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Integrity, Self-Control, and the Impact of Ego Depletion on Counterproductive Behavior

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To the Graduate Council:

I am submitting herewith a dissertation written by Joshua D Bazzy entitled "Integrity, Self-Control, and the Impact of Ego Depletion on Counterproductive Behavior." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Industrial and Organizational Psychology.

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Integrity, Self-Control, and the Impact of Ego Depletion on Counterproductive Behavior

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Dedication

To Granny B.

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Abstract

Although integrity has been found to significantly predict job performance and counterproductive behaviors, the constructs that underlie it have remained unclear. Personality, specifically conscientiousness, has been linked to integrity most consistently, but only accounts for a small amount of integrity's variance. Research points to a relationship between integrity and self-control, but this has not been investigated.

The present investigation examined the nature and implications of this relationship. Results found that self-control contributed significantly to the variance in integrity beyond conscientiousness and the other dimensions of personality. Indeed, the addition of self-control to the model essentially eliminated conscientiousness as a significant predictor of integrity. Based on these results, it was predicted that expression of integrity would be negatively impacted by temporary detriments in self-control (i.e., ego depletion).

A significant interaction was found between integrity and ego depletion in predicting off-task behavior. Examination of the interaction revealed integrity to be a significant predictor in the control, but not in the depleted, condition. However, these results are tempered by the overlap in confidence intervals between the beta weights. It is concluded that temporary detriments in self-control can negate the relationship between integrity and counterproductive behavior. Implications of these results and directions for research are also discussed.

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Chapter 1

Introduction

Integrity tests are psychological inventories that attempt to predict the likelihood of an applicant exhibiting counterproductive behaviors (CWB), such as theft, rule-breaking, and work-related accidents as well as job performance (Association of Personnel Test Publishers, 1991). Integrity tests are not simply measures of truthfulness, but hue closer to dependability and a willingness to conform to rules, norms, expectations, and one's own values (Murphy, 2000). However, Murphy (2000) notes that clear construct definition has not occurred in the development of many integrity tests, which leads to confusion about what integrity tests are actually measuring.

The construct that has been most consistently related to integrity is personality, particularly conscientiousness (unless noted otherwise, personality refers to the Five Factor Model). However, this relationship is moderate and accounts for only a small portion of the variance in integrity. A review of the relevant research points to a relationship between integrity and self-control.

Gottfredson and Hirschi (1990) define self-control as a tendency to avoid actions whose long-term costs exceed temporary advantages. Self-control encompasses the ability to overcome or alter one's inner responses, to interrupt undesirable behavioral tendencies and impulses and to ultimately refrain from acting upon them (Tangney, Baumeister, & Boone, 2004). It involves controlling thoughts, emotions, impulses, and performance (Baumeister, Heatherton, & Tice, 1994).

Like integrity, self-control is predictive of counterproductive behavior. Likewise, self-control's pattern of relationship with the facets of personality is very similar to the integrity-personality relationship. Additional research has revealed that impulse control is a hallmark of those high in both self-control and integrity. Recent research on self-control has focused on the stability of the construct.

The present investigation examined the relationship between integrity and self-control. A review of the research on integrity has established the usefulness of integrity as a predictor. It shows that the underlying facets of integrity are not fully known and establishes self-control as the construct most likely to underlie integrity beyond the dimensions of personality. It was proposed that self-control will contribute significantly to the variance in integrity beyond the dimensions of personality. Furthermore, based on the premise that an individual's ability to exhibit self-control is not constant, changes in self-control were expected to impact the ability to exhibit integrity. Using the framework of behavioral self-regulation, the relationship between integrity and off-task behavior changes as a function of state-based self-control.

Integrity

Types of integrity tests. The most common form of integrity testing is a paper-and-pencil test. Paper-and-pencil integrity tests have generally been classified in two ways: overt and covert tests. Overt integrity tests attempt to predict the likelihood of counterproductive behavior based on responses to questions designed to assess thoughts, feelings, and expected behaviors involving honesty, theft and punishment of deviance, as

well as admissions of past misbehavior (Alliger & Dwight, 2000; Ones, Viswesvaran, & Schmidt, 1993).

Covert integrity tests tap general psychological characteristics (e.g. conscientiousness, impulse control, dependability, social conformity, trouble with authority, and hostility) that can be used to identify individuals who might engage in counterproductive behaviors (Sackett & Wanek, 1996). Covert integrity tests are sometimes referred to as personality-based tests because they attempt to predict behaviors based on responses that tap into aspects of an individual's personality (Alliger & Dwight, 2000). Both overt and personality-based integrity tests have similar operational validities in predicting job performance (Ones et al., 1993).

Integrity as a predictor of job-related behavior. Integrity tests are well established instruments for use in selection systems. Originally conceived to predict employee theft, as well as absence and turnover, these criteria have broadened over the years to include other counterproductive behaviors (CWB) and job performance (Sackett & Wanek, 1996). A variety of research has been conducted to address the predictive powers of integrity tests.

Research has found that integrity tests are significantly predictive of employee theft at moderate levels (e.g., Berman, 1993; Bernardin & Cooke, 1993; Borofsky, 1992; Kobs & Arvey, 1993). Furthermore, both overt and covert integrity tests are significant predictors of a variety of counterproductive behaviors, including substance abuse, poor work habits, disagreeing with customers/coworkers, and vandalism (Borofsky & Smith, 1993; Jones, Slora, & Boye, 1990; Neuman & Baydoun, 1998). Integrity tests have also

been used to predict counterproductive and deviant behaviors outside the workplace. For example, Lucas and Friedrich (2005) found that integrity was a significant predictor of academic dishonesty at moderate to high levels. Furthermore, Neuman and Baydoun (1998) found that personality could be used to predict additional variance in theft admissions and CWB beyond integrity.

In a wide-ranging meta-analysis on the psychometric properties of integrity tests, Ones et al. (1993) found that scores on integrity tests are reliable and valid. They found integrity tests to predict a range of counterproductive behaviors and that integrity test predictions (average r = .33, corrected r = .47) are also stable across time and conditions. Results also indicated that overt tests predicted broad counterproductive and disruptive behaviors better than theft alone.

Ones et al. (1993) concluded that the average validity integrity tests can be expected to have in predicting supervisory ratings of job performance is .41. Furthermore, integrity tests have a near-zero correlation with measures of general cognitive ability (Schmidt & Hunter, 1998). When an integrity test is used in conjunction with general cognitive ability the result is a corrected validity coefficient of .65, or a 27% increase over general cognitive ability alone. Although there are some predictors with higher validities, integrity tests combine with general cognitive ability to produce the highest incremental validity of any known measure (Schmidt & Hunter, 1998).

In conclusion, research has shown that integrity tests are predictive of theft, theft admissions, academic dishonesty, general counterproductive behavior, and job performance. Furthermore, they can be used in concert with measures of personality to

increase their predictive abilities for theft admissions and CWB. They can also be combined with measures of general cognitive ability to produce the highest incremental validity of any two known predictors.

Integrity testing issues. An early concern regarding integrity testing, as with all self-report measures, was the danger that individuals would not respond to items truthfully. Furthermore, validity perceptions and the potential for discrimination are important factors in examining selection instruments. A number of studies have attempted to examine the phenomenon of faking on integrity tests, test perceptions and the possibility of discriminatory outcomes.

McFarland and Ryan (2000) found that, among non cognitive measures, integrity tests were second only to measures of biodata in terms of fakeability, and were slightly more fakeable than conscientiousness. Alliger and Dwight's (2000) meta-analysis found that individuals who were coached or instructed to fake good were able to increase scores up to 1.5 standard deviations depending on the specific instructions and type of test (e.g., coaching on overt measures increased scores to the greatest extent). However, Cunningham, Wong, and Barbee (1994) found that encouraging subjects to present themselves as being exceptionally honest did not increase scores compared to a group of job candidates. The authors hypothesized that because most integrity tests are validated using actual job applicants, they have likely corrected for self-presentation bias during the development of the instrument. Cunningham (1989) found that scores for individuals who believed that faking on integrity tests was valuable were negatively correlated with performance on an integrity test. Ones and colleagues concluded that neither faking nor

social desirability appears to damage the criterion-related validity of integrity tests (Ones et al., 1993; Ones & Viswesvaran, 1998a).

Perceptions of integrity tests vary, in that some studies show that individuals have more favorable opinions of overt tests (Jones, 1991; Rosse, Ringer & Miller, 1996; Whitney, Diaz, Mineghino, & Powers, 1999) and others have more favorable opinions of personality-based tests (Henderson, 1992 & Wanek, 1991 as reported in Sackett & Wanek, 1996). Whitney et al. (1999) found that individuals who passed the tests (both overt and covert) had higher justice perceptions than individuals who failed the tests. In their review of integrity testing, Sackett and Wanek (1996) concluded that, in terms of other types of instruments, integrity tests fall somewhere in the middle. Although levels of favorability differ across studies, there is generally a more positive than negative opinion regarding integrity tests.

Another important factor to consider when discussing any selection system is adverse impact. In a meta-analysis, Ones and Viswesvaran (1998b) found that women and individuals over 40 scored slightly higher than men and those under 40, respectively. However, no interaction existed between gender and age. Furthermore, there were only negligible differences between racial groups on integrity test scores. Ones and Viswesvaran (1998b) concluded that integrity tests are not likely to cause adverse impact. Furthermore, researchers have found that using integrity tests in conjunction with cognitive ability tests is likely to reduce the overall adverse impact of a selection system; however it will not eliminate it completely (Schmidt & Hunter, 1998).

Recent research (Duehr, Sackett, & Ones, 2003 as reported in Berry, Sackett, & Wiemann, 2007) examined the relationship of integrity facets (Wanek, Sackett, & Ones, 2003) to cognitive ability, as previous research had only examined overall integrity scores. Results found that some personality-oriented facets (e.g., extroversion; locus of control; emotional stability) were positively related to cognitive ability whereas honesty-related facets (e.g., honesty attitudes; lack of theft thoughts/temptation) were negatively related. The lack of correlation between integrity and cognitive ability appears to be the result of combining factors that are positively and negatively correlated with cognitive ability. The authors suggest that focusing on specific factors during test construction might produce instruments that are less cognitively-loaded.

In conclusion, results indicate that despite their susceptibility to faking, integrity tests are valid predictors of a variety of work-related criteria. Furthermore, perceptions of validity do not prohibit their use. Finally, integrity tests' lack of adverse impact allows them to be used without the fear of yielding discriminatory results. Indeed, the use of integrity tests can actually decrease the likelihood that a selection system will exhibit adverse impact. Research has clearly established integrity tests as valid predictors of job performance and counterproductive behaviors. However, questions remain regarding the constructs underlying these measures.

Dimensions of integrity tests. Murphy (2000) found three common themes among those who score low on integrity tests. Low scorers tend to see dishonest behavior as occurring relatively frequently and being acceptable. Secondly, they tend to rationalize these behaviors (e.g., companies build theft into their prices so it's not really stealing).

Finally, these individuals tend to be more impulsive in their behaviors. This type of skewed perception of norms and rationalization of behavior might help explain why individuals willingly admit to theft (cf. Alliger & Dwight, 2000). Fine, Horowitz, Weigler, and Basis (2010) found integrity and perceptions of norms for deterring CWB were significantly related. Likewise, Ryan et al. (1997) found that those who scored low on integrity tests also rated dishonest behaviors as more honest and honest behaviors as less honest compared to high test scorers.

A number of researchers have examined the factors of integrity tests in an attempt to better understand the constructs that comprise them. Woolley and Hakstian (1992, 1993) found four common factors across integrity tests: conventional commitment, intolerance for dishonesty, socialized control and active conscientiousness. Conventional commitment is primarily commitment in the context of a job with dependability and conventionality the central aspects. Those high on this factor are steady, conforming and self-controlled. Intolerance for dishonesty is attitudes toward one's own and others' dishonesty; honesty is inferred from this factor. The third factor, socialized control, is one's degree of social maturity, self-control and responsibility. Those high on this aspect have internalized the rules, norms, and values of society. The researchers found that socialized control was the largest factor and has a strong undercurrent of self-discipline. Finally, active conscientiousness measures determination and commitment to performance and attainment of goals and obligations.

Hogan and Brinkmeyer (1997) used item-level analysis to explore what dimensions underlie integrity tests, using one overt and one covert integrity test. Principal

components analysis revealed a four-factor solution: 1) punitive attitudes: degree to which a person expresses a disciplinary attitude toward theft; 2) illegal drug use: admission of illegal drug use at and away from work; 3) reliability: impulsiveness, hostility toward rules or authority, social insensitivity, and alienation; 4) theft admissions: reports of previous theft. Although the item loadings for each factor revealed little overlap across the measures, confirmatory factor analysis did reveal one latent factor (which they deem to be conscientiousness).

Wanek et al. (2003) also used item-level analysis to analyze seven different integrity tests (both overt and covert) and two personality tests using the psychometric theory of composites (Ghiselli, Campbell, & Zedneck, 1981). Analyses revealed four principal components: antisocial behavior (i.e., theft, breaking rules and wrongdoing); socialization (i.e., achievement/success orientation, emotional stability, extroversion, and locus of control); positive outlook (i.e., safety and accident proneness, views of the general honesty of others and views of supervisors); and orderliness/diligence. Examination of these analyses revealed some manner of overlap among the factors. The results point to views of honesty (for oneself and others) and admissions of wrongdoing, along with a manner of responsibility, self-control and conscientiousness as the most prominent factors underlying integrity.

Integrity and conscientiousness. It has been hypothesized that conscientiousness is the single construct that underlies integrity tests (Hogan & Brinkmeyer, 1997; Ones et al., 1993). Barrick and Mount (1991) found that conscientiousness was the best predictor

across types of job performance and job type among personality variables. A large portion of the research involving integrity has focused on conscientiousness.

Collins and Schmidt (1993) predicted white collar criminal behavior with a composite they deemed “social conscientiousness.” The largest contributor to this composite was a measure of personality-based integrity. They found that personality-based integrity was highly correlated with the Socialization, Responsibility, and Tolerance scales of the California Psychological Inventory (CPI; Gough, 1987). High scorers on the Socialization scale conform to social norms and are characterized as dependable, honest, conscientious, and rule-abiding, while lacking opportunistic and manipulative behavior (Gough, 1990). High scorers on the Responsibility scale are characterized as conscientious, responsible, dependable, and are committed to social, civic, and moral values, whereas Tolerance is characterized by trust and lack of judgment toward others. The authors note that these scales are descriptively similar to conscientiousness.

Murphy and Lee (1994a) found that integrity correlated more highly with conscientiousness than with other personality dimensions. However, the correlation between integrity and conscientiousness was relatively modest and there were a number of other constructs that emerged beyond conscientiousness. Murphy and Lee (1994b) analyzed previous meta-analyses to examine the role of conscientiousness in integrity as a predictor. Across the meta-analyses, the authors found the average correlation between integrity and job performance to be .34. After controlling for the effect of conscientiousness, the partial correlation between integrity and job performance

decreased only slightly to .28. The authors concluded that the predictive ability of integrity cannot be explained solely by its relationship to conscientiousness.

In addition to conscientiousness, research has also examined additional personality dimensions. Previous research with single instruments has found that integrity is significantly correlated with the personality dimensions of conscientiousness, agreeableness, and emotional stability (Hogan & Brinkmeyer, 1997). In their multi-measure study, Wanek et al. (2003) found that conscientiousness was the strongest correlate and emotional stability was also found across all four identified integrity dimensions. Furthermore, agreeableness was found to load on three components. Although extraversion and openness were less strongly correlated with the integrity components, they were non-zero. Additional research (e.g., Marcus, Funke, & Schuler, 1997 as reported in Marcus, Lee, & Ashton, 2007) found conscientiousness, agreeableness, and emotional stability/neuroticism to be the strongest correlates with integrity, with conscientiousness consistently proving to have the strongest relationship to integrity.

