they do suggest that test-taking attitudes (particularly motivational components) are important and merit further investigation. Lounsbury et al. (1989) point out that, in the past, researchers have failed to examine test taking attitudes systematically and have shown a general lack of concern for the factor structure or

dimensionality of this construct. In other words, past research on test-taking attitudes has been largely descriptive and has provided inconclusive information.

Test-Taking Attitudes

Recently, the study of test-taking attitudes has been taken to a new level and systematic attempts have been made to measure the construct in a consistent fashion with the goal of examining the resulting effects on the selection process. An important consideration, with regard to the selection process, is the validity of the tests that are used for the selection and placement of employees. The validation process, and a number of arguments related to test-taking attitudes, will be reviewed.

Validity is a singular concept that generally refers to the inferences made based on test scores but researchers find it useful to break it down into three highly related categories. These are content validity, construct validity and criterion-related validity. They are all of interest to researchers and practitioners. It is important to emphasize that this classification is based on different inferences made from a test and does not imply different *types* of validity (Pedhazur & Schmelkin, 1991), or that these are the only useful strategies for validation (Binning & Barrett, 1989; Schmitt, & Landy 1993).

One way to establish the validity of measurement is to examine the content of a test. Content validity refers to whether the items on a test are a representative sample of a particular content domain. Construct validity is concerned with the inferences made about constructs (unobservables) on the basis of observed variables. Stated another way, it is asking whether the test is a good measure of what it is intending to measure. Finally, criterion related validity looks at the relationship between a predictor variable and a criterion of interest. In the context of

selection, one is interested in whether a particular test (the predictor) is related to a relevant organizational outcome measure (the criterion). The use of the word validity throughout this manuscript will be referring to what is described above as criterion-related validity unless stated otherwise.

There are two strategies that are commonly utilized to establish the criterion-related validity of a selection test. Predictive validation involves utilizing one variable (in this case a selection test) to predict another variable collected at a future point in time. Concurrent validation is the same in all respects except for the absence of a time lag between the collection of the predictor and the criterion data. These tests are validated using a wide range of criterion variables including: Absenteeism, employee deviance, performance, and turnover. Although not required, predictive validation approaches almost always involve job applicants while concurrent procedures utilize actual incumbents of the job in question.

The ultimate goal is a selection test that predicts the future job performance (or other relevant variable) of applicants. Based on this fact, it is often argued that predictive validity is the most important and useful strategy. (Cascio, 1991; Guion & Cranny, 1982). However, for a number of practical reasons, concurrent designs are commonly utilized to provide estimates of the predictive validity of tests (Murphy & Davidshofer, 1994). The important question becomes: Are concurrent validity estimates accurate? There has been a long-standing debate concerning the relative adequacy of these two strategies for the purpose of validating an employment test. A number of authors have espoused predictive validity as a clearly superior strategy in employee selection (Anastasi, 1976; Cascio, 1991; Guion, 1976; Guion & Cranny, 1982).

Barrett et al., (1981) provided an extensive review of the major criticisms levied at concurrent designs. First, the "missing persons" problem or the fact that concurrent designs are more likely to have less variability or restriction of range as compared to predictive designs. Second, and a focus of this investigation, they pointed out the likelihood of motivational and attitudinal differences between applicants and incumbents that may affect observed validities. Finally, the confounding of validity with job experience within an incumbent sample may lead to an attenuation of the observed validity coefficients. In spite of these criticisms, they point out that there is no empirical evidence documenting adverse effects on validity.

The empirical evidence to date seems to demonstrate that concurrent and predictive designs produce similar validity coefficients (Bemis, 1968; Society for Industrial and Organizational Psychology, 1987). This evidence has been used to suggest that any differences in these designs (e.g. attitudinal\motivational differences) have no practical effects and must not affect validity. For example, Schmitt, Gooding, Noe, & Kirsch (1984) conducted a meta-analysis and the resulting validity coefficients for concurrent and predictive designs were almost identical. However, most of this evidence comes from meta-analyses and other unknown variables may be effectively washing out the effects of particular variables such as motivation. It is also important to note that a great deal of this evidence concerns cognitive ability tests and it has been pointed out that the same may not hold true for other types of self-report measures where motivational differences between applicants and incumbents may have a greater effect (Arvey et al., 1990; Barrett et al., 1981; Guion & Cranny, 1982).

Thus, researchers should investigate important factors that may influence the validity (construct or criterion-related) of a test for the purposes of selection. It is also important to

attempt to understand potential differences between applicant and employee samples in validation studies. As mentioned previously, a number of authors have suggested that current employees (concurrent validation) may not exert as much effort or persistence as actual applicants (predictive validation) when taking an employment test (Barrett, et al., 1981; Guion & Cranny, 1982; Murphy & Davidshofer, 1994). Although this has been a long standing criticism of concurrent designs there has been almost no research directly examining these potential differences or their effects on the selection process and the validation of tests.

Arvey et al. (1990) point out that there have been two strands research suggesting motivational and attitudinal differences between applicants and incumbents. For example, subjects taking cognitive ability tests for research purposes perform at lower levels on tests than actual applicants or those seeking a promotion (Heron, 1956; Jennings, 1953; Rothe, 1947). Jennings (1953) administered the Wonderlic Personnel Test, to a group of supervisors under instructions that the test would be used for research or as a basis for promotion. The promotion group demonstrated significantly higher mean scores and greater validity in terms of the correlation with overall work performance. This research suggests that motivational differences, inferred based on comparing the promotion versus the research condition, affect test performance. A related strand of research has demonstrated that test performance can be altered when faking instructions are given or incentives are provided to do well which illustrates the potential effects of outside influences (Corr, & Gray, 1995; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Jeske & Whiten, 1975; Mahar et al., 1995; Moore, 1990; Zalinski & Abrahams, 1979).

Although past research has been limited and only provides us with small insights into test-taking attitudes and motivation, two recent studies have taken the first steps toward

understanding differences, between applicants and incumbents, in test-taking attitudes and the resulting effects on test performance, job performance and test validity. Two recent investigations directly study the effects of test-taking attitudes and motivation: Arvey et al, (1990) and Schmit & Ryan (1992).

Arvey et al., (1990) were the first to develop an instrument to systematically measure the attitudes of test-takers in an employment setting. They created the Test Attitude Survey (TAS) specifically for this purpose. The original item pool was designed to reflect a number of attitudinal and motivational components of test-taking. Their primary conceptualization of motivation was the exertion of effort and hard work on a test. They also wrote items to reflect perceived instrumentality, challenge and difficulty as well as attributions for test success and belief in the accuracy and utility of tests in general. The resulting scale consists of 9 factors related to employment tests: Motivation/effort, Concentration, Belief in Tests, Comparative Anxiety, Test Ease, External Attribution, General Need Achievement, Future Effects and Preparation.

Arvey et al. (1990) pointed out that the final scale reflects a number of "different motivational and attitudinal dispositions" (p.703). The words attitudinal and motivational dispositions are used interchangeably throughout their paper (as they have been in this manuscript) in reference to the TAS factors without much explanation. They do point out that attitudes and motivation are distinct constructs but they are content with treating them as equivalent in the conceptualization of their scale. As an alternative, it may be useful to look at this scale within the context of the generally accepted tripartite or ABC model of attitudes (Aronson, Wilson, & Akert, 1994; Baron & Byrne, 1987; Breckler, 1984). This will help in

clarifying the potential confusion that may result from treating attitudes and motivation as one and provide a framework to better understand the TAS.

The tripartite, or ABC, model of attitudes suggests that attitudes have three components: Affective, behavioral and cognitive (Aronson et al., 1994; Baron & Byrne, 1987; Breckler, 1984). The affective component deals with positive or negative emotions toward an object, the behavioral component reflects intentions to act or behave and the cognitive component deals with thoughts and beliefs about an object. When we hear the term attitude we tend to think only of the cognitive component but each of the TAS subscales can be conceptualized in terms of this model of attitudes (See Appendix B for specific items). Comparative Anxiety and External Attribution are representative of the affective domain, Motivation, Concentration, General Need Achievement and Preparation are behavioral in nature and Belief in Tests, Future Effects, and Test Ease refer to cognitions about tests. Based on this, it is clear that the TAS measures test-taking attitudes focusing on the highly-related affective, behavioral and cognitive elements.

Beyond the creation of the TAS, the results of Arvey et al. (1990) offer some interesting insights into the attitudes of applicants (N = 301) and incumbents (N = 179) concerning selection tests (Intuitive Mechanics Test, the Shop Math Test, and the Tool Use Test; Richardson, Bellows, & Henry, Inc, 1950). They showed that applicants expressed higher TAS scores on 7 of the 9 factors when compared to incumbents. Specifically, applicants reported more motivation/effort, preparation, and a belief that they would be affected by the results of the employment tests. This finding provides direct evidence for a long standing belief concerning the existence of motivational differences that has been unsubstantiated due to the lack of empirical investigations.

In addition, the data also revealed a small, but significant, positive relationship between TAS factor scores and overall performance on a comparison test (identify whether two columns of information are identical or not), an arithmetic test and a work sample test. The Motivation, Comparative Anxiety and Preparation TAS factors demonstrated the strongest overall relationships with scores on all three tests. It is also important to note that the racial differences in mean test performance, that are often discovered, were substantially reduced when the TAS motivation scores were held constant. This also suggests that motivational factors are likely to play a role in test performance.

Although not hypothesized, Arvey et al. (1990) provided tentative evidence for the TAS scores providing incremental validity above the use of three pre-employment tests. A sample of 179 incumbent highway workers were given the Intuitive Mechanics Test, the Shop Math Test, and the Tool Use Test (Richardson et al. 1950). A potential explanation for this finding of incremental validity, as put forth by Arvey et al., (1990), is that TAS scores may demonstrate an independent relationship (i.e. additive) with the criterion variable due to correlations with relevant personality or dispositional variables. For example, TAS scores (driven by the behavioral intention/motivational component) could be related to job performance based on an association with motivation on the job. Another possibility is that TAS scores moderate the validity in that predictability of individuals differs based on their test-taking attitudes and motivation. In other words, TAS scores interact with test scores in predicting relevant work outcomes.

However, they were unable to draw any firm conclusions due to a number of self-admitted limitations in their study. First, they had no information about the psychometric features of the employment tests used due to the opportunistic nature of their sample. Second, they were

plagued by missing data due to subjects' failure to complete the TAS or supervisors' negligence in providing ratings. Finally, the sample size was small. In light of these limitations, Arvey et al., (1990) suggested that future research needs to examine whether TAS factors "add incremental validity through operating as a direct predictor or as a moderator" (p.712). In spite of the drawbacks listed above, this study provides some interesting insights and the foundations for the future study of test-taking motivation.

Schmit & Ryan (1992) built upon the work of Arvey et al. (1990) by attempting to demonstrate precisely how these attitudinal differences may affect validity coefficients in selection research. They conducted a study, utilizing undergraduates, that simulated a concurrent validation design for the job of college student. The simulation involved a personality test, a cognitive ability test as well as the Test Attitude Survey. Subjects were instructed to play the role of an applicant competing for a job at a prestigious university. They were also told that a large number of applicants were competing for a few openings. Monetary rewards were offered as opposed to jobs (i.e. two \$20 prizes and four \$10 prizes based on test performance). Although unrelated to the present study, they also examined the effects of practice and negative feedback on test-taking dispositions and motivation.

Two of their findings are particularly relevant to this study. First, they found no evidence of incremental validity in predicting cumulative grade point average, when used in conjunction with an ability test, for the TAS scores. However, this could be due to the nature of the population, and the simulation utilized in the study. The choice of criterion is also suspect for examining this issue as it is unlikely that the TAS would demonstrate incremental validity in predicting grade point average over and above a cognitive ability test. It is generally accepted

that cognitive ability tests are robust in the prediction of grade point average and success in college. Considering these limitations, and the tentative evidence of incremental validity provided by Arvey et al. (1990) it seems necessary to examine this possibility in a situation that is more conducive to the examination of test-taking attitudes.

Their main finding was a moderating effect of TAS scores on the correlation between the personality test and grade point average (i.e. validity). Specifically, the validity of personality tests was the lowest for those with positive test-taking attitudes. Schmitt & Ryan (1992) put forth two potential explanations for the relationship between TAS scores and personality. First, as suggested by Arvey et al. (1990), test-taking attitudes and motivation may be related to stable characteristics such as motivation on the job. However, they rejected this notion due to the lack of evidence for incremental validity. Second, they suggested that motivated test takers may approach personality test items as representative of the maximum performance domain (as opposed to typical performance) and distort their responses based on a self presentational approach.

It is important to emphasize the limitations of Schmit & Ryan (1992). They utilized a small sample ($n = 157$) of college students in a simulation design. It is unlikely that the same motivational characteristics that would be found in a selection setting would be present in this sample particularly due to the nature of the simulation. It seems prudent to re-examine these important issues in a large organizational sample with more relevant criterion. Considering the equivocal results provided by Arvey et al. (1990) and Schmit & Ryan (1992), research concerning the relationship between the TAS and other variables potentially relevant to selection is warranted. For example, the construct of test-taking attitudes and motivation may be related to

self-presentation (response distortion) on these tests. It is logical to suggest that the way an individual thinks, feels, and intends to behave (attitudes) in a testing situation is likely to affect the way they respond to test items.

Response Distortion

Cognitive ability tests have received a great deal of attention and are frequently utilized in selection batteries for a plethora of jobs. The validity of these tests has been documented and many authors advocate intelligence as the best predictor of job performance (Hunter & Hunter, 1984; Jensen, 1993; Olea & Ree, 1994; Ree & Earles, 1993; Schmidt, Hunter, & Caplan; 1981). Hunter & Hunter (1984) went so far as to suggest that cognitive ability tests are valid predictors of performance across all jobs and can be universally applied for the purposes of selection. Over the years, a number of authors have echoed these sentiments and claimed that it is difficult, if not impossible, to achieve any meaningful increments in validity over and above cognitive ability tests (Hunter & Hunter, 1984; Ree & Earles, 1992; Ree & Earles, 1993; Ree, Earles, & Teachout, 1994).

