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The Development And Validation Of Personality-Based Implicit Measures For Predicting Character Failure

David Doedli Willis

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THE DEVELOPMENT AND VALIDATION OF PERSONALITY-BASED

IMPLICIT MEASURES FOR PREDICTING CHARACTER FAILURE

A Masters Thesis

Presented to

The Graduate College of

Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science, Psychology

By

David D. Willis

December 2016

THE DEVELOPMENT AND VALIDATION OF PERSONALITY-BASED IMPLICIT MEASURES FOR PREDICTING CHARACTER FAILURE

Psychology

Missouri State University, December 2016

Master of Science

David D. Willis

ABSTRACT

Previous research in personality-based Implicit Association Tests (IATs) found little predictive power and obtained limited psychometric properties. This study was designed to improve the psychometric properties of personality-based Implicit Association Tests designed to assess attributes related to integrity and character. The predictive validity of the IATs for behavior related to character failure (e.g. dishonesty and rule violations) was also investigated. The personality-based IATs target attitudes and behavior related to what is referred to as the dark side of personality (i.e. traits related to Machiavellianism, psychopathy, and narcissism). To obtain criterion behavior related to these traits a temptation manipulation provided subjects an opportunity to follow or break a rule, lie or tell the truth, and blow the whistle on a thief or remain silent. Subjects completed both explicit (self-report) measures and implicit (IAT) measures of the dark side personality attributes. Results provide evidence that the IATs are psychometrically sound (they have adequate reliability) but only modestly improve the prediction of criterion behavior over previous personality-based Implicit Association Tests.

KEYWORDS: implicit association test, character failure, psychopathy, dark triad, integrity, personality, counterproductive work behavior, organizational citizenship behavior

This abstract is approved as to form and content

_____
Donald L. Fischer, PhD
Chairperson, Advisory Committee
Missouri State University

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INTRODUCTION

Integrity and character are important for those in both leadership and membership roles in organizations. The cost of character failure in both leadership and membership roles have been estimated to be in the billions of dollars worldwide (Mather, 2004; Moorthy, Somasundaram, Arokiasamy, Nadarajah & Marimuthu, 2011). Consequently, most organizations have an interest in better managing risks related to character failure.

These risk-management efforts would benefit from psychometrically sound measures that accurately identify those who pose a greater risk. Most existing measures of integrity rely on self-reports to assess these risks. However, self-report measures are susceptible to contamination due to impression management and self-knowledge artifacts. Individuals may respond to self-report measures in a dishonest manner that is consistent with social norms and expectations (Berry, Sackett, & Wiemann, 2007). Alternatively, individuals may self-report in ways that honestly reflect what they believe about themselves, without realizing that these beliefs do not accurately predict their actual behavior.

The Implicit Association Test (IAT) has been shown to be resistant to impression management and self-knowledge artifacts (Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellot, 2002). Although IATs were originally used to assess cognitive social knowledge structures (attitudes associated with racial, ethnic, and gender, groups), research has shown some promise for the development of IATs that assess self-concepts and personality attributes like shyness and anxiety (Schnabel, Banse & Asendorpf, 2006) and Big Five personality traits (Steffens & Konig, 2006). Building on these efforts,

Fischer and Bates (2008) and Thomas, Fischer and Willis (2016) developed IATs

designed to assess attributes related to integrity and character.

The Implicit Association Test

The IAT is a procedure that relies on reaction times in classification tasks to

assess the strength of the associations in a person's cognitive structure (Lane, Banaji,

Nosek & Greenwald, 2007). For example, stimuli (e.g., words like marvelous and superb

or daisy and rose) are sorted into categories (e.g., GOOD or FLOWER) over a large

numbers of trials. Greenwald, Banaji and Nosek, (2003) provide psychometric evidence

supporting a seven block procedure for obtaining reaction times on this kind of sorting

task (see Table 1).

Table 1. Schematic Overview of the Seven Block Implicit Association Test.

Blocks	Left Key Assignment	Right Key Assignment
1 (practice)	FLOWER	INSECT
2 (practice)	GOOD	BAD
3 (practice)	FLOWER + GOOD	INSECT + BAD
4 (test)	FLOWER + GOOD	INSECT + BAD
5 (practice)	BAD	GOOD
6 (practice)	FLOWER + BAD	INSECT + GOOD
7 (test)	FLOWER + BAD	INSECT + GOOD

Stimuli (words) that are randomly chosen from the target categories appear one at

a time on a computer screen. The person presses the "E" key to sort the stimuli that

belong to the category on the left side of the electronic work space and the "I" key to sort

stimuli that belong to the category on the right side of the electronic work space. For example, during the 20 trials in block 1, the words mosquito, beetle, fly and bee would be assigned to the INSECT category by pressing the "E" key, while the words daisy, rose, mum and orchid would be assigned to the FLOWER category by pressing the "I" key. During block 3 the participant must sort both FLOWER and GOOD stimuli to one side of the electronic work space while assigning INSECT and BAD stimuli to the other side of the electronic work space. After a 20 trial practice block with these paired categories, a 40 trial test block is administered. Block 5 reverses the sides for the GOOD and BAD categories, so that people must sort the stimuli by pressing the opposite key ("I" for GOOD stimuli and "E" for BAD stimuli). Blocks 6 and 7 pair INSECT with GOOD and FLOWER with BAD.

Greenwald, McGhee and Swartz (1998) theorized that the difference in reaction times for the alternate pairings provides a measure of the difference in the strength of the implicit (automatic) associations. Operationally, mean latency data from blocks 3 and 4 is compared with that from blocks 6 and 7. The mean difference is divided by the pooled standard deviation and the result is called a D-score. The magnitude and sign of the D-score reflect the strength and nature of the association between the target categories, so that a positive value indicates a stronger association between the hypothesized pairing (i.e. flower with good and insect with bad), while negative values indicate a preference for the reverse pairing (i.e. flower with bad and insect with good). The greater the magnitude of the D-score, the greater the difference between the strength of the association between the target categories. Classifications will be made more quickly and

accurately when there are stronger associations and, conversely, weaker associations will lead to slower classifications and more errors.

Overt Integrity Tests. Sackett, Burris and Callahan (1989) identified two types of integrity tests, which they labeled overt integrity tests and personality based integrity tests. Overt integrity tests focus on attitudes toward dishonest and antisocial conduct while personality based integrity tests focus on more broad traits related to conscientiousness, agreeableness and neuroticism. Overt integrity tests have a long history in both the fields of psychology and business (Ones, Viswesvaran & Schmidt, 1993). By directly asking questions related to theft (i.e. attitudes toward punishment of theft, and acceptance of rationalizations given for theft), explicit questionnaires can identify an individual's personal beliefs on the subject of integrity. However, Greenwald et. al (2002) point to the problems of impression management and lack of accurate self-knowledge as limitations of such explicit measures.

IATs modeled after overt integrity measures have been used to attempt to overcome these limitations. These IATs were developed by Fischer and Bates (2008), and they used category labels that are transparently related to the integrity construct (e.g. honest and dishonest), with stimuli that were equally transparent (e.g. fair, truth and sincere, versus lie, cheat and steal). Recent research has found a link between scores on these IATs and actual behavior related to integrity and character (Fischer, Osafo & Turner, 2010; Fischer, Thompson & Turner, 2012).

Personality-based Integrity Measures. The second group of integrity tests identified by Sackett are the personality-based integrity measures. Personality-based integrity measures are more broad in scope and seldom directly ask about behaviors

related to integrity. Instead, these tests ask questions related to personality traits. An early example of personality-based integrity test is the Personnel Reaction Blank developed by Gough (1971). This early test attempted to measure an individual's impulse-control and rule-observance behaviors. Hogan and Hogan (1989) also developed early tests of personality-based integrity citing the need to have a broader view in assessment than just theft in the work place. While personality based integrity tests are harder to impression manage, they can be faked if the socially/contextually desired answer is known (Berry, Sackett & Weimann, 2007).

Implicit measures have also been developed to assess personality traits. Steffens and Konig (2006) created bipolar IATs with categories based on the Big Five personality traits and their cognitive opposites (e.g. Agreeable/Not Agreeable and Extroverted/Introverted) and stimuli related to each category (e.g. understanding, compliant, cooperative versus critical, antagonistic, stubborn and self-assured, active, talkative versus withdrawn, independent, balanced).

However, Schnabel, Asendorpf, and Greenwald (2008) describe a problem involving the confounding influence of valence with semantic value when an IAT includes such self-referent categories. Individuals may more strongly associate themselves with words that have a positive valence (e.g. delicate) than words that have a negative valence (e.g. weak). When controlling for a word's valence, they found that self-descriptive attributes were more strongly associated with self-concept than non-self-descriptive words with a similar valence. This finding underscores the importance of the semantic meaning of the word, not just its valence. As an alternative to traditional bipolar IATs, these authors suggested using semantic contrasts that are non-bipolar, by pairing

concepts and stimuli that are balanced with respect to an evaluative dimension. This follows the same approach as forced-choice self-report measures that match items according to their social desirability. For example, one of their balanced IATs paired positive aspects of conscientiousness (determined, dutiful, orderly and disciplined) with positive aspects of agreeableness (bighearted, amicable, warmhearted and docile). Another IAT paired negative aspects of these traits (absentminded, neglectful and chaotic versus egoistic, greedy and quarrelsome). Correlations among their measures provided support for the convergent and discriminant validity of the IATs – the IATs measured implicit associations among semantically distinct self-constructs that were independent of self-esteem, and they did so in a way that reflected relationships among explicit measures of corresponding constructs.

In accord with Schnabel, et al (2008), Thomas, Fischer and Willis (2016) used trait descriptors related to dark side personality attributes to develop IATs that are balanced with respect to an evaluative dimension. This was done with the same problem in mind of not confounding self-esteem with semantically distinct descriptors of maladaptive behavioral tendencies. More specifically, they developed four IATs by pairing attributes that are strongly associated with psychopathy (e.g., irresponsible, mean) and attributes that are weakly associated with psychopathy (e.g., anxious, shy) with a self-referent dichotomy (me, not-me). Two of the IATs – one that contained attributes with positive stimuli (Confident-Nice) and one that contained attributes with negative stimuli (Mean-Shy) – involved attributes related to the negative poll of the Big Five factor of Agreeableness (i.e., ruthless and manipulative behavior). The other two IATs (Adventurous-Conscientious and Irresponsible-Anxious) involved concepts more closely

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related to attributes of Conscientiousness (i.e., impulsiveness and lack of goals). A multitrait-multimethod analysis revealed some support for the construct validity of the implicit measures and a subsequent study revealed some evidence of predictive validity for behavior related to integrity and character (Fischer, Stassen, Thomas & Willis, 2015). A multitrait-multimethod analysis revealed some support for the construct validity of the implicit measures. However, evidence also suggested that these IATs were heavily contaminated by measurement error – the mean reliability was .58.