A clear pattern of relationship between integrity and personality has emerged. However, it is also clear that the predictive ability of integrity cannot be explained solely by personality. A number of researchers have suggested that integrity is a higher-order construct (Murphy, 2000; Ones et al., 1993; Sackett & Wanek, 1996). Although personality does not account for all the variance in integrity, some have proposed that integrity is merely another facet of personality. This is the first step in exploring what other constructs might also underlie integrity.

Integrity as a personality variable. Recently, researchers have sought to conceptualize integrity as another dimension of personality. The HEXACO model of personality attempts to redefine the traditional Five Factor Model (FFM) of personality (Lee & Ashton, 2004). The HEXACO model contains six dimensions: Honesty–Humility, Emotionality, Extroversion, Agreeableness, Conscientiousness and Openness to Experience. There is considerable overlap between the HEXACO and FFM (Lee & Ashton, 2004; Lee, Ashton, & de Vries, 2005). The authors note that the HEXACO model is largely a re-defining and re-ordering of the FFM (Lee, Ashton, Morrison, Cordery, & Dunlop, 2008), except for the sixth and final dimension, Honesty-Humility (H-H). H-H is described as honesty, fairness, sincerity, and loyalty versus greed, conceit, pretentiousness, and slyness (Marcus et al., 2007).

Lee et al. (2005) found that the correlation between the H-H dimension and integrity was moderate and greater than the relationship between integrity and conscientiousness – as conceptualized in the HEXACO and FFM. They contend that the primary component of overt integrity tests is the moral conscience that underlies the H-H factor, rather than conscientiousness. Marcus et al. (2007) also found moderate to strong relationships between H-H and different integrity tests. Can integrity be explained by the HEXACO model?

Lee et al. (2005) examined the HEXACO model as a predictor of integrity scores. The authors found that the HEXACO model was a significantly stronger predictor of integrity scores compared to the FFM. However, the difference was eliminated when the H-H dimension was added to the FFM. Despite the significant relationship between H-H

and integrity, the HEXACO model failed to account for all, or even a majority of, the variance in integrity.

Lee et al. (2005) also examined the HEXACO model as a predictor of workplace deviance. Results found that the HEXACO model correlated more strongly with the measure of workplace deviance than did the FFM. However, the magnitude of relationship between HEXACO and workplace deviance was not apparently greater than the validity coefficients for integrity tests in predicting CWB (Ones et al., 1993). This raises the question as to what is a better predictor of CWB: integrity or the HEXACO model of personality?

Marcus et al. (2007) examined the relationships between personality, integrity (two overt and two personality-based measures), CWB, and counterproductive academic behavior (CAB). As previously mentioned, they found a moderate to strong relationship between H-H and measures of integrity. However, results also showed that correlations between CWB and CAB and H-H were no stronger than between CWB and CAB and any of the integrity measures. Furthermore, they confirmed Lee et al.'s (2005) results, finding that there was no combination of personality variables (HEXACO or FFM) that accounted for all the predictive ability of integrity. Even if all personality dimensions are added to the regression models, the measures of integrity were still, "sizeable and statistically significant" (p. 24) predictors of CWB and CAB.

These results would seem to indicate that integrity is more than simply another facet of personality and is not made obsolete by the HEXACO model. In seeking to understand the predictive ability of integrity, the answers seem to lie beyond broad

dimensions of personality. Reviews of integrity research have suggested that self-control might play a role in integrity (Berry, Sackett et al., 2007; Sackett & Wanek, 1996), but research has not specifically addressed this topic. In addition to the dimensional results (Hogan & Brinkmeyer, 1997; Wanek et al., 2003; Woolley & Hakstian, 1992, 1993) pointing toward self-control, an examination of integrity's relationship to additional narrow traits further reveals self-control as the most likely correlate of integrity beyond conscientiousness and the other broad dimensions of personality.

Additional traits of interest. It has been established that the FFM dimensions are important, but insufficient, to understanding what underlies integrity. Likewise, the larger HEXACO personality model is also inadequate. It is prudent to examine integrity's relationship to additional, narrower traits (cf. Marcus et al., 2007). The Hogan Personality Inventory (HPI) was designed to parallel the FFM (Hogan & Hogan, 1989, 1992), but their structures are not identical (e.g., five factors vs. seven). Furthermore, the HPI contains 45 additional subscales (clusters) that allow us to identify aspects within personality that might be of importance to understanding integrity, but are "masked" by focusing on the broader factors.

Murphy and Lee (1994a) and Hogan and Brinkmeyer (1997) both examined integrity's relationship to the HPI and found integrity's strongest relationship to be with the Prudence dimension. The Prudence dimension is concerned with conscientiousness, conventional values and self-righteousness, as well as caution, control, and conformity (Hogan & Hogan, 1992). Further examination of this dimension revealed significant contributions from the Trouble Avoidance and Impulse Control clusters (Murphy & Lee,

1994a). Hogan and Brinkmeyer (1997) revealed a wider pattern of relationship (i.e., Moralistic, Impulse Control, Virtuous, Mastery, and Trouble Avoidance clusters). They described this pattern of scores as a combination of self-righteousness and self-control.

Given changes to the HIC over time (Hogan & Hogan, 1992), direct comparison of all cluster results was not possible. However, Trouble Avoidance and Impulse Control both contributed significantly to the variance in integrity in both studies and appear relatively unchanged over time. Both of these scales point toward an element of self-control underlying integrity – it will be shown that lack of impulsivity is a hallmark of individuals high in self-control. This is further evidenced by a significant negative relationship between integrity and the Sociability scale (Murphy & Lee, 1994a). Sociability assesses an individual's need for and enjoyment of social interaction and low scorers are predictable, quiet, reserved, and not impulsive (Furnham & Drakeley, 2000).

It should be noted that five of the six clusters of the Likeability scale were significantly related to integrity (Murphy & Lee, 1994a), which matches previous results that point to agreeableness as another contributor to integrity. Furthermore, other narrow traits (e.g., leadership, temperament, caring) failed to show a consistent, significant relationship with integrity in either study.

Research by Wanek et al. (2003) also provides insight into additional traits of interest. Recall that they used item-level analysis to identify four principal components of integrity. The integrity components were drawn from 23 thematic composites. In examining these composites, three correlated .40 or larger (the authors' benchmark) across all measures of integrity: theft thoughts/temptation, social conformity/rule

abidance, and perception of dishonesty norms. Furthermore, theft admissions, association with delinquents, and honesty attitudes were related to all overt tests. These results reinforce the idea that integrity includes internal desires/values about honesty as well as perceptions of normative behavior.

Furthermore, Wanek et al. (2003) found a consistent negative correlation between each integrity component and the Sociability HPI, which matches Murphy and Lee's (1994a) findings. The primary component of this negative relationship was impulsivity. That is, individuals who are high in integrity also tend to not be impulsive. Furthermore, the self/impulse control composite correlated highly with two of three overt tests and all personality-based measures. Again, impulse control will be seen as a key component of self-control. Wanek et al. (2003) found that additional composites were related to integrity, but to a far lesser degree across the measures. For example, driving violations, extroversion/introversion, orderliness, diligence, safety/accident proneness, and locus of control were related to no more than one integrity measure at or above .40.

The findings of Murphy and Lee (1994a), Hogan and Brinkmeyer (1997), and Wanek et al. (2003) point to internal honesty beliefs, perceived behavioral norms, and self-control, along with broad dimensions of personality, as the most important constructs in understanding integrity. Honesty beliefs, which are measured by all integrity measures, the previously established dimensions of personality and the proposed relationship with self-control, are the most likely avenues for examining integrity. An examination of the self-control construct will provide further evidence of its proposed relationship to integrity and point toward the implications of this relationship.

Self-Control

Self-control definitions and facets. Self-control contains the ability to overcome or alter one's inner responses, to interrupt undesirable behavioral tendencies and impulses and to ultimately refrain from acting upon them (Tangney et al., 2004). Bertrams and Dickhauser (2009) state that individuals who are higher in self-control capacity are better at restraining their impulses. Vohs et al. (2008) defined self-regulation (used interchangeably with self-control) as the self exerting control to override a dominant response, in order to achieve goals and/or conform to standards.

In their General Theory of Crime, Gottfredson and Hirschi (1990) defined self-control as a tendency to avoid actions whose long-term costs exceed temporary advantages. They note that self-control functions based on both natural and normative sanctions (Hirschi & Gottfredson, 1994). According to Baumeister et al. (1994) there are four major dimensions of self-control (i.e., controlling thoughts, emotions, impulses, and performance), which are important to include in any index of self-control. Furthermore, self-control behaviors maximize long-term interests (Muraven & Baumeister, 2000).

Self-control (or self-regulation) has been measured in a number of different ways, particularly via physical exertion or paper-and-pencil measures. Physical measures of self-control include the length of time able to spend drinking a bad-tasting beverage; delaying gratification (Vohs et al., 2008); thought suppression (Gailliot, Plant, Butz, & Baumeister, 2007); affect regulation (Baumeister, Bratslavsky, Muraven, & Tice, 1998); and task persistence (Schmeichel & Vohs, 2009). For an exhaustive list of self-control tasks, see Hagger, Wood, Stiff, and Chatzisarantis's (2010) meta-analysis.

One example of a common self-control task is the “white bear/zoo” task (Wegner, Schneider, Carter & White, 1987), which has been used in numerous studies of ego depletion (e.g., Burkley, 2008; Fischer, Greitemeyer, & Frey, 2008; Muraven, Collins, & Nienhaus, 2002; Muraven & Slessareva, 2003) as an exhibition of self-control. In this scenario, participants are asked to imagine a visit to a zoo and instructed to write down everything and every animal that comes to mind during the imaginary trip. Participants are instructed not to think about a white bear, but if they do think of a white bear, they should suppress the thought and continue to think about other animals and situations in the zoo (Fischer et al., 2008). Specific analysis of the task by Hagger et al. (2010) has confirmed a significant effect (d^{+} = 0.65, CI_{95} [0.52, 0.78]).

A number of paper-and-pencil measures of self-control have also been created, which help confirm the dimensions that underlie self-control (e.g., Marcus, 2003; Tangney et al., 2004). Both of these measures have shown acceptable levels of convergent validity with external indicators of self-control. Although the specific factors differ across these two measures, both confirm Baumeister et al.’s (1994) guidelines, which state that measures of self-control primarily involve assessing one’s ability to control thoughts, emotions, impulses, and performance.

Self-control and conscientiousness. As personality has been the primary correlate of integrity, it was prudent to examine how it relates to self-control. Self-control has shown a similar pattern of relationship to the dimensions of personality as integrity, particularly with respect to conscientiousness. Tangney et al. (2004) found that self-control was significantly related to some dimensions of personality (in decreasing

magnitude of strength) – conscientiousness, emotional stability and agreeableness, though significance for agreeableness went away after controlling for social desirability. Marcus (2003) found a slightly different order of significant correlations between self-control and personality dimensions – conscientiousness, agreeableness, neuroticism, and extroversion. Recall that integrity correlates most strongly with conscientiousness, agreeableness, and emotional stability/neuroticism (Marcus et al., 2007).

O'Gorman and Baxter (2002) found that self-control is conceptually related to conscientiousness and correlated with all subfacets of conscientiousness. The authors also examined the relationship between self-control and the behavioral activation system (BAS) versus the behavioral inhibition system (BIS) (Carver & White, 1994; Gray, 1972). The BAS is described as being sensitive to reward and non-punishment, whereas the BIS is responsive to punishment and non-reward. Self-control correlated with the BAS, but not BIS, indicating self-control is less related to responding to possible punishment than to a lowered attraction to the immediate outcomes. These results confirm the idea that those with higher levels of self-control are more focused on long-term benefits.

Roberts, Chernyshenko, Stark, and Goldberg (2005) defined one of six subfactors underlying conscientiousness as self-control. Self-control was related to both the proactive and inhibitive aspects of conscientiousness and was primarily a measure of impulse control. Another factor was labeled as integrity, which was related only to the inhibitive aspects of conscientiousness (as responsibility and virtue subfactors) and defined as a measure of social responsibility, dependability, conformity to acceptable

morality, and honesty. The proactive aspect of conscientiousness is seen most clearly as need for achievement and work commitment whereas the inhibitive aspect is seen as moral scrupulousness and cautiousness (Costa, McCrae, & Dye, 1991).

Among the measures included in Roberts et al.'s (2005) analysis was the HPI, specifically the previously mentioned clusters of the Prudence dimension. Results found that the Impulse Control, which has been linked to integrity (Hogan & Brinkmeyer, 1997), and Not Spontaneous clusters loaded strongly on the self-control subfactor. The responsibility and virtue subfactors of integrity featured the Trouble Avoidance, Moralistic and Virtuous clusters, which have also been linked to integrity (Hogan & Brinkmeyer, 1997).

In addition to their shared trait of impulse control, self-control and integrity appear to be related via their common relationship with conscientiousness. It is clear that an examination of the relationship between integrity and self-control is warranted. A review of self-control's ability to predict behavior will reinforce this.

Self-control as a predictor. Dispositional self-control has been linked to a number of traits and behaviors, many of which fall outside the workplace. Tangney et al. (2004) found that high self-control predicted higher GPA, less psychopathology, higher self-esteem, less binge eating and alcohol abuse, better relationships and interpersonal skills, secure attachment, and more optimal emotional responses. Results also showed no negative effects from too much control.

On the other hand, low self-control leads to a risk of a range of problems, including aggression and antisocial behavior (Gottfredson & Hirschi, 1990; Latham &

Perlow, 1996). Low self-control has been found to predict imprudent behavior and criminal intent (O'Gorman & Baxter, 2002) and lack of self-control can lead to reduced persistence on a difficult task (Schmeichel & Zell, 2007). O'Gorman and Baxter (2002) found that self-control was linked to absenteeism and academic cheating and added significantly beyond conscientiousness in predicting criminal behavior/intent.

Like integrity, self-control has been found to predict a number of counterproductive behaviors (Marcus & Schuler, 2004; Villanueva, 2007; Zettler, 2011). More specifically, Marcus and Schuler (2004) examined the antecedents to General Counterproductive Behavior (GCB). This study used select dimensions of a German integrity test in combination with self-control to form a subset of internal control variables. Additional factors of the integrity measure combined to form propensity/motivational variables. Together, the internal control and motivational variables formed person variables. A number of situational variables were also examined (grouped as triggers and opportunity/external control).

Hierarchical regression found that after controlling for the person variables, situational variables were no longer significant contributors of GCB. Looking within the person variables, the authors found that after accounting for internal control, motivation/propensity was no longer a significant contributor to GCB. In examining all variables/dimensions individually, the authors found that after accounting for self-control there were no other significant predictors of GCB out of 25 total variables. These results indicate that self-control is a valid predictor of counterproductive behavior and perhaps

even supersedes integrity or integrity's components (overall/scale levels of integrity were not analyzed).

If integrity contains elements of self-control and if self-control is, in fact, more important in predicting counterproductivity, then the link between integrity and various forms of counterproductive behavior will potentially change based on the dynamics of self-control. These implications are discussed, as self-control's impact on behavior is further examined.

Changes in self-control (ego depletion). More recent research has focused on changes in self-control. Baumeister and Heatherton (1996) and Baumeister (2002) outlined a model wherein self-control is a limited resource that can be renewed over time and increase or decrease in capacity. Although self-control is a dispositional trait that is generally stable over time, it is not stable within limited timeframes. As such, if the resource is depleted, an individual might not be able to exhibit self-control to the same extent as in non-depleted situations. This phenomenon is referred to as ego depletion.