Despite the widespread application and general acceptance of these tests, there are still problems associated with their use. The main issue is the adverse impact toward minority groups that often results from the use of cognitive tests (Arvey & Sackett, 1993; Murphy & Davidshofer, 1994; Schmidt, 1988). Schmidt (1988) expressed concern over the fairness of these tests toward African Americans and other minority groups. It is also important to note that there is a growing body of research suggesting that gains, in terms of validity and fairness, can be made from the use of other instruments such as integrity tests, biodata inventories and personality tests (Baehr &

Orban, 1989; Calfee, 1993; Day & Silverman, 1989; Landy, Shankster, & Kohler; 1994; McClelland, 1993).

However, a major concern for most noncognitive measures (i.e. biodata, integrity, and personality) is the potential for response distortion. Response distortion has been defined as the intentional falsification of responses on self-report test (Merydith & Wallbrown, 1991). A great deal of evidence suggests that individuals are able to fake (both good and bad) responses to biodata inventories, integrity tests, and personality tests (Bornstein, Rossner, Hill, and Stepanian, 1994; Corr & Gray, 1995; Cunningham, Wong & Barbee, 1994; Hogan, 1992; Hough et al., 1990; Kluger & CoLella, 1993; LoBello & Sims, 1993). That is, individuals can raise or lower their scores depending on the situational inducements. After a brief review of the prevalence of faking on noncognitive measures, the response distortion literature will be reviewed in detail.

Organizations have been utilizing integrity tests (honesty tests) as a means to predict and control theft, turnover, absenteeism and other deviant behaviors. Integrity measures have been categorized into two types: Overt and personality-based tests (Sackett, Burris, & Callahan, 1989). Overt tests directly assess attitudes toward, and actual incidents of, dishonest behavior, while personality-based integrity tests attempt to predict counterproductive behaviors indirectly by using measures of personality such as reliability, conscientiousness or adjustment. The validity of these tests, in predicting a number of outcomes, has been consistently demonstrated (Cunningham et al., 1994; McDaniel & Jones, 1986; McDaniel & Jones, 1988; Ones et al., 1993; Ones, Viswesvaran, & Schmidt, 1995).

A common criticism of integrity testing has been the potential for dissimulation, or response distortion, on the part of the test takers. The purpose of many of these tests is quite

transparent and it makes intuitive sense that people would attempt to present themselves as honest and virtuous by denying past theft or dishonest behaviors. Research has shown that integrity tests, particularly overt tests, are susceptible to response distortion or faking (Cunningham, 1989; Cunningham et al., 1994; LoBello & Sims, 1993; Ryan & Sackett, 1987). Ryan & Sackett (1987) gave an honesty test to 148 undergraduates under instructions to respond honestly, fake good or respond as if you were applying for a job. They provided evidence that fake good subjects receive the best (most honest) scores. LoBello & Sims (1993) gave 60 male inmates an overt integrity test under instructions to respond as if they were applying for a desired job and give the most favorable impression possible (n = 19), to respond truthfully (n = 20), or in the absence of instructions. They showed that the most favorable test profiles were given under fake good instructions.

The second type of noncognitive test, biodata, generally consists of the standardized assessment of an individual's background and life history. Biodata inventories have been demonstrated as valid in predicting a variety of job relevant criterion such as performance, tenure, training success and future wages (Reilly & Chao, 1982; Schmitt et al., 1984). However, they are susceptible to response distortion or faking just like the other noncognitive measures (Hogan & Stokes, 1989; Hough et al., 1990; Lautenschlager, 1994). Hough et al., (1990) examined faking on a biodata instrument called the Assessment of Background and Life Experiences (ABLE). They gave ABLE to 245 enlisted men who completed it under fake good (be sure the Army selects you), fake bad (be sure the Army does not select you) and honest conditions with the order of instructions counterbalanced. They found significant mean differences among the

conditions with the fake good condition resulting in significantly higher means, and the fake bad resulting in lower means, when compared to the honest condition.

The final category of tests, and the focus of this investigation, is personality tests. There are countless instruments designed to assess personality and, as Klimoski (1993) pointed out, there is probably a test for every personal attribute or trait imaginable. Over the years, there have been many negative commentaries regarding the use of personality tests in the context of personnel selection. A number of authors have expressed the view that the validity of personality tests in predicting performance is very low (Ghiselli, 1973; Guion & Gottier, 1965; Hunter & Hunter, 1984; Reilly & Chao, 1982; Schmitt et al., 1984). Based on these reviews, organizations and researchers eventually lost confidence in personality tests for use in selection settings.

In spite of these critical reviews, there has been a recent resurgence in the use of personality tests to predict work performance and other organizational criteria. Fueled in part by the widespread interest in taxonomies such as the "Big Five" and personality research in general (Barrick & Mount, 1991; Digman, 1990; Goldberg, 1993; Landy et al., 1994), organizations and researchers have given these predictors another look (Hogan, 1991; Hollenbeck, Brief, Whitener, & Pauli, 1988). A number of recent studies, and meta-analyses, have provided evidence for the validity of a multitude of well constructed personality measures in predicting performance, commitment, tenure and other organizational variables (Atwater, 1992; Barrick & Mount, 1991; Dunn, Mount, Barrick, & Ones, 1995; Hogan, 1991; Muchinsky, 1993; Tett, Jackson, & Rothstein, 1991; Tett, Jackson, Rothstein, & Reddon, 1994).

Of equal importance, a number of investigators have provided evidence of incremental validity for personality measures over and above that provided by cognitive ability tests (Baehr, &

Orban, 1989; Day & Silverman, 1989; McHenry, Hough, Toquam, Hanson, & Ashworth, 1990). Baehr & Orban (1989) tested the hypothesis that personality predictors, with little association to cognitive ability, would be important in the prediction of performance for management jobs. 800 incumbents, from 12 occupational groups, were given an extensive battery of cognitive and personality measures which were eventually correlated with a criterion measure of current earnings. They demonstrated that personality measures did add incremental validity and that optimal prediction was obtained from different combinations of personality and cognitive measures dependent upon the occupational level. The conclusion that has been drawn from this body of research is that, unlike cognitive tests, different personality tests (i.e. measuring a different trait or set of traits) are predictive for specific jobs (Atwater, 1992; Hogan, 1991; Muchinsky, 1993). In other words, each individual personality test should be tailored for use, in terms of which traits are relevant, and validated for each situation.

However, personality tests are not immune to the problems associated with faking and response distortion. A large body of research documents the presence of faking on these tests (Christiansen, Goffin, Johnston, & Rothstein, 1994; Furnham, 1990; Holden, Kroner, Fekken, & Popham, 1992; Mahar et al., 1995). Holden et al., (1992) assigned 84 undergraduates to fill out the MMPI under one of three conditions: standard self-report, fake good and fake bad. They demonstrated that faking subjects took significantly longer to respond as compared to those given standard instructions indicating the presence of response distortion. Paulhus, Bruce and Trapnell (1995) and Paulhus and Bruce (1991) demonstrated that, when given instructions to do so, individuals can successfully fake entire personality profiles.

In order to benefit fully from the use of these tests in a selection setting, it is important to examine factors that are related to their successful implementation. In the past such research has been conducted but it has focused mainly on cognitive ability tests. Considering the recent resurgence in the use of personality tests, the purpose of this investigation is to examine a number of issues associated with the use of personality tests in the context of selection. It is reasonable to assume that a selection situation is likely to motivate individuals to fake their scores in hopes of obtaining a job (Mahar et al., 1995; Lautenschlager, 1994). A number of researchers have pointed out the problems associated with faking responses in a testing situation. Furnham (1986) concluded that validity is often undermined by various forms of response distortion. Kroger and Wood (1993) noted that the potential of response distortion raises the possibility that our tests measure "not permanent dispositions but momentary presentations of the self that suit the occasion" (p. 1297). Considering this, and the repeated demonstrations that people can fake responses on noncognitive measures, it is important to review the literature surrounding the effects of faking. Faking will be examined with regard to effects on reliability, construct validity, criterion-related validity and a number of other practical considerations. There are three basic perspectives when it comes to the outcomes associated with response distortion: faking helps, faking has no effect and faking is detrimental.

The notion that faking helps is relatively new and there is almost no research substantiating this point of view. This view is based, in large part, on the conceptualization of social desirability as a meaningful construct that is related to stable personality traits or adding relevant variance in the prediction of performance or other relevant criterion (Christiansen et al., 1994). There is also evidence that correcting for social desirability can decrease validity

coefficients (Ones et al., 1993) which also suggests that faking may help in terms of criterion-related validity. Finally, Douglas, McDaniel & Snell, (1996) demonstrated that reliability (conceptualized as internal consistency) actually increased for subjects in the faking condition. They reasoned that this was due to a tendency for faking subjects to consistently report positive behaviors while honest subjects report real inconsistencies in their behavior. In spite of this, there is a paucity of research suggesting that faking helps and until additional research is conducted it will remain a tenuous position.

The second, and most commonly held, position is that faking has no effects on validity or other relevant properties of employment tests. The first strand of evidence in support of this position is the failure to detect differences in validity coefficients between predictive and concurrent designs (Barrett et al., 1981; Ones et al., 1993; Schmitt et al., 1984). Researchers suggest that if more faking is occurring in the applicant samples, as people commonly assume, the effects would manifest themselves in the validity coefficients. However, most of the evidence in support of this comes from meta-analyses and there could be any number of unknown variables working to wash out the negative effects of faking. There is also a great deal of evidence that correcting for social desirability does not improve validity coefficients (Christiansen et al, 1994; Douglas et al., 1996; Ones, Viswesvaran & Reiss, 1995). Finally, many researchers suggest that actual applicants do not fake and that response distortion is a phenomena that is confined to laboratory studies with instructional manipulations (Hogan, 1991; Hough et al., 1990; Ones et al., 1993). However, there is a great deal of research suggesting that applicants do, in fact, engage in response distortion (Barrick & Mount, 1996; Douglas et al., 1996; Frei, Griffith, Snell, McDaniel & Douglas, 1997; Stokes, Hogan & Snell, 1993). While we may not have a precise idea of the

true level of faking among applicants it appears that the conclusion that they do not engage in response distortion is premature.

The third perspective, consistent with the logic put forward in this manuscript, is that faking is detrimental to the psychometric properties of tests and their overall utility. The most basic notion is that faking leads to range restriction in the predictor (i.e. whatever test you are using) resulting in a reduction of the validity coefficients (Douglas et al., 1996; Furnham, 1986; Holden & Jackson, 1981; Zickar, 1997). Beyond that, it is important to review a recent study by Douglas et al. (1996) that is very informative with regard to the effects of faking. They randomly assigned 600 college students to either an honest condition (n = 293) or a faking condition (n = 307). Each subject completed a biodata inventory and a personality measure that both contained subscales measuring agreeableness and conscientiousness. Rating forms were also submitted to the employers of each subject as a measure of job performance (208 were returned).

This study presented a number of findings germane to the perspective that faking is detrimental to noncognitive testing. First, the criterion-related validities were considerably lower in the faking condition (-.09) as compared to the honest condition (.15). This provides direct evidence that faking can, and does, affect the validities obtained based on noncognitive tests. They also conducted a Multi-Trait (agreeableness, conscientiousness) Multi-Method (MMTM) analysis (Personality, Biodata) to investigate the issue of construct validity. Their results showed a clear reduction in construct validity when subjects were faking their responses. The MMTM demonstrated significantly higher validity (convergent and discriminant) for the honest condition as compared to the faking condition. Specifically, there was a large decay in the divergent coefficients when estimates were made based solely on subjects in the faking condition. Recall

that Douglas et al. (1996) demonstrated that faking could increase the internal consistency reliability of a scale. This high degree of response consistency may have negative effects on construct validity. Considering all of the above evidence they came to the conclusion that "faking has substantial consequences...with respect to reliability, construct validity, and criterion-related validity" (p.5).

Another negative effect of faking relates to the utility of a test used for purposes of selection. Zickar, Rosse, & Levin, (1996) conducted a simulation and used item response theory to demonstrate that small percentages of fakers can have detrimental effects on potential decisions based on that test. They showed that only a few fakers are needed for a high percentage of fakers to end up in the top of the distribution. Douglas et al. (1996) and Zickar (1997) replicated these results and showed that as the number of fakers increases the percentage in the top of the distribution also increases. For example, when 25% of the Douglas sample consisted of fakers, 9 of the top 10 subjects were fakers. In this case, the overall validity was around .20 but for these fakers it was almost zero. This has obvious implications as the top of the distribution (i.e. highest scores on the predictor) is the most relevant since they are the ones usually hired by an organization. Considering all of the above evidence it seems clear that faking has detrimental effects on employment tests. In sum, faking leads us to question what we are measuring, it can lead to lower criterion-related validity and it can have adverse effects on who we select into our organizations.

Beyond documenting its existence and the effects on validity, most of the research surrounding response distortion has dealt with methods of avoiding, detecting and eventually making corrections for faking (Baer, Wetter, Nichols, Greene, & Berry, 1995; Christiansen et al.,

1994; Holden, 1995; Holden et al., 1992; Hsu, Santelli, & Hsu, 1989). Suggested methods of avoiding response distortion include: Directions encouraging frankness, disguising items, repeating items, and not allowing test takers to sign their name until the test is completed. In terms of detection, researchers have suggested and utilized a number of different social desirability and lie scales, as well as measures of response latency.