Hypotheses

The present study first sought to address this problem of measurement error. To reduce measurement error (i.e. increase reliability), the logic of Lane, et al (2007) was followed. Specifically, stimuli that are categorized easily and quickly will add the least to error variance in the IAT effect. Ambiguity about an item's appropriate categorization will slow reaction times and increase the number of classification errors, both of which can distort the IAT effect (which is a function of the difference in mean reaction times for alternate pairings of the categories). This will be especially problematic if stimulus ambiguity and classification ease are confounded with the classification categories (i.e., the stimuli are quickly and easily classified for one category but not another). The percentage of classification errors that subjects make during the IAT trials is an index of the potential for this source of measurement error.

The average error rates for the four earlier IATs developed by Thomas, et al (2016) ranged from 11% to 14%. These compare poorly with the average error rates that have been obtained for standard racial attitude IATs (obtained from the Project Implicit web site at Harvard University), which ranged from 4% to 6%. The reasons for the

elevated error rates may include the labels that were chosen for the IAT attributes (i.e., they may not be equally easy to identify), the semantic homogeneity of the stimuli for each attribute, the semantic similarity of the stimuli with the attribute label, and the distinctiveness of the paired attributes and stimuli. The present study addressed each of these issues in an effort to refine the IATs that Thomas, et al (2016) developed.

A second purpose of the study was to extend validation of these personality IATs. In particular, following previous studies by Fischer and colleagues, the experimental protocol involved opportunities for opportunistic lying and cheating. Since reliability places a limit on validity, it is expected that increasing the reliability of the Thomas et al (2016) personality IAT will enhance its predictive power.

Finally, although no specific hypotheses are offered, both explicit and overt integrity measures were used for additional comparison and validation purposes.

Hypothesis 1: The three non-bipolar, valance balanced, dark side personality trait IATs will predict behavior related to sub-clinical psychopathy: lying, cheating and stealing behavior.

Hypothesis 2: The three non-bipolar, valance balanced, dark side personality trait IATs will incrementally improve the prediction of criterion behavior, relative to the prediction provided by explicit (self-report) measures of the dark side personality traits and overt-based IATs.

METHOD

Participants

Participants were recruited through the Sona System's web-based management system used by the Psychology Department at Missouri State University. Participants received up to five course credits for their participation. The University's Institutional Review Board approved this research with human subjects (Study Number 16-0190: 2015).

Measures

Explicit Overt Integrity Measure. The overt-based integrity measure used in this study is the Employee Integrity Index (EII; Ryan and Sackett, 1987). The EII contains 63 items using a five point Likert scale for most of the questions (a few items involve dollar amounts or percentages). Questions include "Have you ever knowingly purchased stolen merchandise?" and "What percentage of employees steal?" Questions also ask the participant to self-disclose past larceny habits with questions like "Over the last three years, what's the total dollar value of merchandise and property that you've taken from your employers?" Typical reliability scores are very good, with alphas greater than .90.

Explicit Personality-Based Integrity Measures. Two personality-based integrity measures were used in this study. Participants completed the Levinson Self-Report Psychopathy Scales (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) and the Paulhus Deception Scales (PDS; Paulhus, 1998). These are considered personality-based integrity tests because they attempt to measure traits theorized to be related to integrity.

The Levinson Self Report Psychopathy scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) contains 28 items which provide scores on two subscales. The first (LSRP-1) contains items like "Looking out for myself is my top priority" and "I often admire a really clever scam" that are related to callous insensitivity and self-absorption The second (LSRP-2) contains items like "I am often bored" and "I quickly lose interest in tasks I start" that are related to impulsiveness and irresponsibility. The reliabilities for the subscales are reported to be adequate (alpha = .82 for LSRP-1 and alpha = .63 for LSRP-2).

The Paulhus Deception Scales (PDS; Paulhus, 1998) contains 40 items which provide scores on two subscales. One scale assesses traits related to impression management (the IM scale) and contains items like "I never take things that don't belong to me." A narcissistic scale labeled Self-Deception (SD) includes questions like "I am a completely rational person." The manual reports alphas ranging from .70-.75 for the SD scale and .81-.86 for the IM scale.

Overt-Based IATs. The overt IATs are drawn from previous research by Fischer and Bates (2008). These IATs use the standard seven-block procedure and the D-score described by Lane et al. (2007). One IAT targets attitudes about how honest employers are believed to be (relative to employees) and the other IAT targets self-concept (how honest one believes one's self to be, relative to others). The category labels and word stimuli for the overt IATs are presented in Table 2.

Table 2. Category Labels and Word Stimuli for the Overt IATs

Person		Group		Attribute	
Self	Other	Employer	Employee	Honest	Dishonest
me	them	manager	subordinate	fair	unfair
my	their	boss	laborer	integrity	steal
mine	theirs	supervisor	worker	sincere	deceive
self	other	employer	employee	trustworthy	cheat
I	they			truthful	lie
				moral	corrupt

Personality-Based IATs. The target categories for the personality IATs were chosen because of their association with attributes related to dark side personality traits. These traits include callous social insensitivity (meanness) and irresponsible impulsive thrill seeking (boldness and recklessness). The target category labels were Bold, Mean, and Reckless, while the valence-balanced comparison categories were Nice, Shy, and Anxious, respectively. Larger (positive) IAT effects indicate an implicit self-concept that is more strongly associated with the dark side (target) personality traits. The word stimuli for each of the IATs are provided in Table 3. Both the category labels and their corresponding stimuli were developed by extensively pilot testing alternative labels and stimuli, and retaining those that had lower misclassification error rates and higher internal consistency reliability coefficients.

Table 3. Category Labels and Word Stimuli for the Personality-based IATs

Pd IAT 1		Pd IAT 2		Pd IAT 3	
Bold	Nice	Mean	Shy	Reckless	Anxious
Bold	Nice	Mean	Shy	Reckless	Anxious
Daring	Friendly	Rude	Withdrawn	Daredevil	Worried
Fearless	Warm	Malicious	Quiet	Brash	Afraid
Thrilling	Polite	Hateful	Bashful	Risky	Tense
Dominating	Kind	Hostile	Reserved	Impulsive	Nervous

Criterion Measures. A temptation manipulation was used to obtain four criterion measures. Two of the measures involved rule compliance and two involved telling the truth (blowing the whistle on a confederate for cheating and stealing). One of the rule compliance measures dichotomized subjects based on whether they stopped within five seconds of the alarm sounding. The second rule compliance measure was based on the total time the subject spent taking the test (subjects could continue past the alarm for approximately two minutes). Of the two measures that involved telling the truth, the first categorized subjects according to their response to the question "Did the other subject stop after the alarm sounded?" One category contained those who told the truth (e.g., "No, he didn't stop") and two categories contained those who lied (e.g., "Yes, he did stop" or "I don't know/can't say"). The second measure that involved telling the truth categorized subjects according to their responses to the question "Did you see a wallet in here?" These categories included (1) those who blew the whistle while the confederate was present, before the research assistant could ask about the wallet, (2) those who blew the whistle after the research assistant dismissed the confederate and asked about the

missing wallet, (3) those who denied knowing anything about a wallet, and (4) those who admitted seeing a wallet but said they didn't know anything about its disappearance.

Procedure

Upon arrival, a research assistant directed the subject and the confederate to a small lab with two computer work stations. Once seated, the research assistant unclipped a wallet from a clipboard containing the informed consent information to be read to subjects and set it on a desk beside the two work stations. The research assistant then proceeded to read the information that stated the purpose of the study was to investigate the relationship between academic ability and personality traits (see Appendix A for the complete script).

Subjects were told the study had two parts. They would be awarded two credits for participating in this, the first part of the study, but they could obtain an additional three credits if they qualified (and volunteered) for the second part of the study. However, in order to participate in the second part, they needed to correctly answer at least 10 questions designed to measure academic ability during a five-minute timed trial. The questions were administered by computer and feedback regarding answers to each question was given after each response. In reality, the computer that administered the test questions to subjects was programmed to award correct answers based only on the amount of time that had passed. The test questions were very difficult word analogy problems taken from GRE practice materials so that bogus feedback was plausible and not questioned by subjects. The test program was designed to award nine correct responses, one short of the 10 needed by the time the alarm sounded, thus tempting the subject to cheat. To further tempt subjects to cheat, the research assistant would leave "to

check on subjects doing the second part of the study down the hall," closing the door so that they wouldn't be distracted by noise in the hallway outside the lab.

The confederate's computer was also rigid but, unlike the subject's, it would award the final 10th correct answer after an additional 30 seconds had passed after the alarm. When the alarm sounded, the confederate would say, "Don't open the door yet, I'm only one away from 10" and continue responding until the final correct answer was awarded, at which point they would announce their success. Shortly after announcing success, the confederate would comment that a wallet was on the research assistant's desk and proceed to look through it. Upon the research assistant's return the confederate would keep the wallet in hand, while subtly concealing it by his/her side. The confederate would then tell the research assistant that he/she didn't want to stay for the second part of the study and abruptly leave the lab. Because of the stress that might be involved in watching someone steal a wallet, any subject that blew the whistle on the thief or showed signs of distress, was told that this was part of the study and immediately debriefed.

Once the confederate had left, the researcher would look at the confederate's work station and utter a curious "hmmm" before asking the subject, "Did they really stop when the alarm went off?" Then, while turning to attend to the subject, the research assistant would notice that the wallet missing and ask, "Did you see a wallet in here?" After responding to this question subjects were debriefed and invited to volunteer for the second part of the study, the personality assessments (see Appendix B for the complete debriefing script; see Appendix C for complete confederate script; see Appendix D for the second part of the experimenter script.).