Baumeister and Heatherton (1996) state that behavioral self-regulation, which will be discussed later, can fail for three main reasons: deficits in standards, monitoring, or operational capacity. It is this last category of operational capacity where self-control functions, leading to underregulation. That is, there is an inadequate amount of strength to override an unwanted thought, feeling or impulse. As such, if self-control output is diminished, individuals might engage in behaviors that are otherwise undesirable.

Research has confirmed that engaging in acts of self-control results in deficits in subsequent exhibition of unrelated acts of self-control. These results have been found

with self-control being exhibited in a number of ways, including eating less desirable foods (Baumeister et al., 1998); thought and emotional suppression (Muraven, Tice, & Baumeister, 1998); resisting temptation (Vohs & Heatherton, 2000); persistence in the face of failure and procrastination/off-task behavior (Vohs et al., 2008); and lying for monetary gain (Mead, Baumeister, Gino, Schweitzer, and Ariely, 2009).

Baumeister, Gailliot, DeWall, and Oaten (2006) outlined and eliminated a number of alternative explanations (i.e., task difficulty, self-efficacy, and experimental artifacts) for the effects of ego depletion, concluding that it is exhibition of self-control that results in ego depletion. In their meta-analysis, Hagger et al. (2010) confirmed the impact of ego depletion of exhibition of self-control. The average corrected standardized mean difference for ego depletion on self-control dependent measures was $d^{+} = .62$ and confidence intervals did not include zero. They note that this is a moderate to large effect.

In a recent study, Schmeichel and Vohs (2009) examined ways that this depletion could be overcome and found that engaging in self-affirmation after exhibition of self-control lead to subsequent levels of self-control that were equal to those who hadn't displayed initial self-control. However, self-affirmation made no difference in non-depleted respondents. Self-control and self-affirmation were examined from the perspective of mental construal. High vs. low construal focuses on the difference between considering long-term goals and abstract meanings versus short-term satisfaction and concrete sensations (Vallacher & Wegner, 1989). Inducing a mindset conducive to high-level construal by engaging in self-affirmation resulted in better self-control than low-level construal. These results match Gottfredson and Hirschi's (1990) and Muraven and

Baumeister's (2000) contentions that those with high levels of self-control focus on the long-term costs of behaviors.

Ego depletion and trait interactions. In addition to the impact of ego depletion on exhibition of self-control, a number of studies have investigated self-control and ego depletion's relationship to and impact on personal traits. These studies shine more light on how self-control/ego depletion might be related to integrity. Bertrams and Dickhauser (2009) found that self-control partially mediated the positive relationship between need for cognition (NFC) and academic achievement. Furthermore, self-control fully mediated NFC's relationship to grade retention (i.e., previous failings in school). They concluded that effortful cognitive processing relies on the same resource as self-control.

Returning to Marcus and Schuler's (2004) investigation of GCB and its antecedents, the authors found that seven of the nine factors of the German integrity test were significantly correlated with GCB. Examining the correlations between GCB and all person and situational variables revealed that the three strongest relationships were for self-control, rationalizations, and behavioral intentions, the latter two of which are factors of the integrity test. However, as noted previously, when examining all predictors simultaneously, self-control was the only significant contributor to GCB.

In addition to the individual predictors, Marcus and Schuler (2004) looked at the interaction between each group of predictors (i.e., triggers, opportunity/external controls, internal controls, and propensities/motivations). Results found that internal controls were impactful at all levels of opportunities, but significantly more so when external controls were lowered. Furthermore, triggers (e.g., frustration, perceived injustice, and

dissatisfaction) only had an effect on GCB when internal controls were at their lowest levels. Taken together, these results point to the importance of internal controls (e.g., self-control, elements of integrity) and, to a lesser extent, external controls (e.g., norms and monitoring) as being the most significant factors in explaining GCB. Given that self-control was the only significant single predictor in the full model, this lends support to the idea that level of integrity might be less of a factor when self-control is low (i.e., under states of ego depletion).

Baumeister et al. (2006) examined ego depletion's interaction with a variety of traits, revealing three main patterns, two of which are relevant to the present investigation. In the first pattern, Baumeister et al. (2006) found that ego depletion weakened restraints that are typical in everyday life (Gailliot & Baumeister, 2007; Gordijn, Hindriks, Koomen, Dijksterhuis, & Van Knippenberg, 2004; Muraven et al., 2002). They state that although some people are more likely to engage in certain behaviors, they refrain from doing so because these behaviors are not optimal (e.g., behaving promiscuously, expressing stereotypes, or drinking to excess). Under conditions of ego depletion, individuals are unable to display the requisite level of self-control to refrain from engaging in these behaviors and, therefore, their inner traits or impulses exert greater control.

If this pattern held for integrity, those who were low in integrity would exhibit higher levels of CWB, but only under depleted conditions. There is no evidence to suggest that the myriad studies linking integrity and CWB (where low integrity

individuals exhibited more CWB) were conducted under ego depleted conditions. As such, this pattern does not fit with integrity.

The second main pattern observed by Baumeister et al. (2006) involves differences in controlling behaviors. This pattern is exemplified by the behavior of dieters vs. nondieters in depleted and non-depleted conditions (Kahan, Polivy, & Herman, 2003; Vohs & Heatherton, 2000). These studies found that ego depletion only impacted the eating behavior of those who were regular dieters. Individuals who did not diet regularly did not exhibit significant differences in eating behavior between depleted and non-depleted conditions. Baumeister et al. (2006) suggest that depletion impacts those who regularly restrain their behavior, but not those who regularly engage in the behaviors they desire (e.g., eating whatever they want). They state that the desire to restrain eating is the same regardless of one's ego state, but ego depletion removes the capacity to actually restrain one's eating. How might these results be applied to integrity?

If acting upon high integrity levels is contingent upon the self resource, then integrity's impact is subject to ego depletion. Under normal conditions, the self resource is sufficient to act upon high levels of integrity. However, under conditions of ego depletion, one is physically unable to act upon the normal, high levels of integrity due to an inhibition of exerting self-control. As such, conditions of ego depletion should result in higher levels of undesirable behaviors among typically high integrity individuals, but no change in undesirable behaviors for low integrity individuals.

Behavioral self-regulation. If integrity is composed of, in part, dispositional self-control and both have been found to impact counterproductive behavior, then ego

depletion should also impact expressions of integrity. As such, one must establish a system wherein they can both function to impact behavior. The most likely system is behavioral self-regulation. Although it has been conceptualized somewhat differently by self-regulation and control theories, the basic tenets are similar across the theories.

Self-regulation theory (Bandura, 1977, 1991) is based on the idea that individuals possess the ability to monitor and control their thoughts, motives and actions. Individuals adopt behavioral standards that guide, motivate and regulate behavior. Self-regulation functions primarily on the basis of negative feedback, which is the idea that people act such that they can reduce discrepancies. As a whole, self-regulation theory states that human behavior is regulated by an interaction between self-generated and external sources of influence. Control theory (Carver & Scheier, 1982) states that information is monitored using some manner of sensor and one's current state is compared to a desired state (e.g., a goal). If a discrepancy exists between the current state and desired state, then a self-correcting mechanism is implemented to eliminate the discrepancy (Klein, 1989). Carver and Scheier (1982) note that control and self-regulation theories are very similar.

The basic element of control theory is the feedback loop (Campion & Lord, 1982). In the feedback loop, an awareness of one's present condition (the input function) is compared to a point of reference (the comparator). If a discrepancy is detected, then a behavior is performed or expectations are changed in order to reduce the discrepancy (the output function). The purpose of control theory is to "create and maintain the perception of a specific desired condition" (Carver & Scheier, 1982, p.113). It is this loop that provides a basis for integrity and ego depletion to interact in their impact on behavior.

According to Hyland (1988), there are four categories that can serve as reference criteria for detection: an end state, rate of progress toward an end state, a state of doing or being, and an emotion or affect. Included in the state of doing or being category are values – internalized beliefs about a desirable state, object, goal, or behavior. Key components of integrity (i.e., honesty, responsibility, and conformity) have been identified as instrumental values (Schwartz & Bilsky, 1987, 1990). Instrumental values are guiding principles for behavior (Elizur & Sagie, 1999; Rokeach, 1971) and research has shown that, in conjunction with norms, these values guide behavior across cultures (Bardi & Schwartz, 2003; Schwartz & Bilsky, 1990). Bandura (1991) states that performance also exists as a function of forethought, which allows for anticipatory control even prior to feedback. The standards one sets serve as behavioral guides before and during regulation.

As such, within the feedback loop, integrity serves as the point of reference, which guides behavior. Baumeister and Heatherton (1996) states that self-control functions within the output phase of the loop. When a behavior is decided upon, the self resource will provide the requisite strength to enact it. As such, individuals will behave in accordance with the standards they have set (integrity) and subsequently adjust or continue their behavior based on negative feedback, but this adjustment will be dependent on one’s strength (state-based self-control/ego depletion).

Chapter 2

The Present Investigation

Integrity and Dispositional Self-Control

A number of studies have attempted to examine what factors underlie integrity. Although the factor names and exact compositions have differed across these studies, some patterns have emerged. Results have shown that views of honesty (both for oneself and others), admissions of wrongdoing, responsibility, conscientiousness, and elements of self-control are the most prominent factors underlying integrity (Hogan & Brinkmeyer, 1997; Wanek et al., 2003; Woolley & Hakstian, 1992, 1993). It has been proposed that self-control plays a role in integrity (Berry, Sackett et al., 2007; Sackett & Wanek, 1996); however, research has not examined this.

Most research has focused on integrity's relationship with the dimensions of personality (i.e., the FFM). More specifically, conscientiousness has been the most consistent correlate with integrity (Murphy & Lee, 1994a; Ones et al., 1993). However, the relationship between integrity and personality is moderate and fails to account for all the variance in integrity (Murphy & Lee, 1994b). Even when personality is conceptualized with a separate honesty component, it does not account for even a majority of the variance (Lee et al., 2005) and integrity remains a sizeable and significant predictor of counterproductive behaviors (Marcus et al., 2007).

The pattern of relationships between integrity and dimensions of the FFM (Marcus et al., 2007) is similar to the pattern between self-control and the FFM (Tangney et al., 2004). That is, the strongest relationships for both integrity and self-control are

with conscientiousness, agreeableness, and emotional stability/neuroticism. Research has also found that elements of self-control and integrity are underlying factors of conscientiousness (Roberts et al., 2005). Furthermore, both self-control (dispositional and state-based) and integrity have been found to be significant predictors of counterproductive behaviors (Marcus & Schuler, 2004; Ones et al., 1993; Vohs et al., 2008).

Examination of more narrow facets of personality also points toward self-control as a possible construct underlying integrity. Murphy and Lee (1994a) found that Prudence (i.e., conscientiousness, conventional values and self-righteousness, as well as caution, control, and conformity) was strongly related to integrity. More specifically, they found that avoiding trouble and controlling impulses were the strongest correlates with integrity. Hogan and Brinkmeyer (1997) found similar results. Wanek et al.'s (2003) examination of integrity measures found that thoughts/temptations regarding theft, conformity/adherence to rules/norms, and perceptions of dishonesty norms were components present across all integrity tests. Furthermore, they identified self/impulse control as sizeable and significant across six of the seven integrity measures examined. Additionally, across these studies, other traits such as leadership, temperament, caring and locus of control failed to show a consistent relationship with integrity.

These results also point toward impulse control as a defining link between integrity and self-control. Murphy (2000) states that individuals who are lower in integrity tend to engage in more impulsive behaviors. Murphy and Lee (1994a), Hogan and Brinkmeyer (1997) and Wanek et al. (2003) all found a significant correlation

between integrity and impulse control. Baumeister et al. (1994) state that controlling impulses is one of four major dimensions of self-control. Tangney et al. (2004) define self-control as, in part, the ability to interrupt undesired behavioral impulses and resist acting on them and Roberts et al. (2005) found that impulse control was a significant contributor to self-control.

Again, opinions of honesty in oneself and others are common components of integrity measures and personality dimensions have been consistently related to integrity. However, these cannot account for the predictive ability of integrity tests (Lee et al., 2005; Marcus et al., 2007). Given the similar patterns of relationship to personality, shared relationship with impulse control and lack of alternative models, dispositional self-control is the most likely construct for investigation.

Integrity and Ego Depletion

If dispositional self-control contributes to the variance in integrity, how might this impact integrity's relationship to behavior, particularly counterproductive behaviors? Baumeister and Heatherton (1996) outlined a model wherein self-regulation (self-control) is a limited resource that can be depleted, known as ego depletion. Under conditions of ego depletion, individuals are less able to exhibit self-control. Research has confirmed that exhibition of self-control significantly impairs one's ability to engage in subsequent behaviors requiring self-control (Hagger et al., 2010). This depletion effect can lead to an increase in counterproductive behaviors, such as lying for monetary gain (Mead et al., 2009) and procrastination/off-task behavior (Vohs et al., 2008).

Baumeister et al. (2006) note that ego depletion can impact a trait's relationship to behavior by removing the capacity to act upon that trait (e.g., Kahan et al., 2003; Vohs & Heatherton, 2000). How might ego depletion impact integrity? The current research on integrity and ego depletion points to a possible conclusion: state-based self-control (the self resource) moderates the relationship between integrity and counterproductive behaviors.

Integrity and ego depletion interact within the framework of behavioral self-regulation (Bandura, 1977, 1991; Carver & Sheier, 1982). Integrity serves as the comparator that guides behavior while state-based self-control functions in the operate phase. When the self resource is depleted, the impact of integrity on counterproductive behavior should be significantly diminished. As such, individuals who are otherwise high in integrity should exhibit greater levels of undesired behavior.

Hypotheses

Hypothesis 1. Hypothesis 1A: dispositional self-control is positively and significantly related to integrity.

Hypothesis 1B: among personality dimensions, Conscientiousness, Agreeableness and Neuroticism have the strongest relationships to integrity.

Hypothesis 1C: dispositional self-control's relationship to integrity is significant beyond that of personality.

Hypothesis 2. Hypothesis 2A: there is a significant interaction effect between integrity and ego depletion on off-task behavior.

Hypothesis 2B: the relationship between integrity and off-task behavior is significantly weaker in depleted, compared to non-depleted, conditions.

Hypothesis 2C: for individuals with high levels of integrity, off-task behavior is significantly greater under conditions of ego depletion than under non-depleted conditions.

Hypothesis 2D: for individuals with low levels of integrity, off-task behavior is not significantly different between depleted and non-depleted conditions.

Chapter 3

Study 1

In order to fully examine the relationship between integrity and self-control two studies were conducted. Study 1 analyzed the contribution of dispositional self-control to the variance of integrity beyond personality. Again, it was hypothesized that self-control would be positively and significantly related to integrity. Furthermore, self-control would contribute significantly to the variance in integrity beyond the Big Five dimensions of personality.

Methods

Participants. Participants were 156 undergraduate business students at a large southeastern university who received course credit in exchange for participation. Of the 156 participants, 54.5% were male and 45.5% were female. The majority (80.8%) of participants was White, 9.6% were Asian and 3.8% were African American. The average age of participants was 21.6. Study 1 was conducted electronically (see Appendix A).

Procedure. Participants completed measures of integrity, personality, dispositional self-control, and self-affirmation electronically, followed by general demographic questions. Order of presentation was randomized with the only stipulation being that individuals engage in self-affirmation after responding to the measure of dispositional self-control. Although ego depletion has not been witnessed following measurement of dispositional self-control, self-affirmation will help guard against any impact ego depletion might have of the assessment of other traits (Schmeichel & Vohs, 2009). Individuals who agreed to participate received an email with instructions on where

and how to complete the measures (see Appendices B and C for specific instructions provided).