However, there has not been much research aimed at understanding the process or the antecedents of response distortion. Most of the research that does exist has examined characteristics of the test and the testing situation to the exclusion of personal characteristics that may lead to faking. For example, Bornstein et al. (1994) demonstrated that the face validity of a test was related to dissimulation by comparing the fakability of projective (low face validity) and objective tests (high face validity). In study 1, subjects were able to identify the trait being assessed on the objective measure but they failed on the projective measure. The results of the second phase of the study followed the same pattern in that subjects could fake their responses on the objective measure but not on the projective measure. Finally, the study provided evidence that scores can be altered by providing instructions in a positive, a negative or a neutral fashion. This points out the importance of outside factors, such as the affective tone of instructions or the face validity of a test, in influencing faking or response distortion. However, this line of inquiry fails to get at any personal factors such as attitudes and motivations associated with the decision to fake.

Kluger & Colella (1993) looked at whether warning against faking could minimize the presence, and the effects, of response distortion on a biodata instrument. The randomly alerted 214 out of 249 individuals applying for a nurse's assistant position of the dangers associated with

faking. They found that, for transparent items, a direct warning did reduce the tendency to fake while the warning had no effect for nonobvious items. They pointed out that more research needs to be conducted on the effects of warning and, more importantly, the role of attitudes and motivation needs to be examined in relation to the decision to fake. As mentioned previously, it is this issue that is most germane to the current study.

Corr & Gray (1995) took this research a step further by indirectly considering motivation in the context of faking. They examined the possibility that faking is a function of the transparency of a test and the motivation to cheat. They compared the responses of newly hired incumbents in a sales position (during training), to normal volunteers on the Seligman Attributional Style Questionnaire and lie scores from the Eysenck Personality Questionnaire. The lie scores for the sales sample were markedly higher than those of the normal volunteers suggesting that they were, indeed, motivated to respond in a self presentational manner. They concluded that response distortion is, in all likelihood, heavily determined by the motivational characteristics of each specific population.

Bornstein et al. (1994) and Paulhus, Bruce and Trapnell (1995) also suggested that self presentational needs are likely to impact whether or not an individual engages in response distortion. Paulhus et al., (1995) gave 370 subjects a measure of the Big Five and a social desirability scale. Subjects were assigned to one of seven faking conditions: Fake best, fake without suspicion, play up good points, respond honestly, be modest, fake bad without suspicion and fake worst. They found that the profiles got progressively better as you moved from the fake worst to the fake best conditions. Based on this, it is logical to conclude that self-presentational strategies (i.e. degree of intended dissimulation) have an impact on response distortion. It also

seems reasonable to suggest that these self-presentational needs may be highly related to an individual's motivation concerning the employment test.

While this research (Bornstein et al., 1994; Corr & Gray, 1995; & Paulhus, Bruce and Trapnell, 1995) represents a positive step toward understanding motivational and attitudinal differences that may lead to faking their approach is indirect. These studies rely solely on inferences of motivational and attitudinal differences based on manipulating instructions or utilizing populations that are likely to have different motivational characteristics. However, these studies fail to utilize manipulation checks to see if the independent variable (motivation/self-presentational strategies) is working as expected. By integrating the work on the Test-attitude Survey, the motivation and attitudes of subjects can be assessed directly and the association with response distortion can be examined.

Before examining other person factors that may impact faking it is useful to outline the two main mechanisms that have been hypothesized to account for response distortion (Paulhus, 1984). The first, is that individuals engage in response distortion due to self deception. In other words, they are unaware that they are providing an inaccurate representation of themselves so it is conceptualized as an unconscious process. For example, Merydith & Wallbrown (1991) argue that response sets, outside an individual's awareness or control, effect or distort answers on personality measures. However, consistent with a number of other authors, this investigation conceptualizes faking as a motivated distortion of responses.

Naturally, the second proposition is that individuals are engaging in a self-presentational strategy much more consistent with the literature surrounding impression management and response distortion (Cunningham et al., 1994; Holden et al., 1992; Leary & Kowalski, 1990;

Mahar et al., 1995). Given the abundance of research demonstrating that subjects are able to distort their responses when instructed to do so, it appears logical to infer that they can be consciously controlled. It is important to review a number of recent studies that provide evidence consistent with this perspective.

Mahar et al. (1995) investigated whether faking strategies are based on stereotypes of workers in the referent occupation. Using the Myers-Briggs Type Indicator (MBTI), the profiles of actual psychiatric nurses were compared to the profiles of students filling out the questionnaire under three separate conditions: fill out the questionnaire trying to get the job (fake-job), provide the best impression of yourself (fake-good), and provide the best impression of a typical nurse (stereotype). Within subjects, the fake-job profiles of the students were almost identical to their stereotype profiles which suggests that subjects rely on stereotypes and can change their faking strategies in a calculated manner. This is consistent with the assertion, of Holden et al. (1992), that personality test items are answered by comparing each item with a cognitive schema.

Cunningham et al. (1994) conducted a study to assess the degree to which the Reid Report, an integrity test, is susceptible to socially desirable responding. An impression management condition, in which subjects were told that the test measures honesty, scored significantly more honest as compared to the control group. The second part of the study provided additional evidence that subjects scores improve when they are given detailed information concerning the construct being measured. When subjects were provided information on the dimensions of the integrity test (control information, punitive information, projective information, and full information), scores on each relevant dimensions as well as other dimensions increased.

They also investigated the extent to which individuals with strong self-presentational tendencies engaged in positive impression management. They assessed subjects personalities on related constructs such as social desirability, the Reid Report and Machiavellianism and overpaid them for their participation in the experiment. Honesty was operationalized as whether or not the amount of overpayment was returned. They compared the efficacy of the Reid Report and the personality constructs in predicting honesty and investigated the relationship between socially desirable responses on the Reid Report and actual honest behaviors. Based on their results, they came to the conclusion that, on self report tests, "the desire to convey an image....may partially motivate responses to questions" (p.655).

Based on the above research it is apparent that the relationship between dispositional variables, such as test-taking attitudes, and self presentational response distortion needs to be examined in greater detail. The objective of the current study is to move beyond the examination of characteristics of tests and the testing situation, as they relate to faking, and move toward understanding individual and attitudinal components and the process underlying response distortion and a self presentational approach. As mentioned previously, this study will move beyond the indirect approach taken in the past and directly assess the attitudes and motivations of individuals in a testing situation.

Overview and Hypotheses

This study examined differences between applicants and incumbents, in terms of test-taking attitudes and response distortion, in a testing situation. We also examined the relationship between TAS scores, response distortion, personality test scores and validation in

greater detail. This section highlights the logic and the most relevant literature directly leading to each hypothesis.

Consistent with the self-presentational view outlined above, test taking attitudes are likely to be associated with tendencies toward response distortion. Individuals who are motivated to do well on a test and believe that the test will have an effect on them should be more prone to taking a self-presentational approach when responding to a personality test. It is also likely that individuals with less positive test-taking attitudes and motivation would not distort their responses because that behavior takes a great deal of effort as compared to honest responding (Goldberg, 1963; Hsu, Santelli, & Hsu, 1989; Schmit & Ryan, 1992).

Hypothesis 1: Individuals with positive test-taking attitudes will demonstrate more response distortion as compared to individuals with negative test-taking attitudes.

The present study also examined potential differences between applicants and incumbents in a testing situation. For a number of years, researchers have suggested that there are motivational differences between applicants and incumbents that may have implications for concurrent and predictive validation designs (Barrett et al., 1981; Guion & Cranny, 1980; Murphy & Davidshofer, 1994). Considering the importance of the situation and the implications associated with taking a test for selection purposes, it is reasonable to expect applicants to demonstrate more positive attitudes and higher levels of motivation and effort than incumbents when taking an employment test.

Hypothesis 2: Applicants will report more positive test-taking attitudes and more response distortion than incumbents.

Another goal of this study is to build upon the work of Arvey et al. (1990) and Schmit & Ryan (1992). Specifically, more research is needed to determine the effects of test taking attitudes and motivation on work performance and the validity of employment tests. Due to equivocal results and the limitations associated with Arvey et al. (1990), & Schmit & Ryan (1992), clarification is needed in terms of the role of TAS scores as a moderator of validity and as directly affecting performance on the job.

Test-taking attitudes and response distortion are posited to demonstrate independent relationships with performance on the job. These hypotheses are based on previous suggestions that test-taking attitudes and response distortion may be associated with relevant personality and dispositional variables that impact job performance (Arvey et al., 1990; Schmit & Ryan, 1992). For example, TAS scores could be related to job performance based on a relationship with motivation on the job. The same would hold true for response distortion as individuals who are motivated in a testing situation are likely to demonstrate motivation on the job.

Hypothesis 3: Positive test-taking attitudes will be positively related to work performance in the incumbent samples. Response distortion will also be positively related to work performance but it will not capture any unique variance in predicting job performance.

In addition, the present study takes the position, consistent with past research and a mediating model, that test-taking attitudes (particularly motivational components) will influence response distortion which will lead to a restriction of range in personality test scores and lower validity coefficients in predicting job performance (TTA---> RD--->Personality scores). It is important to examine the rationale for each individual link in the model.

The link between TTA and RD is consistent with the self-presentational approach in that motivated test takers are more likely to exert effort and distort their responses due to the perceived importance of the testing situation. Response distortion is posited to affect personality scores as all of the traits on the personality scale are desirable and positively poled. Considering that individuals can fake good when they are motivated, or instructed, to do so (Bornstein et al. 1994; Corr & Gray, 1995; Cunningham et al., 1994; Hogan, 1992; Hough et al., 1990; Kluger & CoLella, 1993; LoBello & Sims, 1993) it is reasonable to make this hypothesis. Finally, test-taking attitudes are expected to affect test scores because motivated test takers will put maximum effort into the test and care the most about the outcome (Arvey et al., 1990; Schmit & Ryan, 1992).

Hypothesis 4: Response distortion will mediate the relationship between test-taking attitudes and personality test scores.

Finally, this study examined the potential role of test-taking attitudes as a moderator of validity. In other words, the predictability of individuals differs based on their standing in terms of test-taking attitudes. Again, this is due to the self-presentational approach (i.e. faking) taken by those with positive test-taking attitudes. This approach will lead to restriction of range in the predictor and lower validity coefficients. Based on this, individuals with less positive test taking attitudes (who fake less) will demonstrate higher validity while those with positive test-taking attitudes will exhibit lower validity coefficients.

Hypothesis 5: Test-taking attitudes will moderate the validity of a personality test in the incumbent samples. That is, the validity will be higher for those with negative test-taking attitudes than those with more positive test-taking attitudes.

These issues will be examined utilizing a large organizational sample consisting of applicants and incumbents for the same job.

Method

Sample

The sample for this study consisted of applicants and incumbents, for the same exact job, in a retail sales setting.

Applicants

The subjects were 812 applicants from consumer retail electronic sales. Currently, no criterion data are available for these individuals.

Incumbents

The subjects were 270 incumbents from consumer retail electronics sales.

Validation strategy

As mentioned above, criterion data were available only for the incumbent sample. In this case, the predictor measures and the criterion variables were collected with the absence of a time lag which is representative of a concurrent validation strategy. The validity coefficients are reflective of the correlation between the personality test scores and the supervisory ratings, or hard dollar sales, described below.

Test Battery

Demographics: All subjects were asked to provide their gender and their ethnicity on the first page of the test battery.

PDI Enterprise Scale: The Enterprise Scale (See Appendix A) is a personality scale designed to predict successful sales performance. It measures dimensions related to success at sales jobs and related jobs which require high levels of initiative, energy and commitment. This

scale consists of 192 items that deal with a range of attitudes and opinions. Subjects respond in a true or false format indicating whether or not the statement is true (they agree) or false (they disagree) as it pertains to themselves.

The scale was designed to measure a number of attributes associated with effective sales performance including: Accomplishment, adaptability, commitment, dominance, energy, goal setting/drive, initiative, influence and persuasion, planfulness, persistence, and tolerance for pressure. It is important to note that, in applied settings, this scale is typically scored as a composite that reflects general sales effectiveness as opposed to a profile of personality traits. However, all of the scale scores will be used, in conjunction with the composite score, in this research. It has been consistently demonstrated that this scale predicts sales performance for hard dollar sales and supervisor ratings (Paajanen, Hansen, & McLellan, 1993; EI Validation Manual, PDI).

The internal consistency reliabilities for this sample were as follows: Total score (.93), accomplishment (.87), adaptability (.89), commitment (.91), dominance (.88), energy (.84), goal setting/drive (.93), initiative (.90), influence and persuasion (.79), planfulness (.83), persistence (.86), and tolerance for pressure (.91).

Test Attitude Survey: A slightly modified version of the Test Attitude Survey (TAS, Arvey et al., 1990; See Appendix B) was used as a measure of test-taking attitudes and motivation. The version utilized in this study consists of 6 of the original 9 factors: Motivation (5 items), Concentration (3 items), Belief in Tests (4 items), Comparative Anxiety (3 items), External Attribution (5 items), and Future Effects (2 items). Subjects responded on a five point rating scale ranging from strongly agree to strongly disagree.

All of the TAS factors are keyed in a positive (i.e. more desirable) direction. In other words, high scores on the Comparative Anxiety factor indicate less anxiety, high scores on the Belief in Tests factor indicate a greater belief in tests, high scores on the Concentration factor represent more concentration, high scores on the External Attribution factor mean that an individual did *not* attribute test performance to external factors. Finally, high scores on the motivation factor indicate a greater level of motivation and effort and high overall scores are indicative of generally positive test-taking attitudes.

Consistent with past research, subjects were told that the completion of this scale was voluntary and that the responses would be used strictly for research purposes. In terms of reliability, the internal consistency of the scales ranged from .56 to .86 in Arvey et al, (1990). The internal consistency reliabilities for the current sample were (.88) for the overall score, (.78) for Belief in Tests (.74) for Comparative Anxiety, (.70) for External Attribution, (.55) for Future Effects, (.68) for Concentration, and (.75) for the Motivation subscale.