The implicit measures were administered in a computer lab in Hill Hall immediately after debriefing (see Appendix E for debriefing procedure) and informed consent papers are signed (see Appendix F for informed consent form). The remaining measures were administered in the same labs upon a second occasion which was scheduled during debriefing. Most subjects were scheduled for second sessions within a week of the first session.

RESULTS

Of the 112 subjects who participated in this study, nine were excluded because of their outlier status (Mahalanobis distance metric $p < .001$, non-native speaker of English, or excessive IAT classification error rates). Of the remaining participants, 66 provided demographic data. Females made up 54 % of this sample and 77% were non-Hispanic whites. The mean age was 19.6 years ($SD = 2.01$) and the average number of years of employment was 2.7 ($SD = 2.07$). Of those who participated in the study, only 66 completed the second session and only 58 of these provided usable data on all of the measures. Table 4 contains descriptive statistics for the study variables and Table 5 contains the correlations among study variables.

Regarding the dichotomized rule compliance criterion measure, 33% stopped working on the academic ability test within five seconds of the alarm sounding. In response to the question about the confederate stopping when the alarm sounded, 49% lied (replied "yes"), 28% said they didn't know and 24% told the truth (replied "no"). In response to the question about the missing wallet, 8% blew the whistle with the confederate present (i.e., before the research assistant could ask the question), 44% blew the whistle after the confederate left (i.e., in response to the research assistant's question), 27% feigned ignorance (said they saw a wallet but didn't know anything about its whereabouts) and 21% denied seeing a wallet.

Tests of Hypothesis 1

To test the hypothesis that the personality-based IATs predict behavior related to integrity and character, discriminant function analyses (DFAs) were conducted, using the

Table 4. Descriptive Statistics for Selected Study Variables

Variables	N	Mean	SD	Alpha
Explicit Measures				
LSRP-1	58	31.55	6.86	0.69
LSRP-2	58	19.71	4.57	0.60
EII- Integ	58	227.93	21.80	0.88
PDS-IM	58	7.19	3.59	0.75
PDS-SD	58	2.95	2.46	0.72
Implicit Measures[1]				
Integ-Empl	91	-0.14	0.29	0.25
Integ-Self	91	-0.24	0.29	0.40
Bold-Nice	95	-0.73	0.43	0.75
Mean-Shy	91	-0.52	0.34	0.50
Reck-Anx	51	-0.27	0.38	0.77
Criterion Measure				
Total Test-time[2]	102	319.79	23.57	NA

LSRP 1&2 - Levinson Self-Report Psychopathy Scales, *EII* - Employee Integrity Index, *PDS-IM* - Paulhus Deception Scales-Impression Management, *PDS-SD* - Paulhus Deception Scales-Self Deception, *Integ-Empl* – Employer Integrity IAT, *Integ-Self* – Personal Integrity IAT, *Bold-Nice* – Bold – Nice IAT, *Mean-Shy* – Mean – Shy IAT, *Reck-Anx* – Reckless – Anxious IAT

[1]All implicit measures are D-scores (standardized IAT scores)
[2]This measure is the number of seconds that elapsed from the beginning of the academic test session to the time of the subject's last response; values greater than 300 indicate a last response made after the timer alarm had sounded and subjects were to have stopped.

Table 5. Zero-order Correlations for Study Variables

Variables	1	2	3	4	5	6	7	8	9	10
Explicit Measures										
1. LSRP-1	-									
2. LSRP-2	0.52**	-								
3. EII-Integ	-0.60**	0.46**	-							
4. PDS-IM	-0.49**	0.44**	0.67**	-						
5. PDS-SD	-0.16	0.44**	0.39**	0.34**	-					
Implicit Measures										
6. Integ-Empl	-0.24^{+}	$-.23^{+}$	-0.01	0.06	0.20	-				
7. Integ-Self	0.04	0.11	-0.12	0.06	0.09	0.46**	-			
8. Bold-Nice	0.28^{*}	0.11	-0.22^{+}	-0.04	0.13	-0.16	-0.11	-		
9. Mean-Shy	-0.04	0.02	-0.01	0.09	-0.06	-0.02	-0.04	0.14	-	
10. Reck-Anx	-0.07	-0.27^{+}	0.05	0.14	0.14	0.18	-0.13	0.21	0.27^{+}	-
Criterion Measure										
11. Test Time	0.11	0.08	-0.11	-0.21	-0.08	0.01	0.07	-0.11	0.03	0.10

$^{+}p < 0.10;$ $^{*}p < 0.05;$ $^{**}p < 0.01$

groupings of subjects that the categorical criterion measures created. The DFA for the dichotomous rule compliance measure was not significant (canonical $r = .23$, $\chi^2 = 2.36$, $p > .50$). The DFA for the groups based on responses to the question about whether the confederate stopped on time was not significant (canonical $r = .36$, $\chi^2 = 6.08$, $p > .40$), although the magnitude of the canonical correlation coefficient suggests a moderate effect size, according to Cohen's (1998) standards. The DFA for the groups based on responses to the question about the missing wallet was not significant (canonical $r = .31$, $\chi^2 = 7.89$, $p > .50$), although, again, the magnitude of the canonical correlation coefficient suggests a moderate effect size. Figures 1—3 display the means for the IAT measures on all of the categorical criterion measures. To further examine the hypothesis that the personality-based IATs predict behavior related to integrity and character, a multiple regression analysis was conducted using the total test time measure as a continuous dependent variable, with the three IATs as independent variables. The results of this analysis were not significant ($R = .15$, $F_{(3,47)} = .35$, $p > .70$).

Technical problems with data collection during the first session resulted in substantial missing data for one of the three personality-based IATs (Reckless-Anxious). Rather than having 91 subjects with complete personality-based IAT data, there were only 48. In order to increase the power of the tests for the first hypothesis, all of the DFAs were recalculated using only two of the three IATs (Bold-Nice and Mean-Shy). The results for the first two DFAs (i.e. cheating, lying about stopping) did not change. However, the results of the DFA based on the question about the missing wallet was significant (canonical $r = .33$, $\chi^2 = 13.94$, $p < .05$). An analysis of the interactions
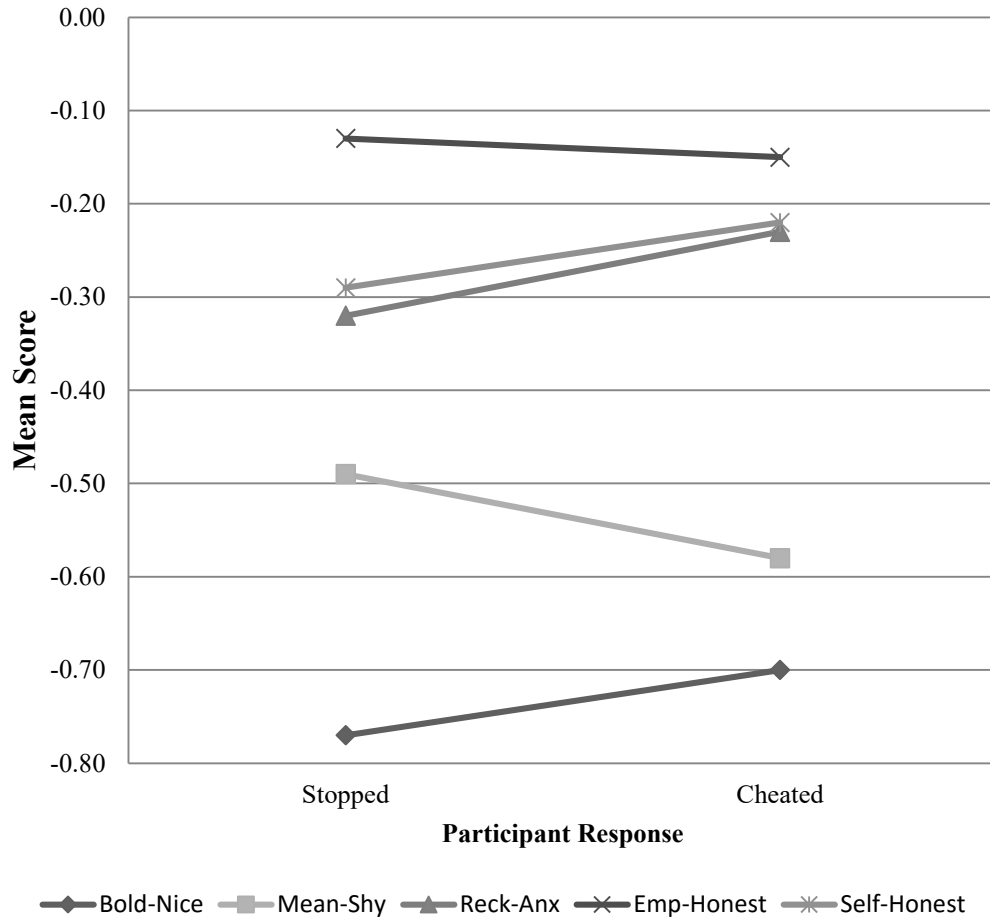
Figure 1. Cell Means for Groups Based on a Dichotomized Rule Compliance measure.

between the three IATs did not yield significant results $F(4,44) = 0.57$, $p = .69$, $R^2 = 0.05$. It is interesting to note that the magnitude of the effect (i.e., the canonical correlation coefficient) remained essentially the same, suggesting a moderate effect size.