Measures. Excluding the demographic questionnaire, all measures in Study 1 had been used in previous research regarding integrity, self-control, and personality. As such, there was existing evidence regarding the reliability and validity of each measure included in this study. All measures can be found in Appendix D and a summary table of the measures can be found in Appendix G, Table 1.

Integrity. Integrity was measured using the Employee Integrity Inventory (EII; Ryan & Sackett, 1987). The EII has been used in a number of studies (e.g., Lucas & Friedrich, 2005; Marcus et al., 2007) as a measure of integrity, shows adequate levels of internal consistency (α = .77-.93; Ryan & Sackett, 1987), and is similar to published measures of integrity (Alliger, Lilienfield, & Mitchell, 1996). Participants were instructed to rate their level of agreement to a series of statements on a Likert-type scale, ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). The scale consisted of a total of 61 items (e.g., "I am too honest to steal"), including 11 admission items plus 11 social desirability items. Admission items consisted of a similar 5-point scale of ordinally arranged options. Item responses were coded such that higher scores indicated higher levels of integrity.

Dispositional self-control. Dispositional self-control was measured using the Brief Self-Control Scale (Tangney et al., 2004). The Brief Self-Control Scale exhibits adequate levels of internal consistency (α = .83) and test-retest reliability (α = .87) and has been found to be positively related to numerous positive outcomes, consistent with

prior research on self-control (Tangney et al., 2004). Participants were instructed to respond to a series of statements, rating each based on how it reflects how the participants typically are on a Likert-type scale, ranging from 1 (*Not at All*) to 5 (*Very Much*). The scale consisted of a total of 15 items (e.g., "I am good at resisting temptation"), including 9 reverse-coded items. Higher scores indicated a greater level of dispositional self-control.

Self-affirmation. Although ego depletion was not expected from measuring dispositional self-control in study 1, participants engaged in self-affirmation in order to prevent this from occurring. Schmeichel and Vohs (2009) found that self-affirmation, in the form of expressing one's core life values, returns self-control to non-depleted levels without affecting individuals who are not in a state of ego depletion. Participants ranked a set of eleven values (e.g., *Athletics*, *Creativity*, *Social Skills*), then wrote for six minutes explaining why their top-ranked value was important to them and described a time in their lives when it had been particularly important (Cohen, Aronson, & Steele, 2000). The values were drawn from Harber's (1995 as reported in Cohen et al., 2000) Sources of Validation Scale.

Personality. Personality was measured via the 50-item IPIP representation of Costa and McCrae's (1992) five NEO domains (Goldberg et al., 2006; International Personality Item Pool). The 50-item IPIP scale has exhibited adequate dimensional internal consistency (α = .70-.82; corrected α = .85-.92) as well as dimensional correlations with the NEO (α = .77-.86). Individuals responded to each statement based

on accuracy on a Likert-type scale, ranging from 1 (*Very Inaccurate*) to 5 (*Very Accurate*). The scale included 10 items per dimension, half of which were reverse-coded.

Background information. Participants in both studies completed a background survey, which gathered demographic information regarding age, race, sex, classification, and Grade Point Average. Participants also reported about their work experience.

Results

Descriptive statistics, internal consistencies, and intercorrelations can be found in Table 2. The mean score on the EII (224 on a scale of 61-305) was consistent with previous research with undergraduates (Lucas & Friedrich, 2005) and self-control scores (41.1 on a scale of 13-65) were also consistent with previous results (Tangney et al., 2004). Internal consistencies for the EII (α = .90), self-control (α = .81), and personality scales (scale α‘s: .77-.84) were adequate and generally consistent with previous research. Additionally, there were no order effects for scores on any of the measures (see Table 3).

Correlations between self-control and integrity were positive and significant (r = .43, p < .01), confirming Hypothesis 1A. Furthermore, the relationship between integrity and the dimensions of personality were as predicted in Hypothesis 1B. That is, integrity was significantly related to conscientiousness (r = .34, p < .01), agreeableness (r = .46, p < .01), and neuroticism (r = -.29, p < .01). Integrity was not significantly correlated with either openness to experience (r = -.08, *ns*) or extraversion (r = .03, *ns*). In addition to its relationship to integrity, self-control was significantly correlated with conscientiousness (r = .66, p < .01), agreeableness (r = .33, p < .01), and neuroticism (r = -.42, p < .01).

Hierarchical regression was performed to analyze the proportion of variance in integrity accounted for by the dimensions of personality and dimensional self-control. In order to assess the contribution of self-control beyond personality, personality dimensions were entered first, followed by self-control. Personality accounted for 27.3% of the variance in integrity: $F(5, 150) = 11.245$, $p < .001$. When self-control was added to the model, it contributed an additional 4.1% of variance: $F(1, 149) = 8.974$, $p < .01$. In total, personality and self-control accounted for 31.4% of the variance in integrity: $F(6, 149) = 11.365$, $p < .001$ (see Table 4). These results confirmed Hypothesis 1c.

In order to further examine the relationships among integrity, self-control and the dimensions of personality, partial correlations were assessed. Specifically, partial correlations were calculated between integrity and the dimensions of personality, controlling for the contribution of self-control. Furthermore, partial correlations were also calculated between integrity and self-control, controlling for the contribution of the dimensions of personality (see Tables 5 and 6). Of note, when controlling for self-control, the relationship between integrity and conscientiousness was not significant ($r = .07$, $p =$ 37). Furthermore, integrity's only significant relationship was with agreeableness ($r =$ .37, $p < .01$). However, when controlling for the dimensions of personality, integrity and self-control remained significantly correlated ($r = .24$, $p < .01$).

In order to assess the relative impact of self-control and the dimensions of personality on integrity, a dominance analysis was performed (Azen & Budescu, 2003). Agreeableness was the strongest contributor to integrity (see Table 7), accounting for 43.5% of the explained variance (or 13.7% of the total variance in integrity). Self-control

accounted for 30.3% of the explained variance (9.5% of the total variance) and conscientiousness accounted for 12.5% of the explained variance (3.9% of the total).

To summarize, self-control was positively and significantly correlated with integrity. This confirms Hypothesis 1a and begins to answer previous calls for investigation into the relationship between integrity and self-control (Berry, Sackett et al., 2007; Sackett & Wanek, 1996). Furthermore, self-control contributed significantly to the variance in integrity beyond the dimensions of personality (see Table 8 for a summary of Study 1 hypotheses and analyses). Of note, self-control remained significantly related to integrity when controlling for the contribution of the dimensions of personality. On the other hand, conscientiousness was not significantly correlated with integrity among the dimensions of personality when controlling for the contribution of self-control. Dominance analysis revealed that when self-control was included in the model with the dimensions of personality, agreeableness and self-control were the strongest contributors to integrity (accounting for a combined 73.8% of the explained variance). Although conscientiousness did contribute to the variance in integrity, it accounted for just 12.5% of the explained variance. These results clearly point to self-control being integral to our understanding of integrity. Study 2 expanded upon these results by examining how temporary detriments in self-control impact expression of integrity.

Chapter 4

Study 2

Study 2 examined the way in which deficits in self-control (ego depletion) impact the expression of integrity, specifically via off-task behavior. Again, a significant interaction effect was expected between integrity and ego depletion. The relationship between integrity and off-task behavior was expected to be significantly weaker in depleted, compared to control, conditions. It was also predicted that for individuals with high levels of integrity, off-task behavior would be significantly greater under conditions of ego depletion than under control conditions. Conversely, for individuals with low levels of integrity, off-task behavior was not expected to be significantly different between depleted and control conditions.

Methods

Participants. Participants were 216 undergraduate business students at a large southeastern university, who received course credit in exchange for their participation. Responses were collected for a measure of integrity, inducement of ego depletion and measurement of off-task behavior. A laboratory setting allowed for direct observation and measurement of behavior. Of the 216 participants, 51.4% were male and 48.6% were female. The majority (83.6%) of participants was White, 6.9% were Asian and 4.2% were African American. The average age of participants was 21.3 (see Appendix A).

Procedure. Data collection occurred at two separate times. The first collection consisted of measuring integrity and completion of a demographic questionnaire. Individuals who agreed to participate completed these measures on a computer via an

online system, which is managed and secured by the university. In the second collection, participants completed the previously mentioned “white bear/zoo” task, a self-control exertion task (Wegner et al., 1987). This task lasted 5 minutes and was designed to place half of the participants into a state of ego depletion.

After completion of the “white bear/zoo” task, participates completed a task perceptions questionnaire. This questionnaire measured perceptions of the task in relation to ego depletion effects. Studies incorporating activities of some kind between depletion-dependent tasks have been found to result in a significantly larger effect of depletion on subsequent self-control exhibition (Hagger et al., 2010). As such, the intervening task served as both a manipulation check and helped allow the proposed effect to be greater in magnitude.

Participants then completed the final part of the study, which lasted 45 minutes. This task required participants to answer a series of math problems under the guise of creating a normative database. While completing the math problems, participants were presented with opportunities to take breaks (of the scheduled and unscheduled variety). Completing this task required exhibition of self-control and allowed for participants to engage in off-task behavior (see Appendix E for specific instructions provided).

Measures. Measures included in Study 2, with the exception of the demographic questionnaire, had all been used in previous research regarding integrity, ego depletion and off-task behavior, although the off-task behavior measure was modified slightly from previous studies. Therefore, there is existing evidence regarding the reliability and

validity of each measure included in this study. All measures can be found in Appendix D and a summary table of the measures can be found in Appendix G, Table 9.

Integrity. Integrity was again measured via the EII (Ryan & Sackett, 1987). Item responses were coded such that higher scores indicated higher levels of integrity.

Ego depletion. Participants in Study 2 performed an act of self-control in order to enter a state of ego depletion. The "white bear/zoo" task (Wegner et al., 1987) asked participants to imagine a visit to a zoo and instructed them to write down everything and every animal that came to mind during the imaginary trip. Half of the participants were instructed not to think about a white bear while the other half received no restrictions (Fischer et al., 2008).

Interim task. Participants in Study 2 completed a task perceptions questionnaire, which was drawn from previous ego depletion studies (Burkley, 2008; Muraven, Shmueli, & Burkley, 2006). This questionnaire also served as a manipulation check and provided a break between elements of the study. This is a typical procedure and questionnaire in ego depletion studies. Again, manipulation check items were adapted from previous studies and rated on a Likert-type scale ranging from 1 (*Not/None at All*) to 7 (*Very Much*). The final two questions (i.e., "How hard did you work at controlling your thoughts" and "How much effort did you exert on the task") were averaged to form a self-control exertion measure (Burkley, 2008).

Off-task behavior. The dependent variable in Study 2 was off-task behavior, a variation of misuse of time and resources. It was conceptualized as the amount of time spent during scheduled break opportunities, unscheduled breaks and screensaver and

inactivity duration. Specifics of these measures are explained further below. Misuse of time and resources has been reliably classified as a dimension of counterproductive behavior (Gruys and Sackett, 2003). Given that the present investigation was primarily concerned with time spent on work vs. non-work activities, the variable is referred to as off-task behavior (see Appendix F). The scenario for testing hypothesis 2 was modeled after Vohs et al.'s (2008) study, which found that ego depletion resulted in less time spent studying for an exam.

The task was modified in an attempt to more closely resemble a work-like situation. Participants were given a series of math problems where their performance was presented as beneficial to the university. Participants were informed that their responses would be used to create a database of performance, which would be used to help establish norms for future students of their age and classification. Participants were told they had 45 minutes to answer questions, but that they did not need to answer every question, as there were many others who were also contributing data to the normative database.

Participants responded to questions on a computer, using an online quiz system. Questions were presented one at a time, in groups of eight, with a break opportunity scheduled after each set. They were told that once they finished one set of problems they could take a break and, whenever they were ready, they could start the next set of problems. Participants had access to the Internet, magazines, and beverages. The computer recorded the amount of time spent working on the questions. Time spent between sections of the test was recorded as time spent during scheduled breaks with longer time indicating greater off-task behavior. Furthermore, any time spent engaging in

other computer activities during the problem sets (e.g., browsing the Internet, playing computer games) was counted as time spent during unscheduled breaks. Providing access to alternative behaviors was intended to allow the norms of the situation to potentially be perceived as providing opportunities to avoid working on the questions (see Appendix E).

Additionally, the computer's screensaver was set to activate after 30 seconds to help differentiate between participants who were actively working on each question and those who might be off-task outside of the designated break opportunities. Finally, the computer recorded any instance where a participant had not engaged the computer for at least a minute and identified the duration of time until activity returned. Screensaver time and computer inactivity time were also measures of off-task behavior.

Questions on this portion of the study were drawn from the Graduate Record Exam (GRE; Yang & Johnson-Laird, 2001 as reported in Schmader & Johns, 2003). Standardized tests are familiar and cognitively demanding. In order to perform well, individuals must exhibit persistent concentration. Furthermore, research has shown that performance on GRE questions is susceptible to detriments due to ego depletion (Finkel et al., 2006; Schmeichel, Vohs, & Baumeister, 2003).

Results

Integrity. Descriptive statistics and internal consistency for integrity can be found in Table 10. The mean score on the EII (222.08, SD: 22.60 on a scale of 61-305) was consistent with previous research with undergraduates (Lucas & Friedrich, 2005) and with Study 1. Internal consistency for the EII was adequate (α = .90) and generally consistent with previous research. Female participants (M: 227.17, SD: 21.66) scored

significantly higher than male participants (M: 217.35, SD: 23.19) on the measure of integrity: $F(1, 214) = 10.312$, $p < .01$). However, there were no differences in allocation of male and female assignment by condition ($x^2 = .02$, df = 1, $p = .88$). Furthermore, integrity scores did not differ across depletion conditions: $F(1, 214) = .004$, *ns*.

Ego Depletion. Before testing the hypotheses, the task perceptions questionnaire was examined to determine the depletion effects of the white bear task, compared to the control task. Two of the depletion questionnaire items (i.e., controlling thoughts and inhibiting thoughts) were intended to be combined to form a depletion composite, which would serve as the primary measure of depletion check. Before combining responses to form the composite, these items were correlated to ensure adequate consistency between the responses. Analysis of the two depletion composite items revealed a significant correlation ($r = .60$, $p < .001$), which was consistent with Burkley's (2008) results using the depletion questionnaire. Although significant differences existed between conditions for inhibition of thoughts (control: 3.79, white bear: 4.69; $F(1, 213) = 20.45$, $p < .001$), no difference was found with respect to controlling thoughts (control: 4.58, white bear: 4.94; $F(1, 213) = 3.617$, $p = .059$). Still, scores for the depletion composite were significantly different across conditions: $F(1, 213) = 13.171$, $p < .01$ (see Table 11). Examination of the means (control: 4.18, white bear: 4.82) indicated that participants in the white bear condition experienced greater levels of depletion than those in the control condition. However, the means were above the scale midpoint in each condition, which perhaps indicated that participants in both conditions experienced some level of depletion. These results did not preclude us from proceeding, as they showed that

depletion did occur. However, further examination was warranted and can be found in the Discussion section.

Again, the purpose of Study 2 was to examine the relationship between integrity, ego depletion, and off-task behavior. As such, off-task behavior was regressed on the conditions of ego depletion and integrity. Recall that off-task behavior was conceptualized as time spent during scheduled breaks, time spent during unscheduled breaks, as well as screensaver time and computer inactivity time. Integrity scores were centered prior to moderator analysis to reduce potential multicollinearity. Hayes and Matthes (2009) created a script (MODPROBE) for performing interaction analyses in SPSS, which was used.

Off-task behavior. The average amount of time spent during scheduled breaks was 513.79 seconds (SD: 367.98) and during unscheduled breaks was 15.43 seconds (SD: 77.66). To avoid overlap among the variables, time spent during scheduled breaks was removed from the measures of screensaver duration and computer inactivity. The average "unscheduled" screensaver duration was 83.62 seconds (SD: 170.91) whereas "unscheduled" computer inactivity (henceforth: unscheduled inactivity) was 75.52 seconds (SD: 295.66; see Table 12).