Unlikely Virtues Scale: The frankness scale from the PDI Employment Inventory was utilized to identify response distortion in this study. This scale was designed to check for respondents who claim a large number of unlikely virtues. During the construction of this scale, the responses of job applicants were compared to a college population taking the test for research purposes (Paajanen, 1988). The students responded positively (i.e. true) to fewer unlikely virtues and the difference was even more extreme when subjects were asked to respond in a totally honest fashion. This scale has also been shown to be associated with the socially desirable response scale developed in 1987 by Ryan and Sackett (Lasson, 1992).

The 16 items comprising this scale were imbedded in the Enterprise scale. These items were summed and the resulting scale ranged from 16-32 with a 32 indicating a high degree of response distortion (i.e. less candid responding). The internal consistency reliability for this sample was .81.

Criterion Measures

Supervisory Ratings: Supervisory ratings were used as a measure of job performance and as a criterion for all validation hypotheses. These rating forms provide ratings of 30 actual behaviors, positive and negative, that are summed to reflect overall job performance (e.g. makes good eye contact with customers, greets customers promptly and enthusiastically, answers questions accurately and completely). These behaviors are the most relevant criterion for organizations to predict and the consulting firm from which these forms were obtained validates tests based on these behaviors alone. The forms utilized in these samples are standard at PDI for implementation in sales settings (Paajanen et al., 1993). These ratings were available for the incumbent sample but not the applicant sample. Thus, all validation hypotheses are concerned with only the concurrent strategy based on the actual job incumbents.

Dollar Sales: This criterion represents the composite of dollars of merchandise sold. This criterion was standardized to account for differences in what is being sold and where it is being sold. Again, the sales data were available for the incumbent sample but not the applicant sample.

Procedure

Subjects were given the test battery outlined above. All of the tests were administered based on stratified random sampling on a National level (within each sample). The Battery consisted of demographics such as gender and ethnicity, the Enterprise Scale, with the Unlikely

Virtues items embedded into it, followed by the Test Attitude Survey. The subjects were told that responding to the TAS was voluntary but highly encouraged.

Applicants took the tests as part of a standard selection process under instructions that these tests were part of their job screening. Job incumbents took the tests under standard instructions indicating that "you are taking this battery to validate these tests for future selection in your company." All of the supervisors in this study were given standardized instruction with regard to rating errors, such as stringency and leniency, to improve the reliability of the criterion measure.

Results

The first issue to be examined was the overall factor structure of the Test Attitude Survey as well as the factor structure when the sample was broken down into applicants and incumbents. An exploratory factor analysis was conducted utilizing principal axis extraction and an oblique rotation. The first step was an examination of the scree plot to determine the number of factors that best accounts for the data. Table 1 presents the scree plot for the entire sample.

-Inset Table 1 here-

Based on the scree plot a three factor solution was examined as the best fit for this data. A second factor analysis was conducted, as above, which specified a three factor solution (i.e. three factors were extracted). It is important to note that the two and the four factor solutions were examined as potential alternate interpretations. From the standpoint of interpretability, the four factor solution produced an additional factor with 4 essentially random items (e.g. "the questions on the ES were confusing and unclear", "I expect to do well on the ES", "Scores on the ES are likely to affect my future", and "my mind wandered a lot when I was taking the ES") with

a number of double loadings. Considering this, the three factor solution was preferred.

Standardized factor loadings for the three factor solution, for each item, are presented in Table 2.

-Insert Table 2 here-

Based on these loadings, the Test Attitude Survey is highly consistent with the Tripartite, or ABC, model of attitudes mentioned in the introduction. This model suggests that attitudes are made up of three highly related components: Attitudinal, Affective and behavioral. Factor one represents the cognitive component (what an individual thinks about tests) of attitudes with the highest loading items representing Belief in Tests and Future Effects. Factor two is made up of mainly affective items (how an individual feels about tests) from what Arvey et al. (1990) referred to as the Comparative Anxiety and External Attribution subscales. Finally, the third factor is the motivational or behavioral intention component of attitudes toward tests. This factor consists of items from the Motivation and Concentration scales that are clearly reflective of behavioral intentions regarding a test.

While it is clear that the tripartite model of attitudes is a more parsimonious, and highly consistent, conceptualization of the Test Attitude Survey for the entire sample it is important to examine the factor structure separately for applicants and incumbents. The same factor analytic procedures were used on each subsample. Table 3 presents the scree plot for the applicant sample.

-Insert Table 3 here-

Again, a three factor solution best represents this data. Table four presents the standardized factor loadings, based on a three factor solution, for the applicant sample.

-Insert Table 4 here-

Consistent with the factor analysis for the entire sample, a three factor solution is clearly interpretable based on the tripartite model of attitudes. This was expected based on the results of the overall factor analysis considering that applicants represent a large proportion of the total sample (812/1084). Factor one represents the cognitive component (e.g. "Questionnaires like the ES should not be used", "The Es is probably a good way of selecting people for jobs"), factor two represents the affective component (e.g. "I am not good at taking tests", "I get tense when answering questions about myself") and factor three is consistent with motivation or behavioral intention (e.g. "I tried my best on the ES", "I did not put much effort into the ES").

A factor analysis was also conducted, as above, on the incumbent sample. Table 5 presents the scree plot for the incumbent sample.

-Insert Table 5 here-

This scree plot suggests a four factor solution although a three factor solution was more logical. The loadings for the four factor solution are shown in Table 6.

-Insert Table 6 here-

Although the number of factors is different (e.g. four as opposed to three for applicants) the general interpretation remains the same suggesting that there are no substantive differences in the structure of the TAS for applicants and incumbents. Clearly, the cognitive (factor one), affective (factor two), and behavioral components of attitudes (factor three) emerged in the incumbent sample. An additional, two-item factor also emerged for incumbents. These items were "doing well on the ES was important to me" from the Motivation subscale (which also loaded highly on the Motivation factor) and "scores on the ES will probably affect my future" from the Future Effects scale. These items seem to reflect the general importance placed on the

testing situation but they do not appear to represent a new construct nor does it make a four factor solution more interpretable. When a three factor solution is obtained (in the incumbent sample) these two items fall in line with the overall and applicant sample and can be interpreted within the framework provided by the tripartite model of attitudes.

The next step was an examination of the substantive issues hypothesized in this study. Table 7 presents the means, standard deviations, and minimum and maximum values for all of the variables relevant to the hypotheses of this study.

-Insert Table 7 here-

The first hypothesis in this study predicted that test-taking attitudes would be significantly associated with response distortion on the Enterprise scale. This was tested based on a regression analysis entering the TAS factor, applicant-incumbent status (dummy coded), and an interaction of TAS subscale and applicant-incumbent status in predicting response distortion. This was done so that applicant-incumbent status could be examined as a potential moderator. Detailed results of this regression are not presented because applicant-incumbent status did not moderate any of the relationships. These relationships can be expressed as correlations between TAS factors, and overall scores, and the Unlikely Virtues scale as the values are the same as those obtained in the regression. Table 8 presents the zero-order correlations for the TAS factors and the Unlikely Virtues scale (response distortion).

-Insert Table 8 here-

As seen in Table 8, the first hypothesis was supported. Results indicated that Comparative Anxiety ($r=.22, p<.05$), Belief in Tests ($r=.23, p<.05$), External Attribution ($r=.26, p<.05$), Future Effects ($r=.19, p<.05$), Concentration ($r=.27, p<.05$), and Motivation ($r=.22, p<.05$) were all significantly correlated with total scores on the Unlikely Virtues Scale (response distortion).

Overall TAS scores also exhibited significant correlations with the Unlikely Virtues Scale ($r=.35, p<.05$). It is also interesting to note that regressing the Unlikely Virtues scale on all six subscales accounted for the same amount of variance (.12) as the total score (the summation of the six scales).

The second hypothesis suggested that applicants would report more positive test-taking attitudes and more response distortion as compared to incumbents. This hypothesis was tested based on an examination of overall mean differences, and mean differences on each factor, for the Test Attitude Survey between applicants and incumbents as well as overall mean differences on the Unlikely Virtues scale. Recall, that all of the TAS factors are keyed in a positive (i.e. more desirable) direction. In others words, high scores on the Comparative Anxiety factor indicate less anxiety, high scores on the Belief in Tests factor indicate a greater belief in tests, high scores on the Concentration factor represent more concentration, high scores on the External Attribution factor mean that an individual did *not* attribute test performance to external factors. Finally, high scores on the motivation factor indicate a greater level of motivation and effort and high overall scores are indicative of generally positive test-taking attitudes.

As predicted in hypothesis 2, applicants ($M = 87.23, SD = 9.80$) expressed overall test-taking attitudes that were significantly more positive as compared to incumbents ($M = 82.15, SD = 10.26$), ($t(967) = 6.91, p < .01$). Applicants reported significantly less comparative anxiety ($M = 12.18, SD = 2.08$) when compared to incumbents ($M = 11.62, SD = 2.27$), ($t(1004) = 3.59, p < .01$). Applicants reported a greater belief in the efficacy of tests ($M = 13.74, SD = 3.16$) than incumbents ($M = 13.19, SD = 3.38$), ($t(1004) = 2.36, p < .01$). Applicants scored significantly higher on the External Attribution factor ($M = 20.86, SD = 2.65$) as compared to

incumbents ($M = 20.17$, $SD = 2.89$), ($t(992) = 3.51$, $p < .01$) which demonstrates that applicants have less of a tendency to attribute aspects of the testing situation to external factors.

Applicants also reported greater levels of concentration ($M = 12.15$, $SD = 1.80$) as compared to incumbents ($M = 11.27$, $SD = 2.14$), ($t(1007) = 6.44$, $p < .01$) and significantly higher levels of motivation ($M = 21.84$, $SD = 2.45$) than incumbents ($M = 20.64$, $SD = 2.94$), ($t(1002) = 6.40$, $p < .01$). The same was found for Future Effects as applicants expressed more of a belief in future effects ($M = 6.31$, $SD = 1.68$) as compared to incumbents ($M = 5.24$, $SD = 1.70$), ($t(1012) = 8.85$, $p < .01$). Hypothesis two was also supported in terms of response distortion as applicants reported significantly more response distortion ($M = 25.96$, $SD = 2.61$) as compared to incumbents ($M = 24.54$, $SD = 2.72$), ($t(1052) = 7.59$, $p < .01$).

Hypothesis 3 predicted a positive relationship between test-taking attitudes and work performance. Furthermore, response distortion was posited to be associated with work performance although it was not expected to capture any unique variance. This hypothesis was tested utilizing supervisor rating and hard dollar sales as indicators of work performance. The supervisor ratings consisted of the sum of 30 positive and negative behaviors (some reverse scores) with high scores indicating better performance. Recall, this hypothesis was tested in the incumbent sample as the criterion data were only available for this portion of the sample. Table 9 presents the intercorrelations between TAS factors, response distortion, personality variables, and criterion data for the incumbent sample.

-Insert Table 9 here-

As seen in Table 9, limited support was provided for hypothesis 3. In terms of the supervisor ratings, only the Motivation factor demonstrated a significant association with work

performance ($r=.19, p<.05$). Overall test-taking attitudes ($r=.13, ns$), Comparative Anxiety ($r=.08, ns$), Belief in Tests ($r=.04, ns$), External Attribution ($r=.06, ns$), Future Effects ($r=.13, ns$), Concentration ($r=.11, ns$) and response distortion ($r=.14, ns$) did not exhibit significant relationships. None of the TAS factors were significantly associated with work performance when hard dollar sales was used as the criterion. For the hard dollar sales criterion, relationships with overall test-taking attitudes ($r=.09, ns$), Comparative Anxiety ($r=.01, ns$), Belief in Tests ($r=.12, ns$) Motivation ($r=.12, ns$), External Attribution ($r=.08, ns$), Future Effects ($r=.01, ns$), Concentration ($r=.01, ns$) and response distortion ($r=.11, ns$) did not reach significance.

Regression was utilized to examine the possibility that response distortion would make a unique contribution to the prediction of work performance over and above TAS factors. Table 10 presents these equations.

-Insert Table 10 here-

As expected, response distortion did not add any unique variance in the prediction of the hard dollar sales criterion. However, response distortion did add unique variance over and above four of the six subscales in the prediction of work performance based on supervisor ratings. These scales were Comparative Anxiety (R^2 change = $.02, p<.05$), Belief in Tests (R^2 change = $.02, p<.05$), External Attribution (R^2 change = $.02, p<.05$), and Concentration (R^2 change = $.02, p<.05$). Nonsignificant results were found for Future Effects, Motivation and Overall TAS scores. Response distortion did not demonstrate significant relationships in the bi-variate sense but it does appear to add unique variance over and above a number of the TAS factors. This can be taken as evidence that TAS and response distortion do not share as much variance as was

conceptualized by this study. It is also important to re-emphasize that the relationships between TAS factors and work performance were generally small and nonsignificant.

Regression was also utilized to establish the mediating effects of response distortion on the relationship between test-taking attitudes and personality test scores (Hypothesis 4). In other words, test-taking attitudes lead to response distortion which leads to higher personality test scores. This analysis followed the procedure recommended by Baron & Kenny (1986). The first regression equation examined whether test-taking attitudes predict personality test scores. A second equation looked at whether response distortion predicts personality test scores. Finally, an equation was set up where test-taking attitudes predicts response distortion. Refer to Table 11 for these relationships.