A post hoc ANOVA for the Bold-Nice IAT produced significant results ($F(3,91) = 3.38$, $p < .05$), as well. The ANOVA for the Mean-Shy IAT was not significant ($F(3,87) = 1.76$, $p < .20$). The plot of Mean-Shy cell means (Figure 3) shows that average
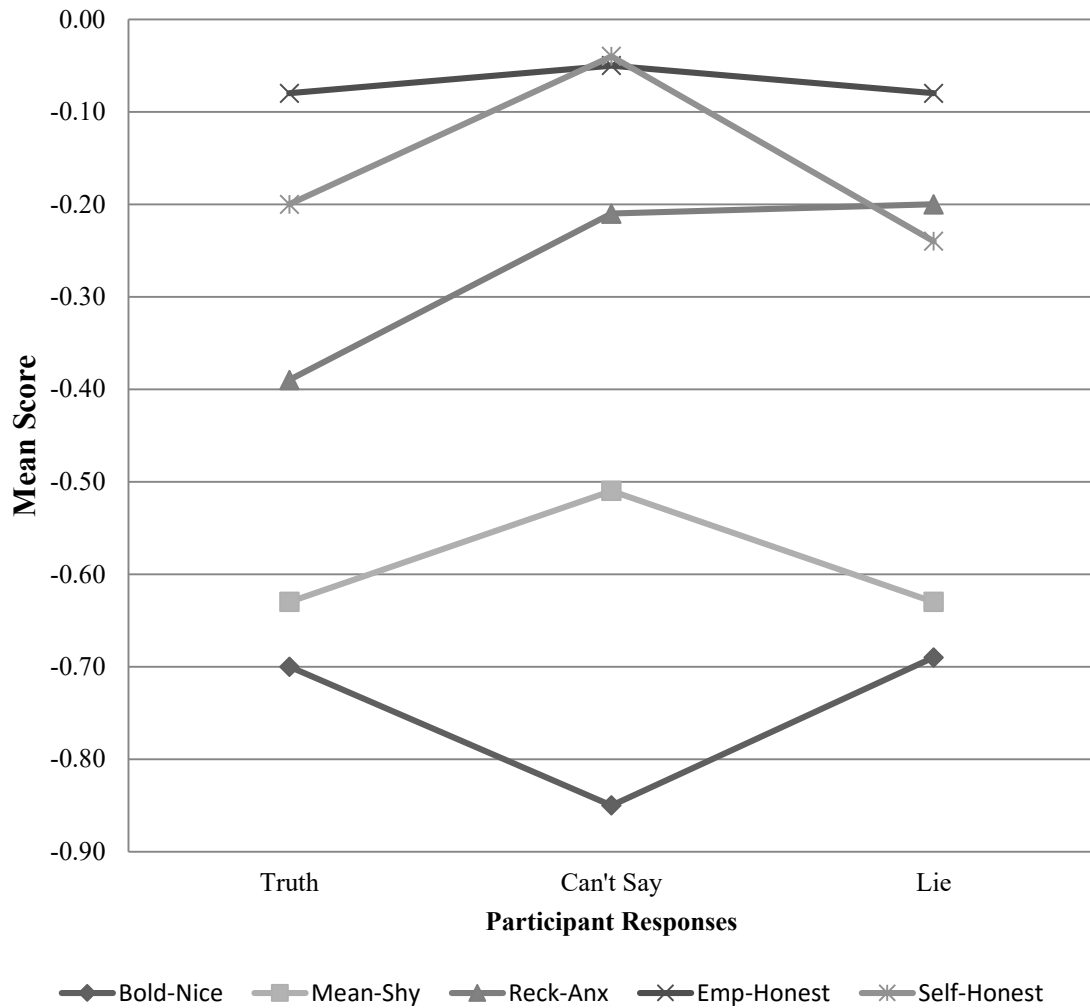
Figure 2. Cell Means for Groups Based on Subjects' Responses to Expose a Cheater.

D-scores are lower for those who blow the whistle than for those who do not, as predicted. The plot of Bold-Nice cell means (Figure 3) shows a large difference between those that blow the whistle while the confederate is present than when the confederate is not present, contrary to expectation.
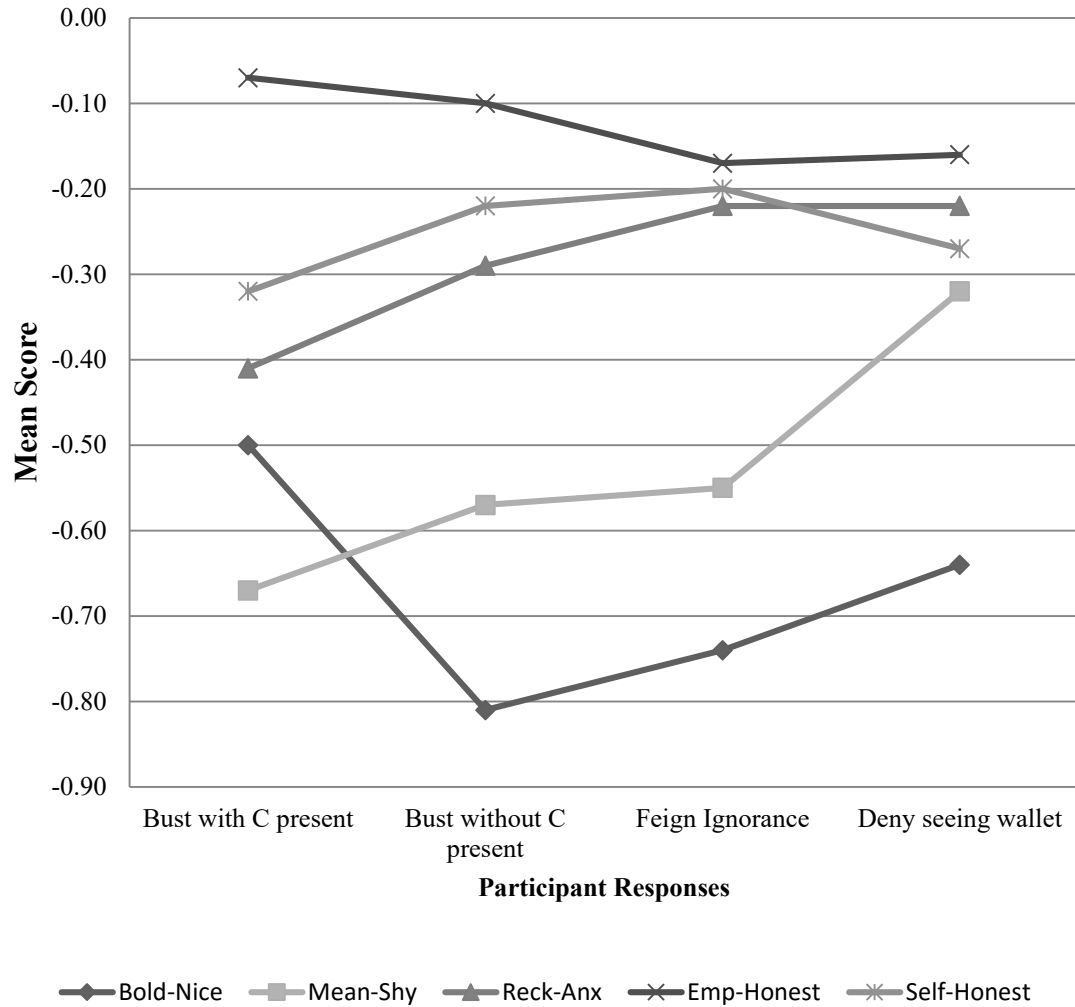
Figure 3. Cell Means for Groups Based on Responses to Expose a Thief.

Tests of Hypothesis 2

Hierarchical DFAs were conducted with the categorical criterion measures in order to test the hypothesis that the personality-based IATs improve the prediction of behavior related integrity and character, over that which the explicit scales and overt IATs can achieve. The Chi-Square test for a difference between a model with seven predictors (five explicit scales and two overt IATs) and a model with 10 predictors adding the three personality-based IATs to the set of predictors) did not produce a

significant result for the dichotomous rule compliance measure ($\Delta\chi^2 = 3.35$, $p > .30$). The Chi-Square test for the groups based on how subjects responded to the question about whether the confederate stopped on time was also not significant ($\Delta\chi^2 = 7.01$, $p > .30$). Similar results were obtained for the analysis based on the question about the wallet ($\Delta\chi^2 = 9.47$, $p > .30$).

Sample size and power were substantial problems in these analyses. This was especially evident when considering the canonical correlation coefficients and classification rates for the DFAs. For example, the canonical correlation coefficient for the first discriminant function improved to .59 from .52 for the analysis based on the wallet question. These values suggest that there is a strong relationship between the criterion behavior and predictors. This was also evident in the classification rates based upon the discriminant functions (i.e., the "hit" rates for assigning subjects to groups, based on subjects' discriminant function values). The correct classification rates ranged from 41% to 69% across the four groups for the seven measures in model 1 and they ranged from 35% to 71% for the 10 measures in model 2. Unfortunately, since these DFAs require data from the second session, the sample size did not increase when the third IAT (Reckless-Anxious) was dropped from the analysis, unlike the tests for the first hypothesis. More detailed information about the hierarchical DFA results and classification rates can be found in tables contained in Appendix G.

DISCUSSION

Increasing Internal Consistency of Implicit Measures

In previous studies conducted by Fisher et.al. (2015) and Thomas et.al. (2016), the personality-based IATs had poor reliabilities – alpha coefficients ranged from .29 to .64. In an attempt to increase the reliability of the personality-based IATs, this study conducted extensive pilot testing that involved sets of alternative category labels and stimuli. This included valance ratings of category labels and stimuli by research assistants and graduate students. The distributions of the ratings were then examined by the researchers to identify words that had high similar mean values and low standard deviations across each of the target attributes.

Pilot tests of the newly created IATs were conducted with up to 30 undergraduate student participants that were recruited from the Psychology Department's subject pool. Three rounds of valance ratings and pilot testing were conducted in an effort to develop IATs with distinctive category labels and sets of stimuli that are quickly and easily classified. During the pilot testing some stimuli were removed because they exhibited too much sematic similarity across the comparison categories (e.g., fearful/fearless & careful/careless) and produced higher classification error rates. Other stimuli were removed because they proved to be too difficult to classify and produced longer response latencies. Category labels were also changed in order to improve the stimuli-category relationship (e.g., Daring was changed to Bold). Ultimately, the pilot testing produced IATs that were more reliable – the alpha coefficients of the new IATs ranged from .50 to .77.

Predictive Validity of Personality Based IATs

Results for the predictive ability of the new personality-based IATs were disappointing. The discriminate function analysis produced a single statistically significant relationship between the new IATs and the criterion behavior. However, technical difficulties and scheduling problems greatly reduced the power of the inferential statistics in this study to detect significant relationships. Only 51 out of the 112 subjects who participated in the temptation manipulation phase of the study completed all three of the new IATs. The statistical power problem was especially evident in light of the magnitude of the relationship between the personality-based IATs and the criterion behavior. The canonical correlation coefficients suggest a medium effect size for both of the whistle-blowing criterion measures. In addition, the pattern of the cell means for the groups based upon the response to the wallet question were generally in the predicted direction. An interesting exception involves the Bold-Nice IAT, where the group with the largest mean was the one where subjects blew the whistle on the wallet theft while the confederate was present. This may mean that the non-responsive bystander effect is moderated by how bold or shy one is – those who are bold act sooner, while those who are shy act later.