Off-task behavior composite. In order to assess off-task behavior, the separate measures (i.e., time spent during scheduled breaks, time spent during unscheduled breaks, and unscheduled inactivity) were combined. To avoid redundancy, time spent with the screensaver active was not included in the composite. Unscheduled screensaver duration and unscheduled inactivity were highly correlated among participants for whom both

measures were available (r = .961, p < .001) and the measure of inactivity was available for all participants, therefore only unscheduled inactivity was included. It was theorized that all measures would be representative of off-task behavior within the misuse of time and resources dimension. Due to the varying ranges of each measure, the variables were first standardized. The resulting standardized measures were then added together yielding a composite, which served as the primary measure of off-task behavior. Ideally, the variables of interest would all be significantly correlated, however that did not occur here (see Table 12). As such, additional analyses were also performed to confirm the relationship among integrity, ego depletion and off-task behavior and are covered below.

The model of integrity, condition, and integrity*condition (henceforth: the model) explained a significant proportion of the variance in off-task behavior (R^2 = .080, p < .001). Within the model, integrity (β = -.0296, t(212) = -4.1125, p < .001) was significant, but condition (β = .0127, t(212) = .0545, p = .9566) was not. The integrity*condition interaction accounted for significant variance in the model (R^2 = .018; β = .0208, t(212) = 2.0440, p < .05; see Table 13).

In order to examine the interaction, integrity's relationship to off-task behavior within each ego depletion condition was tested. It was expected that the relationship between integrity and off-task behavior would be significantly weaker in depleted conditions, compared to control conditions. It has been suggested that establishing confidence intervals for slopes is more useful than simply testing for significance (Bauer & Curran, 2005). As such, 95% confidence intervals for each beta-weight were also calculated. Analysis of the interaction of integrity and condition on off-task behavior

revealed results generally as predicted. That is, integrity was a significant predictor of off-task behavior in the control condition (β = -.0296, $t(105)$ = -4.1125, p < .001), but not in the white bear condition (β = -.0088, $t(107)$ = -1.2319, p = .219). However, examination of the confidence intervals for each beta-weight revealed overlap (control: [-.0438, -.0154] vs. white bear: [-.0230, .0053]; see Table 14).

Additionally, the relationship between ego depletion and off-task behavior at high and low levels of integrity was examined. Research did not dictate pass/fail or specific values of high and low integrity, therefore the interaction was tested at one standard deviation above and below the mean of integrity, a common approach (Hayes & Matthes, 2009). Ego depletion was expected to impact off-task behavior significantly more when integrity was high compared to when integrity was low. Again, 95% confidence intervals for each beta-weight were identified. The relationship between ego depletion and off-task behavior was not significant at either high (β = .4926, $t(212)$ = 1.4948, p = .137) or low (β = -.4611, $t(212)$ = -1.3992, p = .163) levels of integrity. Furthermore, examination of the confidence intervals for each beta-weight revealed overlap (control: [-.1570, 1.1422] vs. white bear: [-1.1106, .1885]; see Table 15).

These results confirmed hypothesis 2a, in that a significant interaction effect between integrity and ego depletion was found. Hypothesis 2b was partially confirmed, as integrity was predictive of off-task behavior in the control, but not the depleted, condition. However, the confidence intervals for the beta-weights revealed overlap, indicating that they were not significantly different across condition. Hypothesis 2c was not confirmed. Although the relationship was in the expected direction of high integrity

individuals engaging in more off-task behavior when depleted than not depleted, the difference was not significant. Finally, hypothesis 2d was confirmed; off-task behavior did not differ across condition for low integrity individuals.

Off-task behavior supplementary analyses. As previously noted, the measures of off-task behavior were not all significantly correlated. In order to confirm the above results, additional analyses were performed. As expected, time spent during unscheduled breaks and unscheduled inactivity were positively and significantly correlated ($r = .115$, $p < .05$, one-tailed), albeit less strongly than expected. However, time spent during scheduled breaks was not significantly related to time spent during unscheduled breaks or to unscheduled inactivity. As such, time spent during unscheduled breaks and unscheduled inactivity were combined to create an additional composite and time spent during scheduled breaks was analyzed separately. As before, the measures were standardized prior to being combined.

The model explained a significant proportion of the variance in unscheduled breaks + unscheduled inactivity ($R^2 = .102$, $p < .001$). Within the model, integrity ($\beta = -.0280$, $t(212) = -4.6730$, $p < .001$) was significant, but condition ($\beta = -.0518$, $t(212) = -.2668$, $p = .7899$) was not. The integrity*condition interaction accounted for significant variance in the model ($R^2 = .022$; $\beta = .0194$, $t(212) = 2.2900$, $p < .05$; see Table 16).

Examination of the interaction for unscheduled breaks + unscheduled inactivity revealed a similar pattern to that in the full off-task behavior composite. That is, integrity was a significant predictor of off-task behavior in the control condition ($\beta = -.0280$, $t(105) = -4.6730$, $p < .001$), but not in the white bear condition ($\beta = -.0086$, $t(107) = -$

1.4461, p = .150). However, examination of the confidence intervals for each beta-weight revealed overlap (control: [-.0399, -.0162] vs. white bear: [-.0204, .0031]; see Table 17). Likewise, the relationship between ego depletion and off-task behavior was not significant at either high (β = .3963, t(212) = 1.4431, p = .151) or low (β = -.4941, t(212) = -1.7991, p = .073) levels of integrity. Furthermore, examination of the confidence intervals for each beta-weight revealed overlap (high: [-.1450, .9376] vs. low: [-1.0354, .0473]; see Table 18).

This composite was explored further by examining the individual components (i.e., unscheduled breaks and unscheduled inactivity) separately. Although these measures of off-task behavior were significantly correlated, the magnitude of the relationship was relatively weak. As such, analyses of each component were performed to reveal any additional information about the dynamics of the relationship between integrity, ego depletion, and off-task behavior.

Regarding unscheduled breaks, the model explained a significant proportion of the variance in off-task behavior (R^2 = .065, p < .01). Within the model, integrity (β = -1.1745, t(212) = -3.6880, p < .001) was significant, but condition was not (β = -6.6009, t(212) = -.6413, p = .522). The integrity*condition interaction accounted for significant variance in the model (R^2 = .018; β = .9072, t(212) = 2.0181, p < .05; see Table 19).

Examination of the interaction for unscheduled breaks revealed a similar pattern to that seen in the composite analyses. That is, integrity was a significant predictor of off-task behavior in the control condition (β = -1.1745, t(105) = -3.6880, p < .001), but not in the white bear condition (β = -.2673, t(107) = -.8425, p = .401). Examination of the

confidence intervals for each beta-weight again revealed overlap (control: [-1.8023, -.5467] vs. white bear: [-.8927, .3581]; see Table 20). Likewise, the relationship between ego depletion and off-task behavior was not significant at either high (β = 14.3521, t(212) = .9849, p = .329) or low (β = -27.2856, t(212) = -1.8724, p = .063) levels of integrity. Furthermore, examination of the confidence intervals for each beta-weight revealed overlap (high: [-14.3736, 43.0778] vs. low: [-56.0109, 1.4397]; see Table 21 and Figure 1).

Regarding unscheduled inactivity, the model explained a significant proportion of the variance in off-task behavior (R^2 = .051, p < .05). Within the model, integrity (β = -2.1440, t(212) = -3.1285, p < .01) was significant, but condition (β = 5.5148, t(212) = .2490, p = .8036) was not. Unlike prior analyses, the integrity*condition interaction did not account for significant variance in the model (R^2 = .008, p = .1870; β = 1.2806, t(212) = 1.3238, p = .1870; see Table 22). Although the interaction was not significant, the dynamics were examined for completeness of comparison across the analyses. The previously found pattern held, with integrity being a significant predictor of unscheduled inactivity in the control condition but not in the white bear condition. Likewise, no relationship was found for condition and unscheduled inactivity at high or low levels of integrity.

Finally, regarding time spent during scheduled breaks, the model did not explain a significant proportion of the variance (R^2 = .002, p < .001). Additionally, neither integrity (β = -.578, t(212) = -.371, p = .711) nor condition (β = 23.883, t(212) = .474, p = .636) were significant predictors of time spent during scheduled breaks. Furthermore, the

integrity*condition interaction (R^2 = .0003, β = .508, *t*(212) = .230, *p* = .818) did not account for significant variance in the model (see Table 23). Additional analyses were performed, analyzing the model's predictive ability of time spent during each individual scheduled break opportunity and cumulative scheduled break time. The model did not explain a significant portion of the variance in any of these measures.

Summary. In summary, hypothesis 2A was confirmed: a significant interaction effect was found between integrity and ego depletion condition in predicting off-task behavior, as measured via the off-task behavior composite. This result was further confirmed by analysis of the unscheduled break time + unscheduled inactivity composite and of unscheduled break time. Examination of the significant interaction results partially confirmed hypothesis 2B. Integrity was significantly related to off-task behavior in the control, but not in the depleted, conditions in all analyses, which was as predicted. However, the confidence intervals for the beta-weights overlapped, indicating that the integrity-off-task behavior relationship was not significantly different across ego depletion conditions. Further examination of the significant interaction effect on off-task behavior failed to confirm hypothesis 2c. That is, for high integrity individuals (+1 SD above the mean), off-task behavior was not significantly different across ego depletion conditions, although the direction of the relationship was as predicted. Finally, hypothesis 2d was confirmed, as individuals with low levels of integrity (- 1 SD below the mean) did not differ significantly in off-task behavior across conditions (see Table 24 for a summary of Study 2 hypotheses and analyses).

Chapter 5

Discussion

Study 1

Self-control, integrity and personality. Self-control was found to be a significant contributor to the variance in integrity. Furthermore, its contribution was greater than even conscientiousness, establishing it as a useful construct in our understanding of integrity. All hypotheses were confirmed, but some results warrant further discussion. Self-control's strongest relationship was with conscientiousness (r = .66, see Table 2). Given the underpinnings of each construct, a strong relationship should not be unexpected. Conscientiousness was originally conceived as self-control (McCrae, 1976 as reported in Costa et al., 1991) and McCrae and Costa (1985) found that self-control includes elements of conscientiousness and neuroticism. Costa et al., 1991 found that the facet of conscientiousness with the strongest factor loading was self-discipline, which entails proactive perseverance on tasks without an immediate appeal. Recall that self-control behaviors maximize long-term interests (Muraven & Baumeister, 2000).

Furthermore, strong correlations between self-control and conscientiousness have been found previously. Marcus (2003) found correlations ranging from .38 to .75 and Tangney et al. (2004) found that the Brief Self-Control Scale was correlated with the Mini Marker's (Saucier, 1994) measure of conscientiousness at .48. Despite the strength of the self-control-conscientiousness correlation in the present study, the Variance Inflation Factors for these scales were 2.054 and 2.129, respectively, indicating that multicollinearity is likely not a problem (O'Brien, 2007).

Self-control was second only to agreeableness in terms of explaining variance in integrity. The sizeable contribution of agreeableness was somewhat unexpected, but not unprecedented. For instance, Lee et al. (2005) found $\beta = .34$ for agreeableness when predicting integrity scores with the FFM and Lee et al. (2008) found $\beta = .37$ for agreeableness in predicting integrity. These results are consistent with the agreeableness-integrity relationship in the FFM-only model in the present study ($\beta = .37$). It should be noted that these studies (along with the present study) all used the EII. Replication with a different measure of integrity might be prudent.

Social desirability. It was also prudent to exam the possibility that socially desirable responding resulted in artificially inflated correlations. It has been suggested that web-based administration might increase the intercorrelations among personality variables (Ployhart, Weekley, Holtz, & Kemp, 2003), although recent studies found measurement equivalence for a variety of scales, including dimensions of personality (Chuah, Drasgow, & Roberts, 2006; Meade, Michels, & Lautenschlager, 2007). Furthermore, the conditions of test administration in the present study included privacy and the ability to backtrack, which have been found to decrease response distortion (Richman, Kiesler, Weisband, & Drasgow, 1999). Finally, the social desirability scale of the EII did not indicate a problem (see Table 2). Socially desirable responding does not appear to be at issue.

Study 2

Ego depletion. The purpose of Study 2 was centered around the interaction between integrity and ego depletion and their impact on off-task behavior. Previous

research had found the white bear/zoo task to be a reliable task for inducing ego depletion in participants (Hagger et al., 2010), yielding significantly worse performance on self-control dependent tasks. However, this relationship did not occur in the present study. Although participants in the white bear condition indicated a greater level of self-control exertion than those in the control condition, this variable was not predictive of off-task behavior. As such, further examination of these results, and how they compare to previous studies, is warranted.

Depletion was confirmed using a task perceptions questionnaire, which was drawn from prior studies (e.g., Burkley, 2008; Muraven et al., 2006) and consisted of questions regarding task effort, difficulty, and frustration, controlling thoughts and inhibiting thoughts. Responses indicated no differences in the amount of effort exerted on the task (control: 5.03, white bear: 5.03; $F(1, 213) = .001$, $p = .980$). The control condition of the present study mirrored Fischer et al.'s (2008) study, which did not report results for effort exertion. The control condition in Burkley (2008) was similar and consisted of simply writing one's thoughts (without the framework of being in the zoo); this study found that participants in the white bear condition reported significantly greater effort. Other research (e.g., Muraven et al., 2002, 2006) found no differences in effort regardless of the control task. That was the goal of the present task and therefore these results are considered in line with previous results.

On the other hand, responses also indicated that the white bear task was more difficult (control: 2.61, white bear: 3.23; $F(1, 213) = 9.592$, $p < .01$) and frustrating (control: 2.44, white bear: 3.15; $F(1, 213) = 11.100$, $p < .01$), whereas prior research

(e.g., Muraven et al., 2002, 2006) found no differences on these items. Again, Burkley's (2008) results differed, finding that white bear participants reported more difficulty than free thought participants. Regardless of their inconsistent results, these prior studies all identified significant effects of self-control depletion on subsequent self-control dependent tasks. Based on this, these response items (i.e., difficulty and frustration) do not appear as integral to witnessing depletion effects as controlling and inhibiting one's thoughts. As defined, self-control dependent tasks are said to require controlling one's thoughts, emotions, impulses, or performance (Baumeister et al., 1994). As such, the primary concern was with the extent to which participants had to control and inhibit their thoughts.

Although significant differences existed between conditions for inhibition of thoughts (control: 3.79, white bear: 4.69; $F(1, 213) = 20.45$, $p < .001$), no difference was found with respect to controlling thoughts (control: 4.58, white bear: 4.94; $F(1, 213) = 3.617$, $p = .059$). Still, scores for the depletion composite were significantly different across conditions: $F(1, 213) = 13.171$, $p < .01$ (see Table 8). However, scores on the depletion composite were above the scale mean for both conditions (control: 4.18, white bear: 4.82). Based on these results, it was concluded that depletion likely did occur, but that it unpredictably occurred for both conditions (albeit to a lesser extent in the control condition). Again, this is not consistent with prior research (e.g., Burkley, 2008; Muraven et al., 2006). The specifics of the manipulation were examined to determine any possible causes for this.

Instructions for the task were identical to those used in prior research (e.g., Fischer et al., 2008) and the 5 minute length of task was also consistent with prior research (e.g., Burkley, 2008; Muraven et al., 2006). The only notable difference regarding the manipulation check items was the scale; the current study used a 7-point scale, whereas previous studies (e.g., Muraven et al., 2006) used a 25-point scale. This difference would not seem to be sufficient to account for the different results in the present study.