-Insert Table 11 here-

When all three equations are significant, a fourth equation is examined with the mediator (response distortion) and the independent variable (test-taking motivation) entered in a stepwise fashion (this is reflective of order of entry not the use of stepwise regression procedures). If the effect of the independent variable (test-taking motivation) is nonsignificant then support is provided for a fully mediated relationship (Baron & Kenny, 1986). For partial mediation, the effect of test-taking motivation (the independent variable) on personality scores must be less in equation four than equation one. As seen in Table 11, the first three equations were significant for all of the personality scales with the exception of Financial Motivation on response distortion. Considering this, the final equation in the mediational analysis was examined for all of the variables with the exception of Financial Motivation. Table 12 presents the results of this

regression analysis. Specifically, the Beta weights, for test-taking attitudes, for Equation 1 and 4 are presented as they are most relevant to the testing of this hypothesis.

-Insert Table 12 here-

Hypothesis 4 was not supported as there was no evidence of full mediation for any of the personality scales or the overall Enterprise Scale score. This is apparent as none of the Beta weights for the independent variables (TAS factors) reduced to nonsignificance. However, there is evidence of partial mediation for response distortion in terms of the relationship between test-taking attitudes and all of the personality scales. Although each effect (Beta weight) remained significant they were all lower in the fourth equation as compared to the first.

The following numbers represent changes (reductions) in TAS Beta weights, for each dependent variable, from the first equation to the fourth: Accomplishment (-.13), Adaptability (-.12), Commitment (-.02), Dominance (-.07), Energy (-.10), Goal Setting/Drive (-.08), Initiative (-.07), Influence and Persuasion (-.08), Planfulness (-.14), Persistence (-.13), Tolerance for Pressure (-.10), and overall personality scores (-.10). In sum, hypothesis four was not supported as the effect of the independent variable never reduced to nonsignificance. However, the reductions in these effects, with the possible exception of the trivial reduction in Commitment (-.02), indicate that response distortion partially mediates the relationship between test-taking attitudes and each of the personality scales. It is also important to point out that there is no statistical test associated with the examination of the reduction of betas from equation one to equation four.

Hypothesis 5 examined the possibility that test-taking attitudes moderate the relationship between personality test scores and job performance (supervisor ratings and hard dollar sales).

Specifically, validity was posited to be highest for individuals with less positive test-taking attitudes and lowest for those with positive test-taking attitudes. Hierarchical (moderated) regression was used to test this Hypothesis. Table 13 presents the results of this analysis.

-Insert Table 13 here-

This hypothesis was tested by regressing work performance on each personality scale, overall TAS scores and the interaction between the personality scale and the TAS scores. This was done for each personality scale with supervisor ratings and each personality scale with hard dollar sales for a total of 26 equations. The moderating role is supported if the interaction term is significant in terms of adding meaningful variance over and above the personality scale and the TAS score.

Overall, there was limited evidence for a moderating role of test-taking attitudes on the validity of the Enterprise scale. The interaction added significant incremental variance for Commitment and Dominance only in predicting hard dollar sales. Test-taking attitudes received no support as a moderator for the other subscales. In cases where the interaction was significant median splits were utilized to examine the nature of the interactions. Specifically, the sample was split at the median, realizing the possibility of misclassification, so that we had a positive and a negative test-taking attitudes groups. The resulting validity coefficients are presented in Table 14.

-Insert Table 14 here-

Consistent with our predictions, the positive attitude group demonstrated lower validity (-.15, ns) as compared to the negative attitude group ($r = .29, p < .05$) with validity referring to the relationship between Commitment and hard dollar sales. The same held true for Dominance, as the positive attitude group were less predictable in terms of hard dollar sales ($r = -.01$) as compared to the negative attitude group ($r = .27, p < .05$). Although hypothesis 5 received little

support, test-taking attitudes moderated the relationship between Commitment and hard dollar sales (Validity) and Dominance and hard dollar sales (validity) in the predicted direction.

Discussion

This study systematically examined test-taking attitudes as they relate to response distortion and the relationship between personality test scores and job performance. Some of the results are encouraging and others fail to support the hypotheses put forth in this manuscript. The results, and their implications, will be discussed along with the limitations of the current study and ideas for future research.

Before dealing with the core issues of this study, the factor structure of the Test Attitude Survey and test-taking attitudes will be discussed. Arvey et al. (1990) settled on a 9 factor instrument that was "rationally constructed with the aid of empirical evidence" (p. 700). As previously mentioned, they used the terms attitudes and motivations interchangeably with little explanation. The confusion that is likely to result from this lack of precision led to an exploratory re-examination of the factor structure utilizing the current sample.

In the literature review of this manuscript, it was tentatively suggested that a more parsimonious conceptualization of the TAS could be found within the framework of the Tripartite, or ABC, model of attitudes (Aronson et al., 1994; Breckler, 1984). This model points out that attitudes are made up of cognitive (i.e. what one thinks about an object), affective (i.e. how one feels about an object) and behavioral (i.e. how one intends to behave with regard to an object) components. An examination of the items of the TAS confirm that each subscale can be classified on the basis of these three dimensions (see Appendix B for specific items). Comparative anxiety and External Attribution contain items from the affective domain, Motivation,

Concentration, General Need Achievement and Preparation are behavioral/motivational in nature and Belief in Tests, Future Effects, and Test Ease refer to cognitions about tests.

The current study utilized 6 of the original 9 subscales: Comparative Anxiety, External Attribution, Concentration, Motivation, Belief in Tests and Future Effects. The factor structure for the entire sample (N = 1084) appears to be best explained by 3 factors that are clearly interpretable based on the cognitive, affective and behavioral components of attitudes. The items loading on the cognitive factor (factor 1) describe individuals belief in tests and cognitions regarding how they will affect them in the future. The affective domain (factor) was represented by the comparative anxiety (e.g. "I am not good at taking tests"), and the external attribution subscales (e.g. "I felt nervous when taking the ES"). Finally, the behavioral intention or motivation factor was made up of items from the motivation (e.g. "I tried my best on the ES") and the concentration scales (e.g. "I concentrated well when answering the ES questions"). Based on these results, the TAS can be interpreted as measuring the cognitive, affective and behavioral components of test-taking attitudes.

Exploratory factor analyses were also conducted separately on the applicant and incumbent populations. The applicant structure was almost identical to the overall sample which is not surprising considering that applicants make up a large proportion of the overall sample. Based on the scree plot from the original factor analysis, the incumbent sample produced a four factor solution. The first three factors were consistent with the tripartite model and generally consistent with the applicant structure. The fourth factor was made up of two items: "doing well on the ES was important to me" from the Motivation subscale and "scores on the ES will probably affect my future" from the Future Effects scale. Both of these items refer to the general

importance of the testing situation which is already captured in the motivation/behavioral intention factor (they also loaded highly on this factor. When a three factor solution is obtained both of these items load on the motivation factor as expected. From the standpoint of interpretability, the four factor solution does not improve upon the more parsimonious three factor solution.

Perhaps in future research involving the TAS some of the items should be dropped or refined to better capture the construct of test-taking attitudes. In sum, the TAS appears to measure, as suggested in the introduction, test-taking attitudes focusing on the cognitive, affective and behavioral components. It is also important to note that three of the original TAS scales were not utilized in this research. However, one would expect General Need Achievement and Preparation to represent the motivational/behavioral intention component and Test Ease items to load on the cognitive factor. This issue needs to be examined in greater detail but the Tripartite model of attitudes should provide a useful framework for future work utilizing the TAS.

Hypothesis one posited that test-taking attitudes would be associated with response distortion. Although all of the effects were moderate (i.e. ranging from .19-.27; .35 for overall TAS scores) this hypothesis was supported for overall test-taking attitudes and each subscale. Specifically, individuals with less comparative anxiety, and less of a tendency to attribute aspects of the testing situation to external factors displayed a higher degree of response distortion. People who believe that they are good at taking tests, and are more relaxed, are more likely to feel like they can beat the test (i.e. fake their response) in order to present themselves in a favorable light. Higher response distortion was also found in individuals that believe in the efficacy and validity of tests and feel that tests will have an impact on them. This can be attributed to the importance placed on the testing situation and the test itself in terms of providing

important outcomes for the individual. Finally, individuals reporting greater concentration and higher levels of motivation toward tests distorted their responses on a more frequent basis. Recall that distortion is conceptualized as an behavior that takes energy and effort (Leary & Kowalski, 1990; Schmit & Ryan, 1992). Considering this, individuals who put forth greater effort and concentrate while taking a tests are more likely to fake their responses.

Past research has suggested that motivation or self-presentational strategies (Bornstein et al., 1994; Cunningham et al., 1994; Holden et al., 1992; Mahar et al., 1995; Paulhus et al., 1995) may affect the decision to fake on noncognitive measures. However, this issue has only been examined based on instructional manipulations (e.g. degree of intended faking) or inferences made based on studying populations (e.g. prison vs. normal) that are likely to have different motivational characteristics. These studies have failed to utilize manipulation checks which raises questions as to whether attitudes and motivations were manipulated as intended. The approach taken in this study is different from past research in that the attitudes and motivations of test-takers are directly assessed and their association with response distortion is examined. Based on the results of this study, individuals who are confident, believe that tests will impact them and exert more effort and concentration are more likely to fake their responses to noncognitive measures. This does suggest that differences in attitudes and motivation may be an antecedent or a factor in the decision to fake or distort responses. This represents the first step toward an understanding of response distortion by considering individual differences that may relate to the tendency to fake.

A number of researchers have suggested the presence of attitudinal or motivational differences between applicants and incumbents with regard to employment tests (Barrett et al.,

1981; Guion & Cranny, 1982). Recently, Arvey et al. (1990) provided direct evidence in support of this assertion. The results of this study replicate their findings and take an additional step in demonstrating that applicants distort their responses more than incumbents (hypothesis 2). In terms of overall attitudes (overall TAS scores), applicants reported significantly more positive attitudes than incumbents. Specifically, applicants exhibited significantly less comparative anxiety, a higher degree of confidence (less external attribution), a high belief in the efficacy and the impact of employment tests, higher levels of concentration and more effort/motivation as compared to incumbents.

These findings provide additional evidence that applicants and incumbents do differ in terms of test-taking attitudes. It is important to note that, on a practical level, the attitudinal differences between applicants and incumbents in this sample are not very large. However, the largest differences are found for overall TAS scores, and the Motivation and Concentration subscales which can be conceptualized in terms of the behavioral intention or motivational components of test-taking attitudes. This is consistent with past suggestions regarding potential motivational differences between concurrent and predictive validation studies. One would expect higher levels of motivation in individuals applying for a job especially when compared to those already holding that position.

As mentioned previously, all three of the above attitudinal components were related to response distortion and applicants reported more positive attitudes across all of the scales. Not surprisingly, applicants showed higher mean levels of response distortion as compared to incumbents. This finding runs counter to recent assertions that applicants do not fake in applied settings (Hogan, 1991; Hough et al., 1990; Ones et al., 1995). However, more and more research

appears to be demonstrating that applicants do indeed fake in real life settings (Barrick & Mount, 1996; Douglas et al., 1996; Frei et al. 1997; Stokes et al 1993). In addition, McDaniel, Douglas & Snell (1997) surveyed job seekers and found that a high percentage reported that they faked responses to employment tests. Although the difference in this sample was significant, it is interesting to point out that both applicants and incumbents displayed relatively high levels of response distortion. A possible explanation for this is the fact that the sample is from a sales population where presenting oneself in a positive light is perceived to be part of the job.

Hypothesis 3 suggested that test-taking attitudes and response distortion would be related to work performance as measured by supervisor ratings and hard dollar sales. The relationships between TAS factors and work performance were generally small and nonsignificant, similar to those found in Schmit and Ryan (1992), providing little support for hypothesis 3. One TAS scale did demonstrate a significant relationship. The Motivation scale was significantly related to supervisor ratings but not hard dollar sales. Arvey et al. (1990) demonstrated that the motivation factor predicted work performance and, logically, the relationship between motivation and work performance makes the most sense based on a possible relationship with motivation on the job. The supervisor is reporting positive behaviors that are likely to be related to an employee's level of motivation.

One possible explanation for the lack of a relationship with hard dollar sales (although the correlation of .12 approached significance), relates to the factors associated with sales that are, potentially, out of the salesperson's control. Factors such as number of customers, the effectiveness of advertising, the economy and even which customers they happen to serve may affect resulting sales. Thus, motivation appears to predict the process or the way an employee

goes about his job (behavioral ratings) but not the end result (dollar sales). The criterion differences aside, these results suggest that the motivation/behavioral intention scales may be the most useful if the prediction of work performance is the goal (supervisor ratings or hard dollar sales). In order to consistently capture stable relationships with work performance researchers might want to refine the TAS scale and focus on the motivational components of test-taking attitudes.

As predicted in hypothesis three, response distortion did not capture any unique variance, over and above any of the TAS scales, for the hard dollar sales criterion. However, contrary to our prediction, response distortion added unique variance over and above the Comparative Anxiety, Belief in Tests, External Attribution and the Concentration subscales in the prediction of supervisor ratings. This suggests that response distortion and test-taking attitudes do not share as much variance as conceptualized in this study. The mixed results for the different criterion measures are also of interest. Perhaps, individuals who fake their responses on noncognitive measures are also able to distort their behavior in manner, consistent with self-monitoring, that would result in higher supervisor ratings but not necessarily higher sales. The same may not be true for the motivation scale, where response distortion failed to add unique variance, as highly motivated individuals may not need to fake or monitor their performance. In this case, motivation may be capturing all of the common variance in supervisory ratings of performance.

Hypothesis four predicted that response distortion would fully mediate the relationship between overall TAS scores and each personality scale. This hypothesis received no support in terms of full mediation. However, response distortion appears to be a partial mediator for all of the personality scales with the exception of financial motivation and commitment. This suggests

that some of the influence of TAS scores on personality is transmitted through response distortion. It also suggests that, beyond the hypothesized indirect influence, overall test-taking attitudes are directly related to personality scores for accomplishment, adaptability, dominance, energy, goal setting/drive, initiative, influence, planfulness, persistence, tolerance for pressure and overall personality scores. Thus, the influence of TAS on personality scores is both mediated and direct.