Incremental Validity of Personality Based IATs

Sample size was also a problem for the analyses investigating the incremental validity of the personality-based IATs. Although none of the hierarchical DFA analyses produced significant results, the magnitude of the canonical correlation coefficients suggested there was a strong relationship between the entire set of predictors and the criterion behavior. The canonical r for the first discriminant function was over .5 for both

the restricted and full models for the analysis based on the wallet theft question. The strong relationship was also evident in the classification statistics for the DFAs, which ranged as high as correctly identifying seven out of ten subjects in the group of those who denied any knowledge of a wallet. Although the canonical *r* improved from .51 to .59 in this analysis, the lack of statistical power undermined the significance of this result. Nevertheless, the prediction of criterion behavior improved when the three personality-based IATs were added to the model containing conventional explicit integrity measures and the overt-based IATs.

Limitations and Future Research

While internal validity issues addressed in this study were successful, the small sample size limited most other analyses. Using Nunnally's (1978) standards for reliability, the reliability for two of the three personality-based IATs improved to acceptable levels ($\alpha > .70$. Although the efforts of the research team were successful in improving the reliability of the personality-based measures, these still fell short of the level Nunnally recommends when making decisions about individuals ($\alpha > .90$), which suggests more work is needed to achieve measures that have applied value in the workplace. To fine tune the personality based IATs, future research may require larger word samples in order to find better category-stimuli agreement. These efforts should focus upon the single measure that did not attain Nunnally's standard (Mean-Shy IAT $\alpha = .50$).

IATs are inherently plagued by testing effects of fatigue and maturation. These testing effects are brought on by the time requirements of taking multiple IATs and their repetitive nature. To gain better multimethod statistics the temptation manipulation may

need to be changed significantly as it was difficult to orchestrate the many research assistants necessary. Second to this is the need to limit the effects of poor acting or giving away the plot. Although, it is important to compare IAT scores to actual behavior the lengthy temptation manipulation may have proved too complex for accurate scoring of criterion measures.

Coding of criterion measures was improved over past experiments, although the classification of subject responses was subjective in nature and required notes in order to classify ambiguous or mumbled responses. In the current study ambiguous responses were categorized as feigning ignorance. Notes by research assistants limited miss-categorization, but the process surely contained errors of classification and judgment. As with past studies the temptation manipulation may have proved to be a strong situation which may have primed individuals to respond in unpredicted ways. This may be most apparent in Table 3 where those with higher IAT scores blew the whistle on the confederate while they were present. Being so bold as to call out a thief to their face may have primed the subject to identify as bold as opposed to nice. As with the above recommendations perhaps changing the criterion measurements to a weak situation in which the responses and outcomes are less well known would provide better criterion data.

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APPENDICES

Appendix A: Online Questionnaire for Explicit Measures

Part 1: PLEASE RESPOND TO THE FOLLOWING DEMOGRAPHIC ITEMS.
1. Subject ID:
2. Age:
3. Sex:
      A. Male
      B. Female
4. Race/Ethnicity:
      A. African American
      B. Asian American/Pacific Islander
      C. Mexican American, Latin American, Hispanic
      D. European American (Caucasian)
      E. Native American
      Other:
5. Years of work experience:

Part 2: Read each item carefully and then rate each of the statements by marking the appropriate response choice. If you are unsure of how to answer a particular item, please choose the answer that describes you as accurately as possible. No item should be left unanswered.

6. My first impressions of people usually turn out to be right.
    (Not True) (1) (2) (3) (4) (5) (Very True)
7. It would be hard for me to break any of my bad habits.
    (Not True) (1) (2) (3) (4) (5) (Very True)
8. I don't care to know what other people really think of me.
    (Not True) (1) (2) (3) (4) (5) (Very True)
9. I have not always been honest with myself.
    (Not True) (1) (2) (3) (4) (5) (Very True)
10. I always know why I like things.
    (Not True) (1) (2) (3) (4) (5) (Very True)
11. When my emotions are aroused, it biases my thinking.
    (Not True) (1) (2) (3) (4) (5) (Very True)
12. Once I've made up my mind, other people cannot change my opinion.
    (Not True) (1) (2) (3) (4) (5) (Very True)
13. I am not a safe driver when I exceed the speed limit.
    (Not True) (1) (2) (3) (4) (5) (Very True)
14. I am fully in control of my own fate.
    (Not True) (1) (2) (3) (4) (5) (Very True)
15. It's hard for me to shut off a disturbing thought.
    (Not True) (1) (2) (3) (4) (5) (Very True)
16. I never regret my decisions.

(Not True) (1) (2) (3) (4) (5) (Very True)
17. I sometimes lose out on things because I cannot make up my mind soon enough.
    (Not True) (1) (2) (3) (4) (5) (Very True)
18. The reason I vote is because my vote can make a difference.
    (Not True) (1) (2) (3) (4) (5) (Very True)
19. People don't seem to notice me and my abilities.
    (Not True) (1) (2) (3) (4) (5) (Very True)
20. I am a completely rational person.
    (Not True) (1) (2) (3) (4) (5) (Very True)
21. I rarely appreciate criticism.
    (Not True) (1) (2) (3) (4) (5) (Very True)
22. I am very confident of my judgments.
    (Not True) (1) (2) (3) (4) (5) (Very True)
23. I have sometimes doubted my abilities as a lover.
    (Not True) (1) (2) (3) (4) (5) (Very True)
24. It's alright with me if some people happen to dislike me.
    (Not True) (1) (2) (3) (4) (5) (Very True)
25. I'm just an average person.
    (Not True) (1) (2) (3) (4) (5) (Very True)
26. I sometimes tell lies if I have to.
    (Not True) (1) (2) (3) (4) (5) (Very True)
27. I never cover up my mistakes.
    (Not True) (1) (2) (3) (4) (5) (Very True)
28. There have been occasions when I have taken advantage of someone.
    (Not True) (1) (2) (3) (4) (5) (Very True)
29. I never swear.
    (Not True) (1) (2) (3) (4) (5) (Very True)
30. I sometimes try to get even rather than forgive and forget.
    (Not True) (1) (2) (3) (4) (5) (Very True)
31. I always obey laws, even if I'm unlikely to get caught.
    (Not True) (1) (2) (3) (4) (5) (Very True)
32. I have said something bad about a friend behind his or her back.
    (Not True) (1) (2) (3) (4) (5) (Very True)
33. When I hear people talking privately, I avoid listening.
    (Not True) (1) (2) (3) (4) (5) (Very True)
34. I have received too much change from a salesperson without telling him or her.
    (Not True) (1) (2) (3) (4) (5) (Very True)
35. I always declare everything at customs.
    (Not True) (1) (2) (3) (4) (5) (Very True)
36. When I was young, I sometimes stole things.
    (Not True) (1) (2) (3) (4) (5) (Very True)
37. I have never dropped litter on the street.
    (Not True) (1) (2) (3) (4) (5) (Very True)
38. I sometimes drive faster than the speed limit.
    (Not True) (1) (2) (3) (4) (5) (Very True)
39. I never read sexy books or magazines.

Not true12345Very True

40. I have done things that I don't tell other people about.
    (Not True)   (1)   (2)   (3)   (4)   (5)   (Very True)
41. I never take things that don't belong to me.
    (Not True)   (1)   (2)   (3)   (4)   (5)   (Very True)
42. I have taken sick-leave from work or school even though I wasn't really sick.
    (Not True)   (1)   (2)   (3)   (4)   (5)   (Very True)
43. I have never damaged a library book or store merchandise without reporting it.
    (Not True)   (1)   (2)   (3)   (4)   (5)   (Very True)
44. I have some pretty awful habits.
    (Not True)   (1)   (2)   (3)   (4)   (5)   (Very True)
45. I don't gossip about other people's business.
    (Not True)   (1)   (2)   (3)   (4)   (5)   (Very True)

Part 3: PLEASE RESPOND TO EACH OF THESE QUESTIONS USING THE FOLLOWING RATING SCALE.

46. Pick the response that best describes you.
    Strongly disagree Disagree Neither Agree Strongly agree
    - Someone who steals because his family is in need should not be treated the same as a common thief.
    - Most companies take advantage of people who work for them.
    - I've thought about taking money form an employer without actually doing it.
    - The average employee will tell his boss about a fellow employee who is stealing money.
    - I have known people who have stolen money from their employer.
    - Making personal phone calls at work without an O.K. is stealing.
    - I am too honest to steal.
    - I've thought of ways in which a dishonest person could steal from the company if a dishonest person had my job.
    - A judge freed a worker who had stolen money from his employer, because the employer paid such low wages. To what extent do you agree or disagree with the judge?
    - I have occasionally had ideas and thoughts that I would not like other people to know about.
    - The average policeman would overlook a traffic violation if offered money.
    - I would turn in a fellow worker I saw stealing.

47. Pick the response that best describes you.
    Strongly disagree Disagree Neither Agree Strongly agree
    - Taking paper clips, pencils, or envelopes from a place where you work is stealing.
    - A person caught stealing $50 from his employer should be fired.
    - I've been tempted to steal company money to buy something I really wanted.
    - I secretly feel good when I read about a successful robbery in the papers.

- Most bosses treat their employees unfairly.
- Nearly every worker has at some time cheated his company out of something.
- It's O.K. for an employee to allow friends to use his/her employee discount card, even though the company does not allow it.
- I have on occasion been at least a little tempted to steal something.
- A person who pays back money he/she stole from the company should be fired anyway.
- A person could steal company merchandise for ten years without being caught.
- Most people I've worked with have stolen something at one time or another.
- If I get into a movie without paying and be sure I wouldn't be caught, I'd do it.