Stillman, Tice, Fincham, and Lambert (2009) are a notable exception among depletion researchers using the white bear manipulation, finding no differences on a self-control dependent task across depletion conditions. However, their manipulation involved restriction of thinking during a period of answering math questions. They theorized that the depletion manipulation was ineffective because individuals were distracted by the math problems and therefore no one was depleted. This would seem to be the opposite of the problem encountered in the present study, where both conditions appeared to experience depletion. Their study did not include a post-manipulation measure for assessing depletion levels, therefore a direct comparison cannot be made. Unfortunately, the specifics of the manipulation in the present study did not provide any clear answers as to why depletion might have occurred in the control condition. However, they did not identify any methodological errors either.

Predicting counterproductive behavior. Vohs et al. (2008) previously found that ego depletion was a significant predictor of time spent studying for a math exam in an experimental study. Similar to the present study, individuals were told they could

spend as much time as they wished on the assigned task and were given distractions (e.g., magazines and video games). Depleted participants spent less time studying than non-depleted participants. Mead et al. (2009) also found that ego depletion predicted lying for monetary gain. Both studies point toward ego depletion being a significant predictor of counterproductive behaviors. As such, it was prudent to examine the dependent variables of the present investigation as they relate to measuring and predicting counterproductive behavior.

Unscheduled breaks and inactivity. The off-task behavior composite, which consisted of standardized) time spent during scheduled breaks, standardized time spent during unscheduled breaks, and standardized unscheduled inactivity, was predicted by the model. Furthermore, a significant interaction between integrity and ego depletion condition was identified, such that integrity was predictive of off-task behavior in control, but not depleted, conditions. However, all of the individual components of the composites were not significantly correlated. As such, it was decided that additional analyses were needed to clearly measure off-task behavior.

The components of unscheduled break time and unscheduled inactivity time were significantly, albeit weakly, related. As such, a composite with only these variables was analyzed. Results were consistent with the full composite analyses, including a significant interaction. However, the model explained 10.17% of the variance in this composite, compared to 8.00% of the variance in the full composite. Indeed, scheduled breaks and unscheduled breaks (r = -.032, p = .32) and unscheduled inactivity (r = -.015, p = .41), while not significantly correlated, were in the direction of being negatively

related. Subsequent analyses of, individually, unscheduled break time and unscheduled inactivity time were also significantly explained by the model. However, a significant interaction was only present for unscheduled break time.

On the whole, these results appeared to indicate that time spent during unscheduled breaks and time spent during unscheduled inactivity can serve as measures of counterproductive behavior, unscheduled break time being the most consistent measure. Indeed, this would appear to be a more consistent conceptualization of counterproductive behavior, in that even when given break opportunities some individuals spent time off task outside of those opportunities.

Furthermore, results indicated that integrity was predictive of this behavior under control, but not depleted, conditions. However, the strength of the interaction effect might have been limited by the apparent depletion that occurred in the control condition. Despite the procedures being consistent with prior research, individuals in the control condition appeared to experience some level of depletion (as evidenced by their relatively high score on the self-control composite measure). If depletion impacts one's ability to express standard desires (Kahan et al., 2003; Vohs & Heatherton, 2000), then the integrity-unscheduled break time relationship in the control condition might have been attenuated by the depleted state of participants. Still, that a significant interaction was found under these circumstances perhaps indicates a stronger effect is at play, but is being masked by individuals being depleted in both conditions.

Scheduled break opportunities. On the other hand, the model was not predictive of time spent during scheduled break opportunities. It is possible that time spent during

scheduled breaks is not an acceptable representation of the misuse of time and resources dimension (Gruys & Sackett, 2003) of counterproductive behavior. However, other results indicated that such a conclusion is premature. Participants were given break opportunities after every eight questions and were not limited in how long each break could last. As such, the average time spent during scheduled breaks was 513.79 seconds (or just over 8 and one half minutes). Recall that the total session time was 45 minutes; therefore participants averaged approximately 19% of the session time in scheduled breaks. The task was structured in an attempt to model a work-type situation; however elements of this structure were not representative. That is, it is unlikely that a typical work situation would provide as many break opportunities during a given period as were provided in the present investigation. The current results do not support the use of length of time spent in scheduled breaks as a measure of misuse of time counterproductivity, but future research would be well served to examine this variable with fewer scheduled break opportunities.

The frequency of break opportunities and relatively lengthy time spent in scheduled breaks might have also impacted off-task behavior. It is possible that having frequent break opportunities provided an outlet for the “urge” to misuse time, which thereby depressed off-task behavior. The average time spent in unscheduled breaks was 15.43 seconds (SD: 77.66) and only 13% of participants (i.e., 28 of 216) engaged in unscheduled breaks. For those participants who did engage in unscheduled breaks, the average time spent was 119.04 seconds (SD: 187.72). Similarly, the average time spent in unscheduled inactivity was 59.16 seconds (SD: 165.92) and only 35% of participants

(i.e., 76 of 216) engaged in unscheduled inactivity. For those who exhibited unscheduled inactivity, the average time spent was 168.14 seconds (245.67). Although counterproductive behaviors typically occur infrequently, it is possible that the low occurrence in the present study was also due in part to the frequent scheduled break opportunities. That is, the temptation to spend time off task was abated by the scheduled breaks, negating the need for unscheduled breaks or unscheduled inactivity. This is further evidence for the need to examine how integrity and ego depletion interact in scenarios with fewer scheduled break opportunities.

Implications. The present results might well be an underestimation of the relationship between integrity, ego depletion, and off-task behavior. Regardless, the model was predictive of off-task behavior and a significant interaction was identified. Integrity was a significant predictor of off-task behavior in the control, but not depletion, condition. Although the results were in the direction of high integrity individuals engaging in greater off-task behavior in depleted, compared to non-depleted, conditions, the analyses were not significant. The interaction between integrity and ego depletion on off-task behavior has a number of different implications for practice and research.

Counterproductive behaviors. In the present study off-task behavior occurred as a function of integrity and ego depletion. Off-task behavior, particularly as measured via unscheduled breaks and unscheduled inactivity, served as a conceptualization of the misuse of time and resources dimension of counterproductive behavior. Research has found that different forms of counterproductive behaviors are positively correlated regardless of the measurement method and the misuse of time and resources dimension is

significantly correlated with all other dimensions of counterproductive behavior (Gruys & Sackett, 2003). Additionally, individuals who engage in one type of counterproductive behavior are also likely to engage in other types of counterproductive behavior. The significant integrity*condition interactions confirmed hypotheses that integrity predicted off-task behavior in non-depleted, but not depleted, conditions. Past research has found integrity to be a consistent predictor of counterproductive behavior in a variety of forms (Ones et al., 1993). Given the interrelationships between counterproductive behavior dimensions, one can expect the dynamic between integrity, ego depletion, and counterproductive behavior to hold for other types of CWB. As such, these results are important not only for identifying situations (i.e., ego depletion) where individuals might spend time off task, but also where they might engage in other counterproductive behaviors, such as committing theft or falsifying documents.

Previous research had found interactions between integrity and external factors (e.g., perceptions of CWB deterrence norms, engagement; Fine et al., 2010) in predicting CWB. However, differences in CWB across factors were limited to those who were lower in integrity and no differences in CWB were seen among high integrity individuals. Although not statistically significant, the present research points to ego depletion impacting those who are high in integrity, increasing their engagement in off-task behavior compared to non-depleted situations. That integrity was not predictive of counterproductive behavior in the depletion condition is noteworthy. These results should not deter organizations from using integrity tests in their selection systems, as integrity remains a strong predictor of job performance and counterproductive behavior. However,

these results call for greater attention to situational factors that might impact otherwise high integrity individuals and lead to incidents of counterproductive behavior.

Situational factors. Although integrity serves as a clear predictor of counterproductive behavior, this relationship might not hold under adverse conditions (i.e., ego depletion). This dynamic would put greater emphasis on identifying work situations that may lead to ego depletion. Although it is unlikely that an employee would be required to perform the white bear/zoo task on the job, a wide variety of behaviors have been found to result in ego depletion.

Difficult or challenging tasks, which require complex cognitive functioning, have been found to result in ego depletion even when such tasks do not require explicit overriding of one's thoughts or impulses (Hagger et al., 2010). Tasks requiring complex cognitive functioning are common in organizations. In situations requiring ongoing performance of cognitively complex tasks, the potential for counterproductive behavior would seem to be greater. Again, this is particularly noteworthy among individuals who are high in integrity and would otherwise not engage in counterproductive behaviors. Another situation that might be susceptible to depletion-induced counterproductive behavior is one involving high maintenance social coordination (i.e., interdependence) tasks. That is to say, when individuals work together inefficiently on interdependent tasks, ego depletion can occur (Finkel et al., 2006). This would likely have implications for counterproductive behavior in teams. Despite high levels of integrity among members, counterproductive behaviors might be more present in team environments when inefficient interactions are present.

Research has previously identified environmental and situational factors such as perceptions of injustice (Dailey & Kirk 1992; Greenberg 1990, 1993; Skarlicki & Folger 1997), work stress and frustration (Chen & Spector 1992; Fox & Spector 1999) as predictors of counterproductive behaviors. However, these factors appear to be distinct from situations involving ego depletion in that they more closely identify perceptual problems. More objective measures of situational factors (e.g., rules/procedures, availability of supplies, workload) are also more stable in nature. Furthermore, Marcus and Schuler (2004) found that external events (e.g., norms, sanctions, monitoring) and/or perceptions of events (e.g., frustration, inequity, injustice) were not significant predictors of general counterproductive behavior after accounting for internal control and motivation variables. It was only for those with low internal controls that these triggers were significantly related to GCB. Moreover, internal controls were the most important predictor of GCB.

In contrast with other situational factors, depletion represents a change in one's internal controls and can occur within a relatively short timeframe and still produce impairment of performance or enhancement of undesired behaviors. Depletion was induced in the present investigation in just 5 minutes and counterproductive behavior was impacted over the subsequent 45 minutes. Applied to an actual work situation, a temporary spike in workload, particularly one involving high cognitive demands, might result in an increase in counterproductive behaviors among individuals who are high in integrity. Ego depletion appears to be a distinct process among situational factors

impacting counterproductive behaviors. The present study reinforces the need for further examination of this relationship.

Depletion prevention. Although the interaction effect was relatively small (R^2 = .018-.022, depending on the measure), this could have a large impact on organizations. Organizations should seek ways to counteract this effect. The present investigation reveals one possible way to achieve this.

The model was not predictive of time spent during scheduled breaks. The current results may indicate that if given adequate break opportunities, individuals will take equal amount of break time regardless of how much they are depleted and how high or low they are in integrity. This is important for organizations concerned about how depletion among its employees might lead to counterproductive behaviors. Providing adequate break opportunities might reduce the likelihood that individuals engage in off-task behavior when depleted.

Previous research has also found that motivation may play a role in the extent to which depletion impacts future performance. Emphasizing the importance or meaningfulness of post-depletion tasks and the relationship between effort and performance (Muraven & Slessareva, 2003) has been found to increase motivation to complete such tasks and reduce the effects of depletion. Although behavioral interventions at the moment of depletion are impractical, providing clear links between performance (not engaging in counterproductive behaviors) and positive personal outcomes might serve to reduce the impact of ego depletion in an organization. Clearly establishing the link between effort, performance, and valued outcomes is a hallmark of

the expectancy theory of motivation (Vroom, 1964). Furthermore, autonomy has also been shown to lessen the impact of ego depletion via an increase in intrinsic motivation (Moller, Deci, & Ryan, 2006; Muraven, Gagne, & Rosman, 2008). Providing autonomy support and emphasizing a sense of self-determination in employees may also serve to reduce the likelihood that ego depletion will lead to increases in counterproductive behaviors.

Finally, researchers have previously stated that self-control can increase in capacity. Self-regulation training strategies such as actively regulating one's mood, controlling one's speech, participating in studying programs, and engaging in a financial monitoring program have been shown to reduce the effect of ego depletion on self-control dependent tasks (Gailliot et al., 2007; Muraven, Baumeister, & Tice, 1999; Oaten & Cheng, 2006, 2007). Marcus and Schuler (2004) previously found that elements of integrity were not significant predictors of general counterproductive behavior after controlling for self-control. In addition to an organization's desire for employees who are higher in dispositional self-control, they would be well-served to implement strategies aimed at increasing self-control capacity. Individuals who are better at restraining impulses and behaviors might be less likely to resist the temptation to engage in counterproductive behaviors when depleted. However, this might be limited, as evidenced by the fact that individuals who were high in integrity engaged in off-task behavior when depleted. Integrity was found to be positively and significantly predicted by self-control; as such high integrity individuals would also be higher in self-control.

Although the limits of self-regulation training warrant further investigation, past results support their usefulness.

Limitations and Future Directions

Study 1. All hypotheses were confirmed, which provides clear evidence that self-control is a significant contributor to integrity, even beyond conscientiousness and the dimensions of personality. The contribution of self-control to the variance in integrity was greater than conscientiousness' contribution. Still, a majority of the variance in integrity is left unexplained. Results using the HEXACO model to explain integrity have yielded similar values (Lee et al., 2005) and may serve as an avenue for future research. Furthermore, the relationship between self-control and the HEXACO model is yet unexamined.

Future research should investigate the relative importance of self-control and the dimensions of personality (particularly agreeableness and conscientiousness) in our understanding of integrity to confirm the hierarchy found in the present study. Agreeableness was the strongest contributor to the variance in integrity, but most research has placed agreeableness behind conscientiousness in explaining integrity. Given that conscientiousness' contribution was substantially reduced when self-control was included, whereas agreeableness remained the strongest contributor in both models, this deserves further attention.

Replication of the present study is also warranted, particularly making use of additional measures of the variables. Again, it is possible that the order of relationships is unique to the current measures, as previous research that has found similar magnitude of

results between integrity, agreeableness, and conscientiousness has used the EII measure of integrity. Numerous physical measures of self-control have been used in prior studies, including the length of time able to spend drinking a bad-tasting beverage (Vohs et al., 2008); thought suppression (Gailliot et al., 2007); affect regulation (Baumeister et al., 1998); and task persistence (Schmeichel & Vohs, 2009). The current results would also be strengthened by incorporating more "objective" measures of self-control.

Study 2. It was theorized that off-task behavior would also manifest itself during the scheduled break opportunities, with depleted and low integrity individuals taking longer breaks. This did not occur. The question of the depletion manipulation aside, there was no relationship between the model and time spent during scheduled breaks. Integrity has proven to be a reliable and valid predictor of many elements of counterproductive work behavior (generally at moderate levels). The present sample was sufficient to have detected a typical integrity-CWB relationship. The average time spent during scheduled breaks was nearly nine minutes (out of a possible 45 minutes during the session). The break schedule was set at every eight questions as an attempt to elicit a greater range of behavior. This frequency and opportunity for lengthy breaks is likely not representative of a typical job situation. However, early pilot testing suggested a need for a greater number or break opportunities because a number of participants were presented with limited opportunities. Possible conclusions are that time spent during scheduled breaks is not a representative measure of the misuse of time and resources dimension of counterproductive behavior or that the lack of relationship is a product of having too

many scheduled breaks. Future research should examine how integrity and ego depletion interact to impact off-task behavior when scheduled breaks are less frequent.

Another alternative for future research might be to provide the same frequency of scheduled break opportunities, but to suggest a length of time for each break. Participants were not given any instructions as to the length of time they could or should spend during the scheduled breaks. Those who asked were informed that there was no set time and could take as much time as they wanted or needed. Prior research has found that individuals who are lower in integrity tend to see dishonest behavior as being more normal and occurring more frequently (Murphy, 2000). It was thought that this difference in individual perception would allow differences in integrity to have an impact on time spent during the scheduled breaks. However, that did not appear to happen. Fine et al. (2010) found that perceptions of security control norms moderated the relationship between integrity and counterproductive behavior. Providing a baseline for what typical behavior is might serve to better focus the measures of off-task behavior in scheduled break opportunities.