An examination of the correlation matrix presented in Table 11 illustrates the bivariate relationships between TAS scores, response distortion and personality. In terms of the proposed mediational model (TAS--->Response Distortion--->Personality) the weakest link, correlation, is between overall TAS and response distortion. Again, these results suggest that test-taking attitudes and response distortion do not share as much variance as hypothesized on this study. While test-taking attitudes are clearly associated with the tendency toward response distortion, it appears that they are directly and independently related to stable personality traits.

Hypothesis 5 examined test-taking attitudes as a moderator of the relationship between personality scale scores and work performance (both in terms of hard dollar sales and supervisor ratings). Overall, this hypothesis received limited support. TAS received no support as a moderator of any of the relationships involving supervisor ratings. As such, individuals do not differ in their predictability, for supervisory ratings, based on test-taking attitudes. For hard dollar sales, most of the results were discouraging. For two of the thirteen personality scales, dominance and commitment, TAS moderated the validity in the predicted direction. For these scales, validity was lowest for individuals with high test-taking motivation. This can be explained based on the increase in response distortion associated with positive test-taking attitudes that is

likely to reduce validity coefficients through restriction of range in the predictor. However, due to the general lack of support for this hypothesis, this explanation is tenuous.

Overall, these results fail to replicate the findings of Schmit & Ryan (1992) in terms of the moderating role of TAS. This study differs from Schmit & Ryan (1992) in a number of ways so it is difficult to speculate with regard to the reasons for these inconsistent findings. They utilized college students in a simulation design while the current study used actual incumbents to test this hypothesis. These equivocal results could be a function of the attitudinal characteristics of the samples utilized in these studies. However, the TAS was different, in terms of composition and scoring, in the two studies which prevents any direct comparisons across samples. They utilized all 9 of the TAS subscales in creating their composite score and responses were made on a 7 point scale as opposed to the 5 point scale in this study.

Another possibility is that the incumbents in this study faked at consistently high levels especially compared to the subjects in Schmit & Ryan (1992). Schmit & Ryan identified 13% of their sample (21 of 157) as faking good based on the regression equations for the CPI. Hansen & McLellan (1997) point out that scores above a 22 on the Unlikely Virtues Scale are indicative of a high degree of response distortion on the Enterprise scale. Based on this, over 60% of the incumbent sample utilized in this study faked at high levels.

Recent research has pointed out that the absolute level of faking does not necessarily affect validity but variance in faking can have deleterious effects (Douglas et al., 1996; Zickar, 1997; Zickar et al., 1996). In other words, if all of the subjects fake the same amount, even if it is a lot, validity is not likely to suffer. In this study, it appears that subjects faked at consistently high levels which may not affect validity due to the lack of variance in test-taking attitudes and

response distortion. However, this explanation is purely speculative as the studies are not comparable in their operationalization of response distortion (CPI regression equation vs. Unlikely Virtues scale) or in terms of the TAS measure.

This study has a number of practical implications. First, it provides additional evidence that applicants and incumbents differ in terms of their test-taking attitudes. Applicants reported more confidence in their ability to do well on test (comparative anxiety), a higher degree of confidence (less external attribution), a belief that tests are a useful means for selecting employees and that they will have an impact on their future, higher levels of concentration and more effort/motivation as compared to incumbents.

This study also made an important contribution by demonstrating that these attitudes are related to the tendency to endorse items on the Unlikely Virtues scale. Recall that faking is conceptualized by the current study as a conscious decision to present oneself in a positive light on an employment test. Considering this, test-taking attitudes are particularly relevant as an individual difference variable that may lead us to a greater understanding of faking and the decision to fake. Individuals who place a greater importance on the testing situation and exhibit more effort and motivation are more likely to consciously approach the test in a self-presentational manner.

Another difference is that applicants were shown to engage in more response distortion as compared to incumbents. This is important in terms of understanding response distortion as a process and getting at some of the motivational and attitudinal variables that may lead to a tendency to distort. Also, these results refute the common claim that applicants do not distort in real settings. This appears to be a premature notion that needs to be dismissed especially

considering the accumulation of evidence to the contrary (Barrick & Mount, 1996; Douglas et al, 1996; Hunt, Hansen & Paajanen, 1995). Finally, this study calls into question the role of test-taking attitudes in terms of predicting work performance or having an affect on validity. If research provides additional evidence that test-taking attitudes fail to influence validity then the notion that concurrent validation strategies fail to accurately estimate validity coefficients obtained from predictive designs due to motivational differences may be false.

However, the effects of test-taking attitudes should not be dismissed based on this study and they certainly merit further investigation. Any differences between applicants and incumbents are potentially relevant in terms of concurrent versus predictive validation strategies. One possibility is that the motivational component of test-taking attitudes may be more likely to moderate validity than overall attitudes (including the cognitive and affective components). This possibility was examined and the same pattern of results was obtained. However, a more detailed analysis of the TAS and, specifically, the motivational component may lead us to a better understanding of test-taking attitudes and their effects on the selection process. In addition, considering that this study provides the first direct evidence of an association between test-taking attitudes and faking, a greater understanding is certainly needed.

Study Limitations and Future Research

There are a number of potential limitations that must be addressed with regard to the current study. First, while the exploratory factor analyses provided a framework for the conceptualization of the TAS more research is needed with regard to this scale. While the tripartite model appears to be a solid foundation on which to base the TAS, the analyses were conducted on one sample and the results certainly require replication in other sales populations as

well as in other job groups. Also, researchers whose primary interest is the factor structure of the TAS may want to conduct confirmatory analyses in different populations.

In addition, the wording of the items on the TAS motivation scale may not be ideal for the study of personality. The items reflect effort and performance variables more consistent with cognitive ability testing (e.g. "I tried my best on the ES", "I answered the questions on the ES as well as I could", "I just did not care how well I did on the ES") which is more consistent with cognitive testing. While this is a potential concern, Schmit & Ryan (1992) argued that motivated test takers may approach personality test items as representative of the maximal performance domain and attempt to achieve optimal performance through a self-presentational approach toward the test.

Second, all of the personality data was obtained from a single test. Additional research needs to be conducted to investigate whether the findings of this study can be generalized to other personality tests. All of the issues addressed in this study are relevant to interest inventories, biodata instruments and honesty tests so it would also be worthwhile to study these issues using other noncognitive measures. Specifically, all of the validity hypotheses need to be re-examined utilizing other personality tests as well as all other noncognitive measures.

Another issue that needs to be addressed relates to the timing of measurement for the Test Attitude Survey. Test-taking attitudes were measured last in the battery yet they were hypothesized as antecedent variables a number of times (e.g. response distortion will mediate the relationship between TAS and personality). Ideally, test-taking attitudes would have been measured three months before the study but there is no reason to believe that the timing of measurement had any affect on the results. First, this investigation deals with personality as

opposed to ability where performance is less clear and less likely to affect reported motivation. Second, this is how the scale was designed to be used and how it has been applied in all research to date involving test-taking attitudes (Arvey et al., 1990; Schmit & Ryan, 1992). Finally, Arvey et al., (1990) demonstrated that timing of measurement did not affect any substantive relationships involving test-taking motivation.

The final limitation is the lack of criterion data for the applicant sample. These data preclude an examination of these issues in an applicant sample where test-taking attitudes, particularly motivation, are more positive than in the incumbent sample. This increase in test-taking attitudes would, based on the results of this study, result in more response distortion and this could have affected relationships with work performance or the moderating role of TAS in terms of validity.

This leads directly into additional suggestions for future research. First, the same issues should be studied in a population with criterion data for applicants and incumbents so that direct comparisons can be made. It is possible that the pattern of results would change for an applicant population with different levels of test-taking attitudes and motivation. It is certainly reasonable to expect the applicant data, with more positive test-taking attitudes and motivation, to exhibit stronger relationships with work performance and impact validity.

As mentioned previously, the factor structure of the TAS is also worthy of a more detailed examination. This can be examined across different populations with the goal of improving the instrument and the ability to study test-taking attitudes. A general refinement of the TAS scale may want to focus on the motivational components of attitudes as they seem to have the most

potential in terms of having an impact on relevant selection issues such as validity. This is based on the fact that the motivation scales demonstrated the strongest relationships in this study.

Finally, this study took a step forward in identifying test-taking attitudes as an antecedent to response distortion on a personality test. Future research may want to concentrate on other individual difference variables that may affect the tendency to fake responses to a test. This would lead to a greater understanding the process underlying faking on noncognitive measures.

In sum, this study provides additional evidence that applicants and incumbents differ in terms of their attitudes toward tests. In addition, these attitudinal variables were associated with the tendency to distort responses on a personality test. This represents an initial step toward understanding the antecedents of faking on noncognitive measures. These results could also have important implications for the use of predictive and concurrent validation strategies. However, contrary to our predictions, test-taking attitudes were not associated with work performance nor did they moderate the validity of the personality test in the incumbent sample. In spite of this, test-taking attitudes and response distortion are important constructs that merit further investigation.

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Appendix A

Enterprise Scale (sample items by dimension)

Accomplishment:

1. You like to seek out additional responsibilities at work.

Adaptability:

1. You get frustrated when priorities suddenly change.

Commitment:

1. You think about work a lot when you are at home.

Dominance:

1. Others usually expect you to take charge.

Energy:

1. It's hard for you to sit still and relax.

Financial Motivation:

1. Making money is very important.

Goal Setting/Drive:

1. You are very aware of the progress you are making against your goals.

Initiative:

1. When you see a problem, you start solving it.

Influence and Persuasion:

1. You have always liked selling.

Planfulness:

1. You are more disciplined about your work than others are.

Persistence:

1. You push yourself to your limits.

Tolerance for Pressure:

1. You do not mind having your performance monitored closely.

Appendix B
Test Attitude Survey

Motivation:

1. Doing well on the ES was important to me.
2. I answered the questions on the ES as well as I could.
3. I tried my best on the ES.
4. I did not put much effort into the ES.
5. I just did not care how well I did on the ES.

Lack of Concentration:

1. I was bored while taking the ES.
2. My mind wandered alot when I was taking the ES.
3. I concentrated well when answering the ES questions.

Belief in Tests:

1. The ES is probably a good way of selecting people for jobs.
2. Questionnaires like the ES should not be used.
3. I don't believe the ES can show how well a person could do on the job.
4. The ES is unfair to some applicants.

Comparative Anxiety:

1. I am not good at taking tests.
2. I usually do pretty well on tests.
3. I expected to do well on the ES.

Future Effects:

1. Scores from the ES will probably affect my future.
2. The way I answered the ES should help me.

External Attribution:

1. I felt nervous when taking the ES.
2. I don't like answering questions like those on the ES.
3. I get tense when answering questions about myself.
4. I was ill or in a bad mood when I took the ES.

Appendix C

Tables

Table 1: Scree Plot for Factor Analysis of the Test-Attitude Survey (Entire Sample).

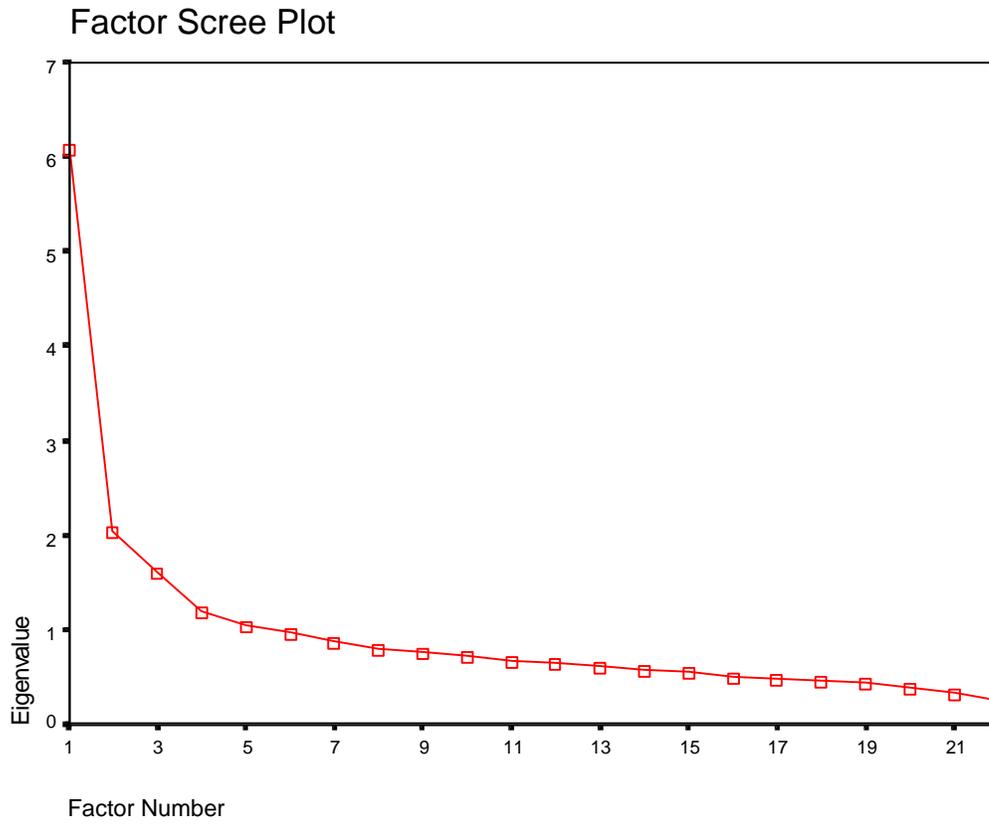


Table 2: Factor Loadings for Test Attitude Survey for the Entire Sample:

Item	Arvey (1990) Subscale	Factor	Factor	Factor
		1	2	3
Questionnaires like the ES should not be used	Belief in Tests	.79	.08	-.03
The ES is probably a good way of selecting people for jobs	Belief in Tests	.77	-.12	-.01
The ES can't show how well a person could do on a job	Belief in Tests	.66	.09	-.12
The ES is unfair to some	Belief in Tests	.59	.18	-.08
I don't like answering questions like those on the ES	External	.54	.28	.03
The way I answered the ES should help me	Future Effects	.45	-.08	.18
I was bored while taking the ES	Concentration	.37	.01	.20
The questions on the ES were confusing and unclear	External	.32	.19	.12
Scores on the ES will probably affect my future	Future Effects	.31	-.15	.15
I am not good at taking tests	Comp. Anxiety	.03	.75	.05
I usually do pretty well on tests	Comp. Anxiety	-.01	.67	.08
I get tense when answering questions about myself	External	.08	.54	.12
I felt nervous when taking the ES	External	.01	.46	.03
My mind wandered a lot when taking the ES	Concentration	.19	.29	.21
I tried my best on the ES	Motivation	-.14	.03	.76
I did not put much effort into the ES	Motivation	.04	.01	.57
I answered the questions on the ES as well as I could	Motivation	-.09	.11	.54
I just did not care how well I did on the ES	Motivation	.28	.08	.51
I concentrated well when answering the ES questions	Concentration	.05	.12	.50
Doing well on the ES was important to me	Motivation	.34	-.19	.44
I expect to do well on the ES	Comp. Anxiety	.20	.15	.41
I was ill or in a bad mood when I took the ES	External	.02	.19	.36

Note: All numbers represent standardized factor loadings. All bolded coefficients represent the factor on which that item loaded the highest.