48. Pick the response that best describes you.
    Strongly disagree Disagree Neither Agree Strongly agree
    - A life of crime would be exciting.
    - Most people cheat on their income tax.
    - Honesty is always the best policy.
    - I have sometimes felt like swearing.
    - It's okay to lie about the past to help get a job if you will be very honest after you're hired.
    - Someone who helped another employee steal a little merchandise from the company should be fired.
    - A person should always tell the truth.
    - I like almost everyone.
    - I have been approached by someone with a plan to steal something.
    - Most people are honest only because they are afraid they'll be caught.
    - It's fair for an employee to borrow some money from the company without asking if he/she has worked there for a long time.
    - If I were given an extra 25 cents change at the supermarket, I would return it.

49. Pick the response that best describes you.
    Strongly disagree Disagree Neither Agree Strongly agree
    - A certain degree of dishonesty is just part of human nature.
    - I get angry when someone treats me really badly.
    - I'd be willing to take a lie detector test if money was missing on the job.
    - Employers expect a certain amount of stealing.
    - I am almost never wrong about things.
    - It would be easy to steal from my employer if I wanted to.
    - Just about everyone has shoplifted something.
    - I am always able to accomplish my goals in life.
    - Most people are basically dishonest.
    - If I found $3.00 in the coin return of a payphone, I'd send the money to the phone company.
    - Most of my friends have taken a little money or merchandise from their employer.

- I sometimes think of doing dishonest things.

50. Pick the response that best describes you.
     Strongly disagree Disagree Neither Agree Strongly agree
     - A person who refuses to take a lie detector test probably has something to hide.
     - Do you agree with the proverb "once a thief, always a thief."
     - Cheating a little on an expense account is really not the same as stealing.
     - People who say they have never stolen anything are lying.
     - An employee should be fired if the employer finds out the employee lied on the application blank.
     - A person who buys stolen merchandise is as bad as the person who originally stole it.
     - I sometimes enjoy listening to gossip.
     - After waiting 20 minutes for a waitress to bring the bill, it would be O.K. to leave the restaurant without paying.
     - Most people I've worked with have never stolen from their employers.
     - I sometimes put things off when I shouldn't.
     - If I found a wallet with money, I'd return it to the owner.
     - My conscience would bother me if I cheated someone.
     - The penalties for theft are too severe.

Part 4: PLEASE RESPOND TO EACH QUESTION BY SELECTING ONE OF THE FIVE OPTIONS.

51. Over the last three years, what's the total dollar value of merchandise and property that you've taken from your employers?
     A. over $100
     B. $51-$100
     C. $11-$50
     D. $1-$10
     E. $0
52. Over the last three years, what's the total amount of money you've taken without permission from your employer?
     A. over $100
     B. $51-$100
     C. $11-$50
     D. $1-$10
     E. $0
53. The most expensive thing you've ever taken from a store and not paid for was worth?
     A. over $100
     B. $51-$100
     C. $11-$50
     D. $1-$10
     E. $0
54. What is the total amount of money you have taken without permission from places other than work, such as schools, parents and friends

A. over $100
B. $51-$100
C. $11-$50
D. $1-$10
E. $0

55. What is the dollar value of all property you have taken without permission from places other than work, such as from school and from friends?
    A. over $100
    B. $51-$100
    C. $11-$50
    D. $1-$10
    E. $0

56. How long has it been since you have stolen money from anyone or any place?
    A. less than 6 months ago
    B. 1 year ago
    C. several years ago
    D. when I was a child
    E. I have never stolen any money

57. Have you ever changed price tags in a store because the prices were too high?
    A. never
    B. once
    C. twice
    D. a few times
    E. many times

58. Have you ever given unauthorized discounts to friends?
    A. never
    B. once
    C. twice
    D. a few times
    E. many times

59. Have you ever knowingly purchased stolen merchandise?
    A. never
    B. once
    C. twice
    D. a few times
    E. many times

60. What percentage of employees steal something from their company?
    A. 75%
    B. 50%
    C. 25%
    D. 10%
    E. 1%

61. What percentage of employees steals over $10 worth of cash or merchandise every month?
    A. 75%

B. 50%
C. 25%
D. 10%
E. 1%

62. Pick the response that best describes you.
   Strongly disagree Disagree Neither Agree Strongly agree

- Success is based on survival of the fittest; I am not concerned about the losers.
- I find myself in the same kinds of trouble, time after time.
- For me, what's right is whatever I can get away with.
- I am often bored.
- In today's world, I feel justified in doing anything I can get away with to succeed.
- I find that I am able to pursue one goal for a long time.
- My main purpose in life is getting as many goodies as I can.
- I don't plan anything very far in advance.
- Making a lot of money is my most important goal.
- I quickly lose interest in tasks I start.
- I let others worry about higher values; my main concern is with the bottom line.
- Most of my problems are due to the fact that other people just don't understand me.
- People who are stupid enough to get ripped off usually deserve it.
- Before I do anything, I carefully consider the possible consequences.
- Looking out for myself is my top priority.
- I have been in a lot of shouting matches with other people.
- I tell other people what they want to hear so that they will do what I want them to do.
- When I get frustrated, I often "let off steam" by blowing my top.
- I would be upset if my success came at someone else's expense.
- Love is overrated.
- I often admire a really clever scam.
- I make a point of trying not to hurt others in pursuit of my goals.
- I enjoy manipulating other people's feelings.
- I feel bad if my words or actions cause someone else to feel emotional pain.
- Even if I were trying very hard to sell something, I wouldn't lie about it.
- Cheating is not justified because it is unfair to others.

Appendix B: Research Assistant (E1 – a) Script and Procedure

- Arrive at 454 at least 10 min before S is scheduled to show up; pull up the countdown timer on the desktop computer & load the Academic Test programs on both work station computers so that the "consent" page is on the screen & wait for S to arrive.

- When S arrives ask if he/she is "here for the psychology study" but don't call out or ask for S by name; direct S & C to sit at the designated workstations and read the informed consent info:

"Both of you are signed up for this study on SONA, right? Okay, like the brief description on the SONA says, this study investigates the relationship between academic ability and personality traits that are important in I-O psychology. We use the kinds of items found on standard achievement tests to measure your academic ability – a lot of word analogy & vocabulary items. The personality traits are measured by two kinds of procedures. One involves self-report items that ask you to describe yourself in terms of questions like: "I like almost everyone I meet" (true/false) & "Sometimes I put things off when I shouldn't" (true/false). A second type of measure is called the Implicit Association Test which is based upon reaction times on classification tasks.

"All of the items for all of the measures are administered by computer programs connected to work stations, both here & in another lab down the hall in room 425. The first part of this procedure – the assessment of your academic ability – requires that you correctly answer 10 questions during a 5-minute timed trial . . . and you will be given 2 units of credit for participating in this activity. IF you can correctly answer 10 questions during the allotted time, we want you to stay for the second part of the study – the part that involve the personality measures – but at this point we're interested in further testing only those who get at least 10 correct on the academic test.

"While the first part of this session takes about 30 minutes, the second part of this procedure – the part that involves the personality measures – is divided into two sessions: the first session you can do today, right after you complete this part of the study, if you qualify. You can sign up for the second session after you complete the first one. You will be given an additional 3 units of credit for completing the personality measures – making a total of 5 units for the entire study: 2 units for for this part and 3 more if you do the personality measures. We estimate that today's session, both the first and second parts, will take about 70 minutes to complete from start to finish.

"Participation in this study is entirely voluntary and you have the right to withdraw at any time, without penalty. Your identity as a subject in this study is confidential; no names or other personally identifying information will be retained. The faculty member responsible for this study is Donald Fischer in the Psychology Department and

he or his research assistants will answer any questions you may have regarding this study. Do you have any questions you wish to ask at this time?”

- After answering any question, continue reading the informed consent info to S & C:

“Read the 'consent statement' on your computer silently to yourselves while I read out loud:

“The procedures of this study have been described to me. I understand that the questions I may have about this research will be answered by Professor Fischer or the research assistants working on this project. By clicking on “Begin Test” (when instructed to do so) I certify that I am at least 18 years old and consent to participate in this research.”

“If you do NOT want to participate, you should leave now.

“When you click on “Begin Test” the questions will be presented one at a time in the box containing the consent information. All of the questions are presented in a multiple-choice format. You record your response by clicking on the radio button for the alternative you choose (an “A” “B” “C” “D” or “E”) and then clicking the “submit” button below. As soon as you enter your response the computer will tell you whether your answer was correct or incorrect, along with how many more questions you need to get correct in order to qualify for the second part of this study (how close you are to getting 10 correct) . . . and then the next question will be displayed, along with the prompt for your response.

“You must respond to each item; you can’t skip an item without entering a response and you can’t go back to earlier items. Take your time and try your best on each item – if you respond in under 3 seconds, your response won’t register – so take your time and try your best . . . but, in the end, if you can’t figure out the answer, make your best guess and go on to the next item. The countdown timer here on this computer [point to the desktop computer] will display how much time is left, so in addition to knowing what your total score is, you will know how much time remains to get a passing score – 10 correct.

[Don’t read this part – ad lib it] “I’m going to leave after I get you started – it’s crowded enough in here without me but I’ll just be down the hall in the lab where we do the personality testing – but I’ll be back to see how you did in five minutes. I’m going to close the door when I leave so that you won’t be distracted by people out in the hallway – it can get pretty noisy up here at times. You’ll want to open the door after the alarm goes off to let me in when you’re done . . . Just make sure you stop working on the test when the timer’s alarm goes off – you’ll hear a classic “ring” tone) – and then wait for me if I’m not already here, waiting for you to open the door . . . if I’m not here – don’t panic – just sit tight & don’t go anywhere (we’re just down the hall) – and don’t click on the “end test” button or anything else on your computer screen (that’s for me). Okay, position your mouse-cursor on top of the ‘Begin Test’

button and get ready to click it after I give you a 'one-two-three-go' countdown – I want us all to try to click our buttons at the same time. Ready? Okay: 1-2-3-go!"

As you go through your countdown try to start the timer simultaneously with "go" & the S's clicking their "begin" button so that we get a true mark of the time of S's last response. Then leave, closing the door behind you. Make note of the time so you know when to return & stand in the hallways outside 454 so you can hear the alarm sound.

Appendix C: Confederate Script

Get to 454 at least 5 min before a scheduled S and either sit on the bench by the door in the main hallway or in the chair outside the door in the side hallway. If a likely suspect passes by before E1 arrives ask:

- "Are you looking for a psychology study?" and if they say "yes" tell them "you found it" & that E1 was here a minute ago & said to "have a seat & wait till they return"

If E1 is already in 454 or sitting in the hall with you, just follow E1's directions & act like a real S.