Unscheduled break time and, to a lesser extent, unscheduled inactivity time appear to be representative measures of counterproductive work behavior within the dimension of misuse of time and resources. The relationship between integrity and unscheduled break time in the control condition was nearly identical to the meta-analytic results (Ones et al., 1993) of integrity's prediction of CWB. However, the overall model and the interaction were smaller in magnitude than anticipated. Given the average time spent in scheduled breaks, it is possible that participants generally did not feel a need to

take additional unscheduled breaks. That is, much of the desire or temptation participants might have felt to spend time off task was satiated by the regular break opportunities provided to them. Does providing frequent scheduled break opportunities lessen the likelihood that individuals will engage in off-task behavior? If so, at what point does this occur? Even though ego depletion condition was not predictive of any of the dependent variables, it has been found to increase the likelihood of counterproductive behaviors in prior research (Mead et al., 2009; Vohs et al., 2008). Researchers would be well served to examine methods and procedures that might lessen the impact that depletion has on these behaviors. Future studies seeking to tap this dimension might also reduce the number of scheduled breaks. A scenario that has limited or no scheduled break opportunities might better allow for a greater range of off-task behavior to occur. Likewise, future research should examine how ego depletion fits in with other situational factors (e.g., injustice, stress) that have been found to impact counterproductive behaviors. Past and present results would seem to indicate that situational factors are less important for those who are higher in dispositional self-control and integrity, but that they would impact all individuals when depleted. This warrants further investigation.

A different measure of behavior might also be needed. Electronic screen captures appeared to provide an accurate snapshot of the relevant behavior engaged in during the session, but they are not without limitations. We cannot definitively account for all off-task behavior (i.e., any time participants spent reading a magazine or getting a drink that occurred outside the scheduled break times). However, attempts to account for this by incorporating measures of unscheduled inactivity were largely successful. The measure

was significantly correlated with unscheduled breaks and the model explained a larger percentage of the variance in the resulting unscheduled breaks + unscheduled inactivity composite than in the full composite that also contained time spent during scheduled break opportunities. Examination of the interaction effect of this unscheduled composite revealed the same pattern, such that integrity was only predictive of off-task behavior in the control condition. That being said, visual observance or video recording of all behavior would be a useful supplement or alternative in future research.

Replication of the present investigation is warranted, particularly given the apparent depletion that occurred in the control condition. Further examination of this is clearly needed. Regardless, the results confirmed that integrity and ego depletion interact to impact off-task behavior. Although integrity serves as a clear predictor of counterproductive behavior, adverse conditions can negate this relationship.

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Appendix A

A Priori Power Analysis

Study 1

Faul, Erdfelder, Buchner, and Lang (2009) developed a program (G*Power) to estimate the power of various models. Based on previous research involving the variables of interest, we estimated the total sample size needed to detect our proposed effects. In their reference manual, Faul et al. (2009) recommended analyzing each effect (main and interaction) separately, noting that whichever effect requires the largest sample size would be sufficient to also detect the other effects.

Murphy and Lee (1994a) found that personality accounted for 44% of the variance in the Performance subscale of the PDI Employment inventory, which the authors describe as, "conceptually closest to an overall honesty or integrity score" (p. 416). Conversely, personality accounted for 18% of the variance in the Honesty scale of the London House Personnel Selection Inventory (PSI), an overt integrity measure. Taking the smaller of the two estimations (R^2 = .18) would yield an effect size of approximately .22 ($f^2 = \frac{R^2}{1-R^2}$ Cohen, 1992). Given that the dimensions of personality were to be treated as separate predictors, 65 participants was expected be required to detect this effect with power of .80 (Faul et al., 2009).

Tangney et al. (2004) found significant relationships between self-control and dimensions of personality, similar to the integrity-personality relationship. Marcus and Schuler (2004) found that self-control and aspects of integrity related to control accounted for 24% of the variance in predicting counterproductive behavior. Across the dimensions of integrity measured, self-control accounted for an average of 10.4% of the variance (again, no scale-level analyses were performed), an effect size of approximately

f^2 = .12. To measure the impact of self-control on integrity, at least 68 participants were estimated to be needed at a power magnitude of .80 (Faul et al., 2009). As such, a sample of 75 participants was set as the minimum to examine hypothesis 1.

Study 2

In their meta-analysis, Ones et al. (1993) found that the mean observed (uncorrected) correlation for integrity in predicting CWB was .33, and .39 for overt measures. Across all moderators examined, the current investigation mostly closely paralleled concurrent validation of externally measured broad counterproductive behaviors among employees. This combination of moderator variables predicted at .71 (a value the authors note is likely an overestimate). Conversely, within the same moderators, the average correlation for applicants was .22 (however, this was based on only two correlations). It was expected that the correlation between integrity and off-task behavior in this situation would fall somewhere between .22 and .71, with the overall overt value of .39 providing a reasonable middle ground. According to Cohen (1992), this falls between a moderate (r = .30) and large (r = .50) effect size for a correlation. Based on these estimates, approximately 39 participants were expected to be needed to test the relationship between integrity and off-task behavior at a power magnitude of .80 (Faul et al., 2009).

Vohs et al. (2008) found that ego depletion was a significant predictor of off-task behavior: $t(22) = 2.43$, $p < .05$. Based on the means and standard deviations reported, these results correspond to an effect size of $d = 1.07$ ($d = \frac{\bar{x}_1 - \bar{x}_2}{s}$; Soper, 2011) or a

correlation coefficient of .47 ($r = \sqrt{\frac{d^2}{d^2+4}}$; Aaron, Kromrey, & Ferron, 1998). This would be classified as a large effect (Cohen, 1992). In order to test the relationship between ego depletion and off-task behavior only 30 participants were expected to be required to detect an effect at a power level of .80 (Faul et al., 2009).

Understanding that after partialling the contribution of each predictor will be lower than the above estimates, we took the smaller of the relationships (r = .39) as the estimate for R, with two predictors, which required 57 participants. This would be a conservative estimate for the number of participants required to detect the proposed main effects of integrity and ego depletion on off-task behavior.

However, an interaction between integrity and ego depletion was also expected. The central question, therefore, was what sample size was necessary to detect an interaction between integrity and ego depletion. Previous research did not dictate what the magnitude of the interaction effect might be. According to Cohen (1992), a small effect size in multiple correlation is .02 and a medium effect is .15. Taking the average of these two effect sizes (f^2 = .085), a minimum sample size of 95 was thought to be needed.

In order to examine the proposed moderated relationship, we also investigated the difference in relationship between integrity and off-task behavior across depletion conditions. Again, based on Ones et al.'s (1993) meta-analysis, a correlation of .39 between integrity and off-task behavior was anticipated in non-depleted conditions and there was expected to be no relationship between integrity and off-task behavior under depleted conditions. Lucas and Friedrich (2005) previously used the EII (Ryan and Sackett, 1987) in a college student population and found mean scores of 227.5 (slightly

above the arithmetic mean of possible scores of 210.5) with a standard deviation of 28.2 and internal consistency of .93. Although the present investigation of off-task behavior was modeled after Vohs et al.'s (2008) study, their results were tempered somewhat by the relatively small sample size (each condition contained only 12 participants). Although the results of Vohs et al. (2008) conformed to the pattern of ego depletion's impact on self-control dependent behaviors, the small sample in the study gave pause to extrapolating the results as a benchmark of off-task behavior.

Rather, Gruys and Sackett (2003) identified the misuse of time and resources dimension of counterproductive behavior as having a mean score of 2.81 (out of 7) with a standard deviation of 1.13 and internal consistency of .90. This dimension contained the behaviors such as spending time on the Internet for reasons not related to work and wasting time on the job, which were the main measures of off-task behavior used in the present study (see Appendix F more information). Gruys and Sackett's (2003) results were based on separate samples of 343 adults and 115 undergraduate students, yielding nearly identical results. The consistency of these results made them better suited as benchmarks. Based on these values a power level of .80 could be achieved with 152 total participants (Faul et al., 2009). In conjunction with the estimations based on the anticipated effect size, these analyses provide a reasonable guideline for the present study. Therefore, a minimum of 95, with a benchmark of 152, participants was planned to be used in study 2.

Appendix B

Procedures for Study 1

Script for Data Collection Session – Study 1

[ADDRESS CLASSROOM OF STUDENTS] Good morning/afternoon/evening. My name is _____, and I am conducting a research project. I'll take just a couple minutes to describe the project.

This project will only require about 30 minutes of your time and will be completed via the Internet. In order to complete the project I will just need your email address. This will allow me to track completion of the project and ensure you receive credit for your participation. However, no identifying information will be gathered in the project.

If you agree to participate in the project I will email you a link to the survey, which will include instructions on how to complete it. You should complete the questionnaires in a single sitting.

Are there any questions? **[ANSWER ANY QUESTIONS.]** Remember that all responses will be completely confidential and there is no identifying information contained within any of the measures. You will receive an email within the next 24 hours. Thank you for agreeing to participate.

Appendix C

Informed Consent

CONSENT TO PARTICIPATE
DEPARTMENT OF MANAGEMENT
THE UNIVERSITY OF TENNESSEE

Before beginning the survey, you must formally agree to participate. Please read the following informed consent information and agree to each. There are 3 consent sections and you must agree to each. If you do not agree to participate, select "I Do Not Consent" and you will be exited from the survey.

This is a research study to examine the relationship among personality-type traits.

In this study you will be required to complete three questionnaires relating to personality-type traits and write one short essay.

After the study is complete, all data and related information will be kept in a locked laboratory. No identifying information will be included in the data. The study will require less than one hour of your time.

- **I Agree – Continue**
- **I Do Not Consent**

There are no known or foreseeable risks for this study.

This research may expand our understanding of how various personality-type traits are related. This may result in a more productive work environment for employees.

Any information about you obtained in this study will be kept strictly confidential and you will not be identified in any report or publication. No reference will be made in oral or written reports which could link participants to the study. Data will be stored securely and will be made available only to persons conducting the study. Neither faculty nor other students will have access to your responses.

In exchange for my participation, you will receive [X] extra credit points toward your [COURSE NAME] grade. Credit will be earned upon completion of the study.

- **I Agree – Continue**
- **I Do Not Consent**

The University of Tennessee does not automatically reimburse subjects for medical claims or other compensation. If physical injury is suffered in the course of research, or for more information, please notify the investigator in charge (Joshua Bazzy; 974-1674).

If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the researcher, Joshua Bazzy, at 408 Stokely Management Center, and 974-1674. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at 974-3466.

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed.

I have read the above information and I agree to participate in this study. A copy of this consent document will be available upon request.

- **I Consent**
- **I Do Not Consent**

CONSENT TO PARTICIPATE
DEPARTMENT OF MANAGEMENT
THE UNIVERSITY OF TENNESSEE

Before beginning the survey, you must formally agree to participate. Please read the following informed consent information and agree to each. There are 3 consent sections and you must agree to each. If you do not agree to participate, select "I Do Not Consent" and you will be exited from the survey.

This is a research study to examine the relationship between individual differences and problem-solving.

In this study you will be required to complete an individual difference measure and a problem-solving task. You will also respond to a series of questions to help establish norms for university students. Only the individual difference measure will be completed at this time.

After the study is complete, all data and related information will be kept in a locked laboratory. No identifying information will be included in the data. The study will require less than one hour of your time.

- **I Agree – Continue**
- **I Do Not Consent**

There are no known or foreseeable risks for this study.

This research may expand our understanding of traits and tasks are related. This may result in a more productive work environment for employees.

Any information about you obtained in this study will be kept strictly confidential and you will not be identified in any report or publication. No reference will be made in oral or written reports which could link participants to the study. Data will be stored securely and will be made available only to persons conducting the study. Neither faculty nor other students will have access to your responses.

In exchange for my participation, you will receive [X] extra credit points toward your [COURSE NAME] grade. Credit will be earned upon completion of the study.

- **I Agree – Continue**
- **I Do Not Consent**

The University of Tennessee does not automatically reimburse subjects for medical claims or other compensation. If physical injury is suffered in the course of research, or for more information, please notify the investigator in charge (Joshua Bazzy; 974-1674).

If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the researcher, Joshua Bazzy, at 408 Stokely Management Center, and 974-1674. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at 974-3466.

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I have read the above information and I agree to participate in this study. A copy of this consent document will be available upon request.

- **I Consent**
- **I Do Not Consent**

CONSENT TO PARTICIPATE
DEPARTMENT OF MANAGEMENT
THE UNIVERSITY OF TENNESSEE

Introduction	This research study seeks to establish norms for university students.
Activities	In this study you will be required to answer a series of math questions. After the study is complete, all data and related information will be kept in a locked laboratory. No identifying information will be included in the data. The study will require less than one hour of your time.
Risks	There are no known or foreseeable risks for this study.
Benefits	This research may help us gain a greater understanding of student knowledge within the university.
Confidentiality	Any information about you obtained in this study will be kept strictly confidential and you will not be identified in any report or publication. No reference will be made in oral or written reports which could link participants to the study. Data will be stored securely and will be made available only to persons conducting the study. Neither faculty nor other students will have access to your responses.
Compensation	In exchange for my participation, you will receive [X] extra credit points toward your [COURSE NAME] grade. Credit will be earned upon completion of the study.
Emergency Medical Treatment	The University of Tennessee does not automatically reimburse subjects for medical claims or other compensation. If physical injury is suffered in the course of research, or for more information, please notify the investigator in charge (Joshua Bazzy; 974-1674).

Initials _____

Contact Information If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the researcher, Joshua Bazzy, at 408 Stokely Management Center, and 974-1674. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at 974-3466.

Participation Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed.

Joshua Bazzy, M.S.	408 Stokely Manag Center	**Dave Woehr, Ph.D.**	974-1673
Principal Investigator	974-1674	Faculty Advisor	

Consent I have read the above information. I have received a copy of this form. I agree to participate in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Appendix D

Measures

Demographic Questionnaire

The following information will be used ONLY for statistical purposes. All responses will be kept strictly confidential.