Table 3: Scree Plot for Factor Analysis of the Test-Attitude Survey (Applicants).

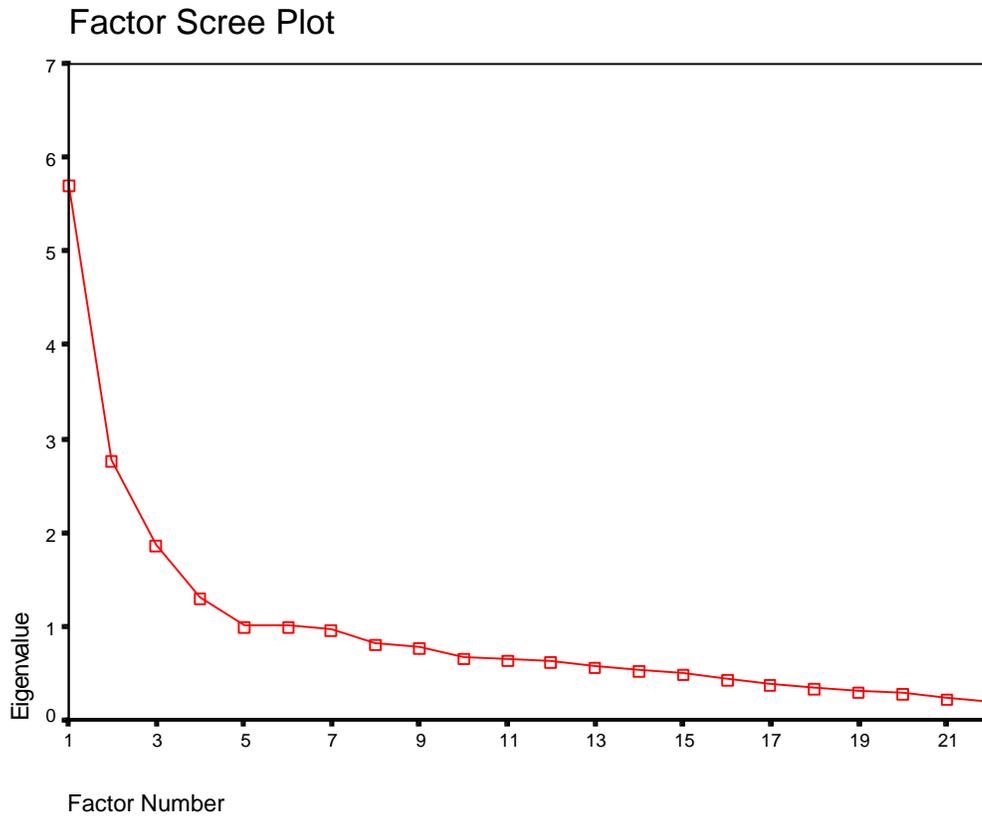


Table 4: Factor Loadings for Test Attitude Survey for the Applicant Sample:

Item	Arvey (1990) Subscale	Factor 1	Factor 2	Factor 3
The ES is probably a good way of selecting people for jobs	Belief in Tests	.79	-.11	-.01
Questionnaires like the ES should not be used	Belief in Tests	.75	.11	-.05
The ES can't show how well a person could do on a job	Belief in Tests	.63	.11	-.12
The ES is unfair to some	Belief in Tests	.58	.17	-.05
I don't like answering questions like those on the ES	External	.52	.27	.02
I was bored while taking the ES	Concentration	.38	-.10	.04
The way I answered the ES should help me	Future Effects	.40	.01	.12
Scores on the ES will probably affect my future	Future Effects	.37	.03	.22
The questions on the ES were confusing and unclear	External	.27	.20	.12
I am not good at taking tests	Comp. Anxiety	.02	.79	-.04
I usually do pretty well on tests	Comp. Anxiety	.00	.70	.03
I get tense when answering questions about myself	External	.06	.53	.16
I felt nervous when taking the ES	External	-.02	.42	.05
My mind wandered a lot when taking the ES	Concentration	.22	.30	.12
I tried my best on the ES	Motivation	-.11	.01	.75
I answered the questions on the ES as well as I could	Motivation	-.10	.04	.58
I did not put much effort into the ES	Motivation	.13	-.02	.46
I just did not care how well I did on the ES	Motivation	.34	-.03	.45
I concentrated well when answering the ES questions	Concentration	.14	.13	.44
I expect to do well on the ES	Comp. Anxiety	.08	.18	.43
Doing well on the ES was important to me	Motivation	-.01	.18	.39
I was ill or in a bad mood when I took the ES	External	.37	-.15	.38

Note: All numbers represent standardized factor loadings. All bolded coefficients represent the factor on which that item loaded the highest.

Table 5: Scree Plot for Factor Analysis of the Test-Attitude Survey (Incumbents).

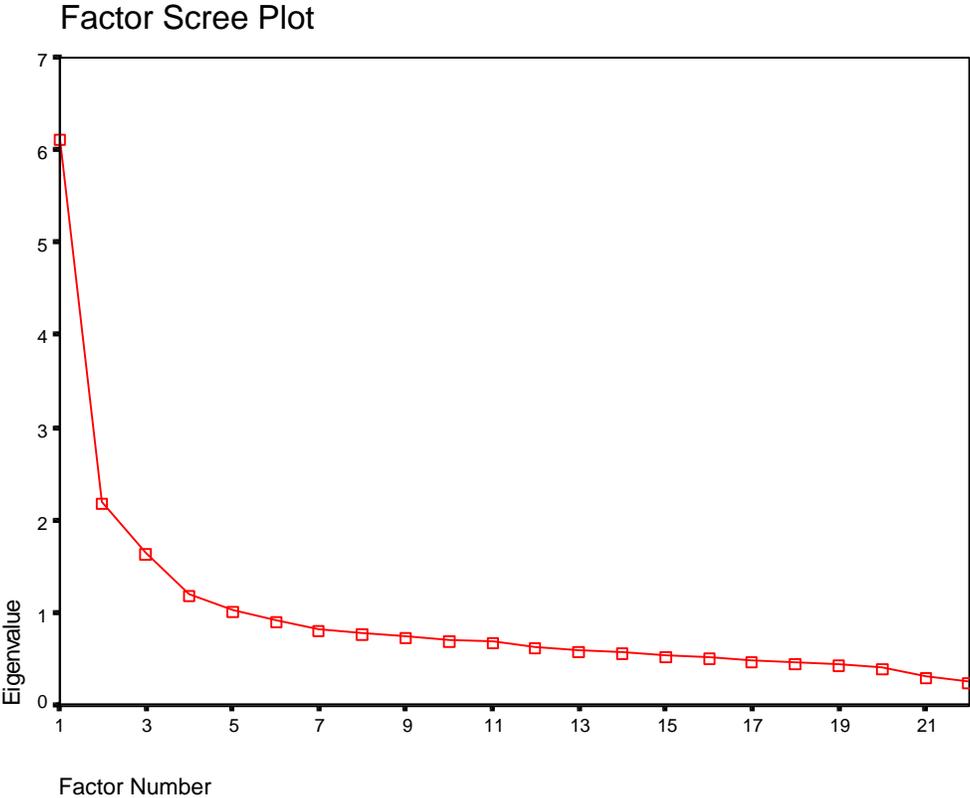


Table 6: Factor Loadings for Test Attitude Survey for the Incumbent Sample:

Item	Arvey (1990) Subscale	Factor 1	Factor 2	Factor 3	Factor 4
Questionnaires like the ES should not be used	Belief in Tests	.86	.02	.00	.08
The ES is probably a good way of selecting people for jobs	Belief in Tests	.74	-.17	.01	.16
The ES can't show how well a person could do on a job	Belief in Tests	.73	.02	.09	.01
The ES is unfair to some	Belief in Tests	.62	.04	-.08	-.10
I don't like answering questions like those on the ES	External	.57	.12	.13	-.11
The way I answered should help me	Future	.48	.01	.02	.36
I was bored while taking the ES	Conc	.32	.06	.23	.13
The questions on the ES were confusing and unclear	External	.27	.19	.15	-.27
I felt nervous when taking the ES	External	.21	.20	.09	.13
I usually do pretty well on tests	Comp.	-.11	.93	-.09	-.01
I am not good at taking tests	Comp.	-.05	.87	-.02	.00
I get tense when answering questions about myself	External	.10	.36	.11	-.22
I expect to do well on the ES	Comp	.20	.32	.19	.19
I did not put much effort into the ES	Motivation	-.08	.02	.83	.06
I tried my best on the ES	Motivation	-.16	.02	.75	.04
I concentrated well when answering the ES questions	Conc	-.04	.00	.59	.01
I answered the questions on the ES as well as I could	Motivation	.00	.00	.56	.18
I just did not care how well I did on the ES	Motivation	.13	.02	.42	.28
My mind wandered a lot when taking the ES	Conc	.19	.14	.37	-.10
I was ill or in a bad mood when I took the ES	External	.12	.07	.31	.10
Doing well on the ES was important to me	Motivation	.21	.00	.37	.47
Scores on the ES will probably affect my future	Future	.00	.01	.03	.46

Table 7: Descriptive Statistics for Independent and Dependent Variables for the Entire Sample

	Mean	SD	Minimum	Maximum
Comparative Anxiety	12.03	2.14	5	15
Belief in Tests	13.6	3.22	4	20
External Attribution	20.69	2.73	10	25
Future Effects	6.03	1.75	2	9
Concentration	11.92	1.93	3	15
Motivation	21.53	2.64	7	25
TASTOT	85.95	10.16	48	106
Accomplishment	22.56	3.31	8	29
Adaptability	12.87	3.37	2	17
Commitment	4.51	1.09	1	6
Dominance	15.44	3.65	3	22
Energy	16.4	2.51	1	20
Financial Motivation	4.11	1.19	2	6
Goal Setting/Drive	12.32	1.77	3	14
Initiative	19.61	2.98	4	27
Influence and Persuasion	13.88	2.32	4	17
Planfulness	11.62	2.65	2	16
Persistence	17.95	3.31	4	23
Tolerance for Pressure	3.71	1.29	1	5
EI-Sales (total score)	143.38	23	60	176
Response Distortion	25.61	2.71	16	32
Supervisor Ratings	104.34	11.07	69	129
Dollar Sales	1.1E-2	0.97	-2.29	1.86

Note: N's ranged from 947 to 1072 due to missing data.

Comparative Anxiety, Belief in Tests, External Attribution, Future Effects, Concentration, and Motivation are subscales of the TAS and TASTOT is the total score.

Accomplishment, Adaptability, Commitment, Dominance, Energy, Financial Motivation, Goal Setting/Drive, Initiative, Influence and Persuasion, Planfulness, Persistence and Tolerance Pressure are subscales and EI-Sales is the total score.

Response Distortion is the overall score on the Unlikely Virtues scale with a high score indicating more response distortion or less candid responding.

Supervisor ratings represent the sum of the ratings of positive and negative behaviors where a high score indicates better work performance. Dollar sales is a work performance measure representative of total sales (N's ranged from 240-245)

Table 8: Correlation Matrix for TAS Factors and Response Distortion (Entire Sample)

	1	2	3	4	5	6	7	8
1. Anxiety		.28	.51	.19	.38	.38	.64	.22
2. Belief			.46	.41	.43	.39	.77	.23
3. External				.17	.47	.46	.76	.26
4. Future					.24	.35	.53	.19
5. Conc						.51	.71	.27
6. Motiv							.75	.22
7. TAS								.35
8. RD								

Note: N's ranged from 968 to 974 due to missing data.

All coefficients significant at $p < .05$

Anxiety, Belief, External, Future, Conc, and Motiv are all Test-attitude Survey factors and TAS is the total score. RD is the total score on the Unlikely Virtues Scale.