*Toward the end of the 5-min session slow down (or click off the 'submit' button) so that you are **at least 2** short of 10 when the alarm goes off; then say:*

- "Don't open the door yet – I didn't make it . . . I'm just a couple short . . . " and continue **for at least 20-30 sec's**.

- After getting 10 correct say "got it" & lean back to see what S is doing. Look around your work station & "find" the wallet & ask S "Someone left a wallet here" – tap S on the shoulder & add "Look" if they don't turn around when you announce the wallet, and then proceed to check out a few of the cards as if you're trying to identify whose wallet it is.

*Option 1: if S is passive (doesn't say anything to dissuade you from stealing the wallet), then pocket the wallet just as E1 returns. When E1 arrives & asks if you stopped on time **QUICKLY answer "yes"** . . . but then decline E1's offer to continue for the second part by saying:*

- "I just got a text & I gotta leave – I just want my 2 credits."

Option 2: if S challenges you at any point, (eg, "hey, don't do that!" or "put that back!") accommodate, don't escalate (say "okay" & put the wallet back on the desk). If S appears to be agitated or confrontational, reveal who you are and why you did what you did; say:

- "It's okay; this is all part of the study – this was a staged event, not a real theft; I'm part of the research team. When E1 returns he (she) will tell you all about it – stay calm."

Option 3: S blows the whistle on you while you as E1 arrives & before you leave.

Support E1 as he/she thanks S for reporting you, and tells S this is part of what this study is really about – blowing the whistle on those who break rules or commit crimes -- and C is really a research team member who helped stage the event so that you'd have an opportunity to report it. Because this study involves deception, we need to give you a full debriefing (give you all of the facts) before you leave, so please follow me."
Accompany E1 & S to 460 (or wherever we are debriefing) but leave with E1 before E2 begins debriefing (pulls up Sona)

Appendix D: Research Assistant (E1 - b) Script and Procedure

*Stand in the main hall outside 454, close to the wall so that you can hear the alarm sound when 5 min has expired. If S is confrontational and C discloses (tells S who he is), **immediately** return to corroborate C and take S to debriefing. If S is passive or non-confrontational, wait approximately 45 sec's after the timer alarm has sounded to return/open door (give C time to finish the test & tell S about the wallet); if the door is still closed, knock & open & enter within a few seconds of C telling S about the wallet (if the door is open, just enter); as you enter the room ask C & S if they stopped when the timer went off:*

- While looking at S say: "Sorry I'm late – did you two stop when the alarm went off?"

If S disagrees or agrees say: "Okay; well, let's see how you two did" & turn to look at C's computer & say:

- "Good – you got a passing score! We'd really like for you to stay for the second part – it's easy and you can get 3 more credits. [after C declines say:] Okay, I understand – I'll make sure you get your two credits."

*As C leaves, look at C's computer & click "**end test**" and "**OK**" in response to the dialog box that opens to display the summary table; make a noticeable sound "hummm" or "that's strange" then look at S & ask:*

- "Did he (she) really stop when the alarm went off?"

Option 1: if S says "yes" or "I don't know/can't say" then say "Okay" and continue to working on C's computer by exiting & restarting the "Academic Test" program.

Option 2: if S blows the whistle & says "no; he/she kept working on the test" (or something similar), *but **says nothing about the wallet***; say "I thought so – thank you for telling me" and exit & restart the "Academic Test" program.

*Under either option 1 or 2, as you swivel around/look around to check S's computer, **before** you get to S's screen, "discover" that you're missing your wallet and say:*

- "Wait . . . where's that wallet?" and then quickly look S in the eyes & ask "Did you see a wallet in here?" Probe any response where S acknowledges seeing a wallet but doesn't bust C with "Did (he/she) take that wallet?"

*If S blows the whistle on C (reports the theft), proceed according to Option 4 below; If S does **NOT** blow whistle on C, then say "Okay – it's all part of the study & we need to tell you about it – follow me" . . . you can make small talk with S about "some deception is*

used in this study and we need to tell you about this before we proceed" while escorting S to debriefing.

> **Option 3:** if S blows the whistle & says "no, C did't stop (or something similar)" **and proceeds to report the wallet & theft**, then say "thank you; the cheating & theft was part of this study – C (name) is part of our research team and the theft was staged . . . and escort S to debriefing.
> .
>
> **Option 4**: If S responds by blowing the whistle on C for stealing wallet *before* C leaves & you can ask about C stopping on time, disclose and immediately take S to debriefing.
>
> - "Thank you for reporting this – C is part of our research team & this was all a staged event. Because this study involves some deception, we need to give you a full debriefing (give you all of the facts) before you continue, so please follow me."

Escort S to debriefing & assign S a 5-digit ID number from the random number table in your clip board & write it on a postem note that you give to the Debriefer. Get the wallet from C & return to 454 to save S's data (following post-subject clean-up procedures); write the subject's ID number, the time of the last response, #correct in 300 sec's, & the response codes to the 3 questions on your clip board & enter the data in the SPSS file (on desktop computer in 425).

When E2 delivers S to 425 after debriefing, help S get set up at a computer & logged into the Millisecond web site, if you're playing the "backup" role.

When S completes the last IAT, thank them & remind them of the opportunity to earn 2 more credits if they'll come back for the second part of the testing . . . emphasize how that participation is worth another two credits.

Pre-subject set up:
Log onto the computers in 454 & double click on the "Academic Test" icon on the desktop (or plug in the memory stick & open the "Academic Test" from there) & click on the "allow scripts & ActiveX" bar & "yes"; on the big desk's computer, open the countdown timer set it to 5 min; log onto the computers in 425 & make sure the desktop (Millisecond) shortcuts are ready to go.

Post-subject clean up:
Click "**end test**" and "**OK**" in response to the dialog box that opens on S's computer to display the data. On a piece of scratch paper in your clipboard write down (1) the subject's 5-digit ID number, (2) the confederate's name, (3) the six-digit "time" of S's last entry, (4) the number of correct responses made in under 300 sec's (or within a couple of sec's of 300) and (5) the codes for the responses to your 3 questions and any "comments" that help clarify the S's responses. Then add these to the SPSS data file on

the desktop computer (computer on the big desk). Save S's data on the workstation computer in the appropriate "data" folder by clicking on "**page**" in the Explorer tool bar to get a dropdown menu and selecting the "**save as**" option; *change the file type from the default (.html) to ".txt" as the file extension option* and make the "**file name**" the subject's 5-digit ID number. Prepare for next subject by closing & reopening the "Academic Test" program & clicking on the "allow scripts" bar.

Codes for S's response to the questions:

Q1 code: in response to first question (Did you two stop?) 1=affirms/lie (says "yes" or nods agreement); 2=silence (neither affirms nor negates); 3= negates/truth (says "no" or disagrees); 4=other (make written note for file & record actual response or paraphrase in "comment" space).

Q2 code: in response to second question (after C is gone, "Did C really stop?") 1=affirms (says "yes" or nods agreement); 2=neither affirms nor negates (says or gestures "I don't know/wasn't watching/can't say/etc); 3=negates (says "no" or disagrees & elaborates); 4=other (make written note & record actual response in "comment" space.

Q3 code: in response to third question ("Did you see a wallet in here?) or prior to third question: 1=busts C on theft with C present; 2=busts C on theft after C is gone; 3=says nothing about theft/wallet or feigns ignorance ("I don't know/didn't see anything"); 4=anything else (make a note & record actual response in "comment" space).

Appendix E: Debriefing Script and Procedure

 [when E1 delivers S, say:] Some deception is involved in this study and I need to tell you about it before we continue. Contrary to the information posted on Sona and the instructions your were read, this study is **NOT** designed to investigate the relationship between academic ability and personality traits – what we're *really* interested in is the relationship between personality measures and *actual behavior* related to integrity & character – lying, cheating & stealing behavior.

In order to obtain this behavior we use what is called a "temptation manipulation" – we create a situation where you (the subject) have an opportunity to follow or break a rule, lie or tell the truth, and blow the whistle on a thief . . . just like the "sting" operations you've seen on TV or in movies where they bait a target in an effort to get them to say or do something while they're being watched. In our case, the other subject (name) is a confederate – a member of our research team – who *doesn't stop* when the alarm goes off and *lies* about it when asked by the research assistant and then *steals a wallet* . . . which gives you an opportunity to join in – or not – and then "blow the whistle" on a thief – or not. Because you were misled by us, I need to describe what we're doing and why we're doing it.

But first, I need to ask if you knew anything about this study OTHER than the information that we posted at the Sona web site where you signed up, or the information E1 read to you when you began the study – did you talk with anyone who had already participated in this study? [record response & probe if "yes"]

Did you suspect that we were really interested in something other than studying academic ability & personality traits? [record & probe as appropriate with What was it? When did you suspect this?]

Okay; it's important to understand that it's difficult to do research like this – research that examines the relationship between psychological measures and actual behavior, especially when the behavior is potentially compromising. At the same time, it is important to learn more about the dynamics of integrity so that we can better manage the risks related to "character failure" – like the illegal conduct of corporate executives who fraudulently "cook the books" and brake laws that lead to the collapse of entire corporations like Enron & Madoff's wall street investment firm . . . or like the illegal conduct of the MP's who violated Geneva Convention standards and abused prisoners at Abu Ghraib in Iraq . . . or like the illegal conduct of police officers who engage in racial profiling when deciding who to stop and search.

IF we can develop psychological measures that accurately identify those who are at higher risk of "character failure" then we can work on ways to mitigate this problem by developing interventions – ways of structuring work environments so those who are prone to temptation do *not* fall prey to it – in much the same way that treatment programs for alcohol/drug abusers intervene with those at risk of "falling off the wagon" & using by helping them identify situations that are "dangerous" (like bars & parties where alcohol is flowing) and then develop strategies that help them NOT fall prey to these temptations – like avoiding bars (finding "new playgrounds & new playmates" is the AA motto) . . . or calling your sponsor BEFORE you throw down that first drink.

We're not interested in alcohol/drug addiction – we're interested in lying/cheating/stealing behavior . . . but, just as with addiction, **intervention BEGINS with awareness**. How would I know if I'm at risk for cooking the books or abusing prisoners? If you ask me "Are you a person of good character?" I would honestly tell you "YES!" . . . I think of myself as a person who tries to do the right thing . . . but how do I really know what I'd do if I were there in the room when the Enron executives were cooking up their illegal schemes & pushing me to join in . . . or what I'd do if I were there at Abu Ghraib in Iraq being told by higher ranking officers to abuse prisoners?

Do you remember the classic Milgram studies from your Psych class? (explain further if needed) If you'd asked ANY of Milgram's subjects – *before they ever set foot on the Yale University campus for the study* – "Are you the kind of person who would torture an innocent victim to death because a Yale professor was telling you to do it, would you do it?" **ALL** of them would say "Absolutely not!" . . . and they wouldn't be lying to you – like me, they think of themselves as people who try to do the right thing. But, in fact, we know **2 out of 3** of Milgram's subjects actually *do* go all the way and electrocute the victim, even with him screaming out in pain in the next room. The problem is that we often don't have the kind of self-knowledge or self-insight to accurately predict what we're at risk of doing in situations that challenge our integrity & character.

I'm telling you all this so that you might understand **WHY** we're doing this research. We are trying to develop psychological measures that better predict who is & who isn't at risk of character failure and doing things they later regret . . . we're not just out on a lark, trying to trick students into doing something that is potentially distressing.

It is also important that you understand we are **NOT** interested in *who you are* in any way; we are ONLY interested in what you said/did (next door) & how you respond on the psychological measures we're developing. Your name is only used to merge the personality data we collect – it is NOT recorded in ANY of our permanent records. The only reason we ask for your name when you log in to take the personality measures is

because we have to have a reliable way of connecting your data – the personality scales are administered on 2 different occasions and reside in 2 different files . . . once the information from these sources is connected you are identified only by the 5-digit number associated with your behavioral data – your data becomes just another record in a file, indistinguishable from any other record in the file.

Although *I* know who you are by name because I have access to the Sona System and award your credit, *I don't* know what you said/did next door [add "other than you acted distressed" if needed] . . . nor do I want or need to know anything else about you . . . if we could figure out how to award you credit & merge your data WITHOUT identifying you are by name, we would do it. While C (name) probably knows whether you kept answering questions after the alarm went off & E1 (name) knows how you answered his/her questions, **neither** of them knows your name because they aren't awarding your credit on Sona – I am.

This study was carefully designed to protect your anonymity because being tempted to break a rule and lie can potentially cause distress or anger at being "set up". The only exception to your anonymity is that C and E1 have seen your face and *may* recognize you at some time in the future (say, grocery shopping or walking across campus) . . . although we know from past studies that this is a remote possibility – not very likely – and, again, even if one of them DO see you again, neither knows who you are (by name) nor do they care to.

However, because we think there *IS* a remote risk of harm to you – specifically, a potential for you to be distressed or angry at us for "setting you up" (tempting you to cheat and lie), the University's Human Subjects Protection Committee (our IRB) requires that I formally assess your feelings and inform them (the IRB) **IF** you feel harmed by the way we have treated you or **IF** you are dissatisfied with the protections we are offering you (anonymity) or **IF** you object to what we say we intend to do with the data we have collected . . . because if you ARE upset then I need to explore these feelings with you and talk about what you might do in response to these feelings – more specifically, I need to make sure you know there are campus resources like the Counseling Center in Carrington Hall where you can talk with a licensed professional (at no cost to you) and explore what you might do in this regard.

For that reason, I need to formally ask you **now** – Do you feel distressed – are you angry or upset about having participated in this study? [explore/follow up, as appropriate]

I also need to tell you that if you should decide at some future time that you were harmed by participating in this study, you can (and should) contact Dr Fischer (here in the Psych

Dept) to discuss these feelings and what you might do about them . . . and I also need to tell you that you can communicate any of these concerns directly to a member of the University's IRB, either now or in the future, and I will provide you with a name and contact information upon your request. [give this info if requested: the IRB member is Russell Carney in the Psych Dept]

Okay; we're almost done. (give S the Informed Consent Form) The last thing I need to do is ask you to complete this form by marking the appropriate alternatives and then signing it.   Please read silently to yourself while I read out loud: (read it to S)

[stop reading when you get to the second part about authorizing us to keep/use the data and say:]

At this point I want to invite you to continue for the second part of this study – the part that involves the personality measures **. . .** and, just like we told you, IF you continue you can get an **ADDITIONAL 3 units of credit**, for a **total of 5 units** – 1 more unit now & an additional 2 units when you complete the second session of this study. [explain how they can do the second session and encourage them to register for a time slot now] However, if you don't want to continue, I can award you 2 units now and you're free to go. [answer any questions/do your best to sell him/her – maybe repeat how easy it is, no more make-my-brain-hurt tough vocabulary questions . . . Then ask S to check the appropriate box & sign the form & award the appropriate credit (2 or 3 credits) & take S to 425 (or release him/her).

Appendix F: Informed Consent Form

The procedures and purpose of the "Academic Ability and Personality Study" in which I participated have been described to me and I understand that deception was used to tempt subjects to break rules and tell lies. I also understand that the data which were collected are anonymous in that *no names* (including mine) appear in any of the permanent records.

I understand that those conducting this study are required to assess and report all adverse responses subjects may have regarding their participation. In accord with this requirement, I have checked the alternative below that represents the amount of ***distress*** (how worried, angry, upset, or ashamed) I currently feel regarding having participated in this study:

__ (1) not at all

__ (2) small/slight

__ (3) somewhat, but not a lot

__ (4) much/substantial

__ (5) very much

I understand that all data pertaining to my participation will be destroyed if I do not want to authorize its use. By checking the appropriate alternative below, I am indicating what I want in this regard:

__ (1) I ***do*** authorize Professor Fischer to retain and use my data.

__ (2) I ***do not*** authorize any use of my data and I want it destroyed.

Signed_____, Date_____

Appendix G: Hierarchical Regression and Hierarchical DFA

Table 6: Hierarchical Regression Analysis for Predicting Test Time[1]

Hierarchical Step and Independent Variable	B	β	Sig.	R	R^2	R^2 Change	F Change	Sig. F Change
Step 1				0.37	0.13	0.13	0.88	0.53
Emp-Honest	5.75	0.08	0.66					
Self-Honest	0.92	-0.05	0.78					
PDS-IM	-2.23	-0.39	0.07					
PDS-SD	-0.63	-0.08	0.67					
LSRP-1	0.51	0.62	0.42					
LSRP-2	0.27	0.05	0.80					
EII-Integ	0.29	0.31	0.26					
Step 2				0.42	0.17	0.04	0.57	0.64
Emp-Honest	3.50	0.05	0.81					
Self-Honest	-0.66	-0.01	0.96					
PDS-IM	-2.32	-0.41	0.07					
PDS-SD	-0.82	-0.10	0.60					
LSRP-1	0.45	0.15	0.48					
LSRP-2	0.52	0.10	0.65					
EII-Integ	0.32	0.33	0.21					
Mean-Shy	-7.65	-0.12	0.46					
Bold-Nice	0.13	<0.00	0.99					
Reck-Anx	10.92	0.20	0.25					

[1]N=47; Dependent Variable: Test Time

Hierarchical Discriminant Function Analysis for Stop/Cheat

Table 7. Hierarchical Discriminant Function Analysis for Stop/Cheat.

Hierarchical Step & DV	Function Coefficient	Canonical (*r*)	Wilks' Lambda	Chi-Square	df	*p*	Δ Chi-Square	df	*p*
Step 1		0.21	0.96	2.52	7	.93			
Emp-Integ	0.21								
Self-Integ	0.49								
PDS-IM	-0.77								
PDS-SD	0.16								
LSRP-1	0.84								
LSRP-2	-0.65								
EII-Integ	0.67								
Step 2		0.37	0.87	5.87	10	.83	3.35	3	.34
Mean-Shy	-0.56								
Bold-Nice	0.38								
Reck-Anx	0.57								
Emp-Integ	-0.16								
Self-Integ	0.36								
PDS-IM	-1.06								
PDS-SD	-0.40								
LSRP-1	0.28								
LSRP-2	-0.23								
EII-Integ	1.04								

Hierarchical Discriminant Function Analysis for Exposing a Cheater

Table 8. Hierarchical Discriminant Function Analysis of Exposing a Cheater.

Hierarchical Step & DV	Function Coefficient	Canonical (*r*)	Wilks' Lambda	Δ Chi-Square	df	*p*	Δ Chi-Square	df	*p*
Step 1		0.52	0.68	18.43	14	.19			
Emp-Integ	0.78								
Self-Integ	-0.48								
PDS-IM	1.17								
PDS-SD	-0.38								
LSRP-1	0.96								
LSRP-2	-0.15								
EII-Integ	-0.17								
Step 2		0.58	0.52	25.44	20	.19	7.01	6	.32
Mean-Shy	0..47								
Bold-Nice	-0.15								
Reck-Anx	0.57								
Emp-Integ	-1.01								
Self-Integ	0.59								
PDS-IM	-1.06								
PDS-SD	0.54								
LSRP-1	-0.94								
LSRP-2	0.61								
EII-Integ	0.42								

Hierarchical Discriminant Function Analysis for Exposing a Thief

Table 9. Hierarchical Discriminant Function Analysis for Exposing a Thief.

Hierarchical Step & DV	Function Coefficient	Canonical (*r*)	Wilks' Lambda	Chi-Square	df	*p*	Δ Chi-Square	df	*p*
Step 1		0.52	0.66	20.11	21	.52			
Emp-Integ	-0.41								
Self-Integ	0.35								
PDS-IM	0.90								
PDS-SD	0.04								
LSRP-1	0.74								
LSRP-2	-0.35								
EII-Integ	0.22								
Step 2		0.59	0.48	29.58	30	.49	9.47	9	.40
Mean-Shy	-0.29								
Bold-Nice	-0.42								
Reck-Anx	0.25								
Emp-Integ	-0.40								
Self-Integ	0.49								
PDS-IM	0.88								
PDS-SD	0.34								
LSRP-1	0.52								
LSRP-2	0.07								
EII-Integ	0.07								