Table 9: Intercorrelations between TAS Factors, Response Distortion, Personality Variables, and Criterion Variables for the Incumbent Sample:

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Anx	.14	.46	.01	.37	.32	.57	.21	.38	.28	.13	.36	.37	.07	.28	.33	.28	.26	.28	.21	.41	.08	.01
2. Bel		.44	.35	.37	.27	.72	.18	.24	.11	.12	.17	.18	.04	.22	.01	.19	.18	.25	.21	.26	.04	.12
3. Ext			.01	.47	.41	.75	.14	.25	.27	.12	.34	.31	.08	.17	.24	.26	.18	.19	.22	.34	.06	.08
4. Fut				.13	.23	.39	.06	.09	.01	.09	.05	.02	.01	.11	.01	.13	.07	.14	.11	.08	.13	.01
5. Con					.53	.74	.25	.23	.25	.21	.23	.33	.06	.29	.17	.17	.25	.38	.29	.36	.11	.01
6. Mot						.72	.11	.31	.17	.19	.25	.26	.09	.33	.19	.25	.19	.32	.21	.37	.19	.12
7.TAS							.25	.39	.28	.22	.37	.39	.09	.36	.24	.33	.29	.41	.32	.48	.13	.09
8. RD								.33	.38	.14	.26	.36	.08	.38	.28	.26	.46	.47	.27	.48	.14	.11
9. AC									.35	.31	.61	.58	.26	.65	.55	.49	.39	.62	.41	.81	.19	.24
10. AD										.11	.36	.39	.07	.35	.41	.26	.35	.41	.42	.62	.13	.04
11.CM											.26	.32	.11	.34	.28	.16	.27	.35	.14	.38	.14	.11
12. DO												.52	.14	.47	.57	.63	.36	.46	.35	.73	.15	.15
13. EN													.09	.51	.49	.37	.31	.61	.37	.71	.13	.14
14. FM														.16	.14	.15	.18	.12	.02	.17	.01	.08
15. GS															.54	.37	.47	.66	.32	.73	.13	.21
16. IN																.35	.29	.47	.16	.64	.11	.08
17. IP																	.18	.33	.31	.56	.17	.13
18. PL																		.54	.29	.53	.08	.04
19. PR																			.46	.79	.14	.22
20. TP																				.52	.15	.04
21. EI																					.23	.27
22 Sup																						.33
23. \$\$\$																						

Note: N's ranged from 188 to 257 due to missing data.

Anx, Bel, Ext, Fut, Con & Mot are subscales of the Test-Attitude Survey and TAS is the overall score.

RD is the total score for the Unlikely Virtues Scale.

AC, AD, CM, DO, EN, FM, GS, IN, IP, PL, PR, and TP are subscales of the Enterprise Scale and EI is the total score.

Sup is the sum total of the positive and negative behaviors and \$\$\$ is the hard dollar sales criterion.

*All bolded coefficients are significant at $p < .05$

Table 10: Regression of Work performance on TAS Factors and Response Distortion (hyp #3).

Criterion Variable	Equation	R	Change R ²	p of change
\$\$\$Sales	Anxiety	.01	.00	ns
	Anxiety + RD	.10	.01	ns
Behavior	Anxiety	.08	.00	ns
	Anxiety + RD	.14	.02	<.05
\$\$\$Sales	Belief	.16	.03	<.05
	Belief + RD	.17	.00	ns
Behavior	Belief	.04	.00	ns
	Belief + RD	.15	.02	<.05
\$\$\$Sales	External	.08	.00	ns
	External + RD	.12	.01	ns
Behavior	External	.06	.00	ns
	External + RD	.14	.02	<.05
\$\$\$Sales	Future	.01	.00	ns
	Future + RD	.10	.01	ns
Behavior	Future	.13	.02	ns
	Future + RD	.18	.01	ns

Criterion Variable	Equation	R	Change R ²	p of change
\$\$\$Sales	Concentration	.03	.00	ns
	Concentration + RD	.11	.01	ns
Behavior	Concentration	.11	.01	ns
	Concentration + RD	.16	.02	<.05
\$\$\$Sales	Motivation	.12	.01	ns
	Motivation + RD	.14	.00	ns
Behavior	Motivation	.19	.04	<.05
	Motivation + RD	.22	.01	ns
\$\$\$Sales	TASTOT	.09	.00	ns
	TASTOT + RD	.11	.01	ns
Behavior	TASTOT	.13	.02	<.05
	TASTOT + RD	.16	.01	ns

Note: N's ranged from 194 to 215 due to missing data.

Comparative Anxiety, Belief in Tests, External Attribution, Future Effects, Concentration, and Motivation are all subscales of the Test Attitude Survey and TASTOT is the total score.

RD represents the total score on the Unlikely Virtues Scale.

Behavior represents the sum of the ratings of positive and negative behaviors where a high score indicates better work performance. \$\$\$Sales is a work performance measure representative of total dollar sales.

Table 11: Intercorrelations between Personality Scales, Response Distortion and TAS scores for the Entire Sample.

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. TAS		.34	.34	.31	.24	.31	.34	.09	.36	.17	.32	.33	.41	.35	.39
2. RD			.29	.43	.14	.25	.36	.03	.31	.21	.29	.42	.46	.36	.43
3. AC				.32	.31	.57	.54	.33	.59	.48	.51	.39	.54	.34	.69
4. AD					.19	.34	.49	.02	.42	.38	.35	.36	.47	.45	.53
5. CM						.25	.31	.06	.33	.18	.24	.21	.36	.23	.31
6. DO							.49	.16	.44	.48	.59	.35	.45	.29	.65
7. EN								.09	.52	.44	.43	.35	.59	.39	.59
8. FM									.16	.16	.16	.11	.09	.01	.19
9. GS										.48	.38	.46	.62	.35	.58
10. IN											.34	.26	.37	.09	.41
11. IP												.25	.38	.32	.58
12. PL													0.5	.34	.48
13 PR														.48	.68
14. TP															.41
15. EI															

Note: N's ranged from 947 to 968 due to missing data.

TAS is the overall score for the Test Attitude Survey.

RD is the total score for the Unlikely Virtues Scale.

AC, AD, CM, DO, EN, FM, GS, IN, IP, PL, PR, and TP are subscales of the Enterprise Scale and EI is the total score.

*All bolded coefficients are significant at $p < .05$

Table 12: Results of Regression Analyses for Mediational Hypotheses (Hyp #4):

Scale/Dependent Variable	Equation	Beta for TAS	Beta Change for TAS
Accomplishment	TAS	.39	
	RD + TAS	.26	
			-0.13
Adaptability	TAS	.31	
	RD + TAS	.19	
			-0.12
Commitment	TAS	.24	
	RD + TAS	.22	
			-0.02
Dominance	TAS	.31	
	RD + TAS	.24	
			-0.07
Energy	TAS	.34	
	RD + TAS	.24	
			-0.10
Goal Setting/Drive	TAS	.36	
	RD + TAS	.28	
			-0.08
Initiative	TAS	.17	
	RD + TAS	.10	
			-0.07

Scale	Equation	Beta for TAS	Beta Change for TAS
Influence and Persuasion	TAS	.32	
	RD + TAS	.24	
			-.08
Planfulness	TAS	.33	
	RD + TAS	.19	
			-.14
Persistence	TAS	.41	
	RD + TAS	.28	
			-.13
Tolerance for Pressure	TAS	.35	
	RD + TAS	.25	
			-.10
E-Total	TAS	.48	
	RD + TAS	.38	
			-.10

Note: N's ranged from 947 to 968 due to missing data.

TAS refers to overall scores on the Test Attitude Survey. RD is the overall score on the Unlikely Virtues Scale. NS = non-significant.

Beta represents the standardized coefficients for TAS in both equations. All bolded coefficients are significant at $p < .05$.

Each personality scale, along with the total score, served as a dependent variable for the mediational analyses. For each scale, an equation with TAS as the lone predictor was followed by an equation with RD entered first followed by TAS.

Beta Change refers to the change in the Beta of the independent variable (TAS Scores) from the first equation to the second where the mediator is entered first.

Table 13: Results of Regression Analyses for Testing Moderation (Hyp #5):

Criterion	Predictor	Beta	R ^a	Change in R ²	p of change
\$Sales	AC	.66	.25	.06	<.05
	TAS	.28	.25	.00	ns
	ACXTAS	-.59	.25	.00	ns
Behaviors	AC	-.27	.19	.04	<.05
	TAS	-.25	.20	.00	ns
	ACXTAS	.63	.20	.00	ns
\$Sales	AD	.24	.04	.00	ns
	TAS	.17	.09	.00	ns
	ADXTAS	-.26	.09	.00	ns
Behaviors	AD	.07	.15	.02	<.05
	TAS	.07	.17	.01	ns
	ADXTAS	.06	.17	.00	ns
\$Sales	CM	1.57	.11	.01	ns
	TAS	.72	.13	.00	ns
	CMXTAS	-1.76	.22	.04	<.05
Behaviors	CM	.36	.12	.02	<.05
	TAS	.21	.16	.01	ns
	CMXTAS	-.30	.16	.00	ns
\$Sales	DO	1.43	.18	.03	<.05
	TAS	.59	.18	.00	ns
	DOXTAS	-1.56	.23	.03	<.05
Behaviors	DO	-.48	.15	.02	<.05
	TAS	-.19	.17	.00	ns
	DOXTAS	.75	.18	.01	ns

Criterion	Predictor	Beta	R ^a	Change in R ²	<i>p</i> of change
\$Sales	EN	-.12	.13	.02	<.05
	TAS	-.11	.14	.00	ns
	ENXTAS	.33	.14	.00	ns
Behaviors	EN	-.21	.13	.02	<.05
	TAS	-.10	.16	.00	ns
	ENXTAS	.41	.16	.00	ns
\$Sales	FM	.68	.15	.02	<.05
	TAS	.33	.16	.01	ns
	FMXTAS	-.63	.18	.00	ns
Behaviors	FM	.43	.03	.00	ns
	TAS	.32	.13	.01	ns
	FMXTAS	-.50	.14	.00	ns
\$Sales	GSD	.99	.24	.06	<.05
	TAS	.52	.24	.00	ns
	GSDXTAS	-1.06	.25	.00	ns
Behaviors	GSD	-.15	.15	.02	<.05
	TAS	-.11	.17	.00	ns
	GSDXTAS	..38	.17	.00	ns
\$Sales	IN	.68	.12	.01	ns
	TAS	.44	.13	.00	ns
	INXTAS	-.77	.15	.01	ns
Behaviors	IN	.03	.12	.01	ns
	TAS	.06	.16	.01	ns
	INXTAS	.09	.16	.00	ns

Criterion	Predictor	Beta	R ^a	Change in R ²	<i>p</i> of change
\$Sales	IP	1.03	.16	.03	<.05
	TAS	.57	.17	.00	ns
	IPXTAS	-1.18	.19	.01	ns
Behaviors	IP	.14	.16	.02	<.05
	TAS	.09	.17	.01	ns
	IPXTAS	-.02	.17	.00	ns
\$Sales	PL	.84	.04	.00	ns
	TAS	.43	.09	.01	ns
	PLXTAS	-.99	.14	.01	ns
Behaviors	PL	..28	.07	.00	ns
	TAS	.21	.13	.01	ns
	PLXTAS	-.28	.13	.00	ns
\$Sales	PR	.48	.23	.05	<.05
	TAS	.13	.23	.00	ns
	PRXTAS	-.33	.23	.00	ns
Behaviors	PR	-.04	.13	.02	<.05
	TAS	.01	.16	.00	ns
	PRXTAS	.18	.16	.00	ns
\$Sales	TP	-.45	.05	.00	ns
	TAS	-.05	.09	.00	ns
	TPXTAS	.54	.11	.01	ns
Behaviors	TP	-.27	.15	.02	<.05
	TAS	-.02	.17	.01	ns
	TPXTAS	.45	.17	.00	ns

Criterion	Predictor	Beta	R ^a	Change in R ²	<i>p</i> of change
\$Sales	E-TOT	.76	.28	.08	<.05
	TAS	.27	.28	.00	ns
	E-TOTXTAS	-.68	.29	.00	ns
Behaviors	E-TOT	-.37	.22	.05	<.05
	TAS	-.36	.22	.00	ns
	E-TOTXTAS	.83	.23	.00	ns

Note: N's range from 189 to 199 due to missing data.

AC (Accomplishment), AD (Adaptability), CM (Commitment), DO (Dominance), EN (Energy), FM (Financial Motivation), GS (Goal Setting/Drive), IN (Initiative), IP (Influence and Persuasion), PL (Planfulness), PR (Persistence), and TP (Tolerance for Pressure) are subscales of the Enterprise Scale and E-Tot is the total score.

Behaviors is the sum total of the positive and negative behaviors and \$Sales is the hard dollar sales criterion.

p of Change was calculated based on the formula presented in Pedhazur (1982).

a = All validity coefficients are uncorrected.

Table 14: Validities of Commitment and Dominance in Predicting Work Performance for Test Takers with Positive and Negative Test-Taking Attitudes along with means and standard deviations for predictor and criterion variables.

Equation/group	Validity	<u>Predictor</u>		<u>Criterion (\$sales)</u>	
		M	SD	M	SD
CM on \$sales					
Positive Attitude	-.15	4.24	1.07	.009	.96
Negative Attitude	.29*	3.93	1.31	-.12	1.0
Do on \$sales					
Positive Attitude	-.01	15.81	3.49	.009	.96
Negative Attitude	.27*	12.89	4.10	-.12	1.0

Note: The predictors were CM = Commitment and DO = Dominance and hard dollar sales was the work performance criterion.

The sample was split into positive (above and below the median) and negative attitude groups based on scores on the Test Attitude Survey. N= 124 for the positive attitude group and N = 115 for the negative attitude group.

*Significant at $p < .05$.

Vita

Jeffrey A. Smith was born May 04, 1970 in Birmingham, Michigan. He studied and received his BS in Psychology at the University of Connecticut and received his MS in psychology at Virginia Polytechnic Institute and State University. He is working as a consultant at the Chicago office of Personnel Decisions International.