Demographic Information:

Age: _____

Major: _____

Gender
(Circle one): M F

Grade Point Average (GPA): _____

Race
(Circle one): African American
Asian/Pacific Islander
Native American
Caucasian
Other: _____

Class Rank
(Circle one): Freshman
Sophomore
Junior
Senior
Grad Student

Work Experience:

Do you currently hold a job? Y N

If yes,

1. How long have you been at your current job? _____ Months

2. How many hours per week do you work? _____ Hours per week

3. Is your current job to be a career-oriented position or a job of convenience? (circle one)

Employee Integrity Index (Ryan and Sackett, 1987)

Participant ID _____

Please respond to each of the following questions using the following rating scale:

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

1. Someone who steals because his/her family is in need should not be treated the same as a common thief.*

2. Most companies take advantage of people who work for them.*

3. I've thought about taking money from an employer without actually doing it.*

4. The average employee will tell his/her boss about a fellow employee who is stealing money.

5. I have known people who have stolen money from their employer.*

6. Making personal phone calls at work without an O.K. is stealing.

7. I am too honest to steal.

8. I've thought of ways in which a dishonest person could steal from the company if a dishonest person had my job.*

9. A judge freed a worker who had stolen money from his/her employer, because the employer paid such low wages. Do you agree or disagree with the judge?*

10. I have occasionally had ideas and thoughts that I would not like other people to know about.*SD

11. The average policeman would overlook a traffic violation if offered money.*

12. I would turn in a fellow worker I saw stealing money.

13. Taking paper clips, pencils, or envelopes from a place where you work is stealing.

14. A person caught stealing $50.00 from his employer should be fired.

15. I've been tempted to steal company money to buy something I really wanted.*

16. I secretly feel good when I read about a successful robbery in the papers.*

17. Most bosses treat their employees unfairly.*

18. Nearly every worker has at some time cheated his company out of something.*

19. 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.*

20. I have on occasion been at least a little tempted to steal something.*SD

21. A person who pays back the money he/she stole from the company should be fired anyway.

22. A person could steal company merchandise for ten years without being caught.*

23. Most people I've worked with have stolen something at one time or other.*

24. If I could get into a movie without paying and be sure I wouldn't be caught, I'd do it.*

25. A life of crime would be exciting.*

26. Most people cheat on their income tax.*

27. Honesty is always the best policy.

28. I have sometimes felt like swearing.*

29. It's O.K. to lie about the past to help get a job if you will be very honest after you're hired.*

30. Someone who helped another employee steal a little merchandise from the company should be fired.

31. A person should always tell the truth.

32. I like almost everyone.SD

33. I have been approached by someone with a plan to steal something.*

34. Most people are honest only because they are afraid they'll be caught.*

35. 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.*

36. If I were given an extra 25¢ change at the supermarket, I would return it.

37. A certain degree of dishonesty is just part of human nature.*

38. I get angry when someone treats me really badly.*SD

39. I'd be willing to take a lie detector test if money was missing on the job.

40. Employers expect a certain amount of stealing.*

41. I am almost never wrong about things.*SD

42. It would be easy to steal from my employer if I wanted to.*

43. Just about everyone has shoplifted something.*

44. I am always able to accomplish my goals in life.SD

45. Most people are basically dishonest.*

46. If I found $3.00 in the coin return of a pay phone, I'd send the money to the phone company.

47. Most of my friends have taken a little money or merchandise from their employer.*

48. I sometimes think of doing dishonest things.*SD

49. A person who refuses to take a lie detector test probably has something to hide.*

50. Do you agree with the proverb "once a thief, always a thief"?*

51. Cheating a little on an expense account is really not the same as stealing.*

52. People who say they have never stolen anything are lying.*

53. An employee should be fired if the employer finds out the employee lied on the application blank.

54. A person who buys stolen merchandise is as bad as the person who originally stole it.

55. I sometimes enjoy listening to gossip.*SD

56. After waiting 20 minutes for a waitress to bring the bill, it would be O.K. to leave the restaurant without paying.*

57. Most people I've worked with have never stolen from their employer.

58. I sometimes put things off when I shouldn't.*SD

59. If I found a wallet with money, I'd return it to the owner.

60. My conscience would bother me if I cheated someone.

61. The penalties for theft are too severe.*

62. Over the last three years, what's the total dollar value of merchandise and property that you've taken from your employers?*

    a) $0
    b) $1 - $10
    c) $11-$50
    d) $51-$100
    e) over $100

63. Over the last three years, what's the total amount of money you've taken without permission from your employer?*

    a) $0
    b) $1 - $10
    c) $11-$50
    d) $51-$100
    e) over $100

64. The most expensive thing you've ever taken from a store and not paid for was worth.*

    a) $0
    b) $1 - $10
    c) $11-$50
    d) $51-$100
    e) over $100

65. What is the total amount of money you have taken without permission from places other than work, such as schools, parents, and friends?*

a) $0
b) $1 - $10
c) $11-$50
d) $51-$100
e) over $100

66. What is the dollar value of all property you have taken without permission from place other than work, such as from school or from friends?*

a) $0
b) $1 - $10
c) $11-$50
d) $51-$100
e) over $100

67. How long has it been since you have stolen money from anyone or anyplace?

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

68. 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

69. Have you ever given unauthorized discounts to friends?*

a) never
b) once
c) twice
d) a few times
e) many times

70. Have you ever knowingly purchased stolen merchandise?*

a) never
b) once
c) twice
d) a few times
e) many times

71. What percentage of employees steal something from their company?*

a) 1%
b) 10%
c) 25%
d) 50%
e) 75%

72. What percentage of employees steal over $10 worth of cash or merchandise every month?*

a) 1%
b) 10%
c) 25%
d) 50%
e) 75%

* Reverse-keyed item.

Brief Self-Control Scale (Tangney et al., 2004)

Participant ID _____

Instructions:

Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

	Not at All				Very Much
1. I am good at resisting temptation.	1	2	3	4	5
2. I have a hard time breaking bad habits.*	1	2	3	4	5
3. I am lazy.*	1	2	3	4	5
4. I say inappropriate things.*	1	2	3	4	5
5. I do certain things that are bad for me, if they are fun.*	1	2	3	4	5
6. I refuse things that are bad for me.	1	2	3	4	5
7. I wish I had more self-discipline.*	1	2	3	4	5
8. People would say that I have iron self- discipline.	1	2	3	4	5
9. Pleasure and fun sometimes keep me from getting work done.*	1	2	3	4	5
10. I have trouble concentrating.*	1	2	3	4	5
11. I am able to work effectively toward long-term goals.	1	2	3	4	5
12. Sometimes I can’t stop myself from doing something, even if I know it is wrong.*	1	2	3	4	5
13. I often act without thinking through all the alternatives.*	1	2	3	4	5

* Reverse-keyed item.

Sources of Validation Scale (Harber, 1995)

Participant ID _____

Below is a list of characteristics and values, some of which may be important to you, some of which may be unimportant. Please rank these values and qualities in order of their importance to you, from 1 to 11 (1 = most important item, 11 = least important item). Use each number only once.

_____ Artistic skills/aesthetic appreciation

_____ Sense of humor

_____ Relations with friends/family

_____ Spontaneity/living life in the moment

_____ Social skills

_____ Athletics

_____ Musical ability/appreciation

_____ Physical attractiveness

_____ Creativity

_____ Business/managerial skills

_____ Romantic values

For the next few minutes, write a brief essay explaining why your top-ranked value is important to you and describe a time in your life when it has been particularly important.

The 50-item IPIP representation of Costa and McCrae's (1992) five NEO domains (Goldberg et al., 2006)

Participant ID _____

Please respond to each of the following questions using the following rating scale:

1	2	3	4	5
Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate

1	I accept people as they are. A	1	2	3	4	5
2	I am always prepared. C	1	2	3	4	5
3	I am not easily bothered by things.* N	1	2	3	4	5
4	I am not interested in abstract ideas.* O	1	2	3	4	5
5	I am often down in the dumps. N	1	2	3	4	5
6	I am skilled in handling social situations. E	1	2	3	4	5
7	I am the life of the party. E	1	2	3	4	5
8	I am very pleased with myself.* N	1	2	3	4	5
9	I avoid philosophical discussions.* O	1	2	3	4	5
10	I believe in the importance of art. O	1	2	3	4	5
11	I believe that others have good intentions. A	1	2	3	4	5
12	I carry out my plans. C	1	2	3	4	5
13	I carry the conversation to a higher level. O	1	2	3	4	5
14	I cut others to pieces.* A	1	2	3	4	5
15	I dislike myself. N	1	2	3	4	5

16	I do just enough work to get by.* C	1	2	3	4	5
17	I do not enjoy going to art museums.* O	1	2	3	4	5
18	I do not like art.* O	1	2	3	4	5
19	I don't like to draw attention to myself.* E	1	2	3	4	5
20	I don't see things through.* C	1	2	3	4	5
21	I don't talk a lot.* E	1	2	3	4	5
22	I enjoy hearing new ideas. O	1	2	3	4	5
23	I feel comfortable around people. E	1	2	3	4	5
24	I feel comfortable with myself.* N	1	2	3	4	5
25	I find it difficult to get down to work.* C	1	2	3	4	5
26	I get back at others.* A	1	2	3	4	5
27	I get chores done right away. C	1	2	3	4	5
28	I have a good word for everyone. A	1	2	3	4	5
29	I have a sharp tongue.* A	1	2	3	4	5
30	I have a vivid imagination. O	1	2	3	4	5
31	I have frequent mood swings. N	1	2	3	4	5
32	I have little to say.* E	1	2	3	4	5
33	I insult people.* A	1	2	3	4	5
34	I keep in the background.* E	1	2	3	4	5
35	I know how to captivate people. E	1	2	3	4	5
36	I make friends easily. E	1	2	3	4	5
37	I make people feel at ease. A	1	2	3	4	5

38	I make plans and stick to them. C	1	2	3	4	5
39	I often feel blue. N	1	2	3	4	5
40	I panic easily. N	1	2	3	4	5
41	I pay attention to details. C	1	2	3	4	5
42	I rarely get irritated.* N	1	2	3	4	5
43	I respect others. A	1	2	3	4	5
44	I seldom feel blue.* N	1	2	3	4	5
45	I shirk my duties.* C	1	2	3	4	5
46	I suspect hidden motives in others.* A	1	2	3	4	5
47	I tend to vote for conservative political candidates.* O	1	2	3	4	5
48	I tend to vote for liberal political candidates. O	1	2	3	4	5
49	I waste my time.*C	1	2	3	4	5
50	I would describe my experiences as somewhat dull.* E	1	2	3	4	5

A: Agreeableness Dimension

C: Conscientiousness Dimension

N: Neuroticism Dimension

O: Openness to Experience Dimension

E: Extraversion Dimension

* Reverse-keyed item.

White Bear/Zoo Task (Burkley, 2008; Fischer et al., 2008; Muraven et al., 2002; Muraven and Slessareva, 2003; Wegner et al., 1987)

Standard Version

For this task, I want you to imagine you are visiting a zoo. Over the next 5 minutes you should write down everything and every animal that comes to mind as you imagine walking around the zoo.

White Bear Version

For this task, I want you to imagine you are visiting a zoo. Over the next 5 minutes you should write down everything and every animal that comes to mind as you imagine walking around the zoo. However, it is important that you do not think about or write about a White Bear on this trip. If you do happen to think about a White Bear, you should make a mark in the margin of the page, suppress the thought and then continue to think about other animals and situations in the zoo.

Post-Ego Depletion Questionnaire (Burkley, 2008; Muraven et al., 2006)

Participant ID _____

Please respond to each of the following questions regarding the task you just completed involving your imaginary trip to the zoo:

1. How much effort did you exert on the task?

1	2	3	4	5	6	7
None at All						Very Much

2. How difficult was it to work on the task?

1	2	3	4	5	6	7
Not at All						Very Much

3. How frustrating was that task?

1	2	3	4	5	6	7
Not at All						Very Much

4. How hard did you work at controlling your thoughts?

1	2	3	4	5	6	7
Not at All						Very Much

5. How much did you have to inhibit your thoughts?

1	2	3	4	5	6	7
Not at All						Very Much

Appendix E

Procedures for Study 2

Script for Data Collection Session – Study 2

[ADDRESS CLASSROOM OF STUDENTS] Good morning/afternoon/evening. My name is _____, and I am conducting a research project. I'll take just a couple minutes to describe the project.

This project will require about an hour of your time. You will complete a couple measures via the Internet before attending a session in person. In order to complete the project I will just need your email address. This will allow me to track completion of the project and ensure you receive credit for your participation. However, no identifying information will be gathered in the project.

If you agree to participate in the project I will email you a link to the survey, which will include instructions on how to complete it. You should complete the questionnaires in a single sitting. Most people finish in 10 or 20 minutes. You will also sign up for data collection session via a second link. You must complete the online measure before attending the session and you'll only get credit if you finish both parts.

Are there any questions? **[ANSWER ANY QUESTIONS.]** Remember that all responses will be completely confidential and there is no identifying information contained within any of the measures. You will receive an email within the next 24 hours. Thank you for agreeing to participate.

[DATA COLLECTION SESSION]

[HAVE STUDENT TAKE A SEAT UPON ARRIVAL] Good morning/afternoon/evening. Thank you for volunteering to participate in this research project. My name is _____, and I'll be leading you through today's session. Today's session will last less than one hour.

[MEASURES] You will complete a problem-solving task, followed by a brief survey and then we'll collect some normative information. Again, the purpose of this study is to examine the relationship between individual differences and problem-solving. Here is the first measure.

[GIVE HALF THE PARTICIPANTS THE STANDARD ZOO TASK.] For this task, I want you to imagine you are visiting a zoo. Over the next 5 minutes you should write down everything and every animal that comes to mind as you imagine walking around the zoo.

[GIVE HALF THE PARTICIPANTS THE WHITE BEAR ZOO TASK.] For this task, I want you to imagine you are visiting a zoo. Over the next 5 minutes you should

write down everything and every animal that comes to mind as you imagine walking around the zoo. However, it is important that you do not think about or write about a White Bear on this trip. If you do happen to think about a White Bear, you should make a mark in the margin of the page, suppress the thought and then continue to think about other animals and situations in the zoo.

[WRITTEN INSTRUCTIONS ON PAGE WILL REPLICATE VERBAL INSTRUCTIONS FOR ZOO TASK]

Are there any questions before we begin? **[ANSWER ANY QUESTIONS.]** As I said before, all responses will be kept completely confidential and there is no identifying information contained within any of the measures. Please begin.

[GIVE PARTICIPANTS THE INTERIM TASK/MANIPULATION CHECK.] Now that you have finished writing about your trip to the zoo, please take a couple minutes to respond to this survey regarding the task.

[Begin Part 2.] We will now gather some normative information. This will take approximately 45 minutes. We are working to create a database of performance among students. This database will be used to help establish norms for future students of your age and classification. In order to accomplish this, you will respond to a series of questions that are representative of knowledge gained throughout one's university education. Your responses will used in conjunction with other students. You will have 45 minutes to answer as many questions as you can or choose. There are more questions than can be answered in 45 minutes so do not worry about trying to answer them all. If you need to take a break during this time period, feel free to browse the Internet or read a magazine. There is also coffee and water if you need it. Questions should be answered without the aid of a calculator. Are there any questions before we begin?

The questions are presented to allow for breaks between each set. You will get eight questions at a time. Some suggest that taking breaks can help improve performance on the questions you attempt. Feel free to take a break in between sets of questions and whenever you’re ready just select the next set of questions and continue.

I will now direct you to the website where you will complete these questions. **[LOAD THE WEBSITE.]** Please log using this randomly assigned ID, which will also serve as your password. **[AFTER LOGGING IN, THEY WILL SEE THE “QUIZ” LISTED.]** Please click on the first Quiz listed under *UT Norms* and click on **Take** under the *Take Quiz* column. Remember, this data will only be used for creating norms within the University. You will not be “graded” based on the quantity or quality of your answers. If you are ready to begin, click **Start Quiz** and begin. Are there any questions before we begin? **[ANSWER ANY QUESTIONS.]** Okay, I’ll be back in 45 minutes.

[PROVIDE PARTICIPANTS WITH DOCUMENTATION OF COMPLETION.]

[REQUEST THAT PARTICIPANTS NOT DISCUSS THE DETAILS OF THE STUDY WITH THEIR CLASSMATES.]

Appendix F

Counterproductive Behaviors

Counterproductive behaviors are any intentional behaviors viewed by the organization as contrary to the organization's legitimate interests (Sackett, 2002). Counterproductive behaviors are difficult to detect and measure and, although a number of self-report measures have been created (e.g., Bennett & Robinson, 2000; Hakstian, Farrell, & Tweed, 2002; Paajanen, 1985), they typically assess only past behavior or behavioral likelihood.

Participant theft and tardiness are common behaviors of interest in laboratory settings, but both tend to have low base rates even in experiments designed to elicit or allow for them to occur (Marcus, Wagner, Poole, Powell, & Carswell, 2009). Reviews of counterproductive behavior have shown that different forms of counterproductive behaviors are positively correlated regardless of the measurement method (Hogan & Hogan, 1989; Hunt, 1996; Koslowsky, Sagie, Krausz, & Singer, 1997; Mikulay, Neuman, & Finkelstein, 2001; Normand, Salyards, & Mahoney, 1990; Sackett & DeVore, 2002). An examination of the various facets of counterproductive behavior allows for identification of additional avenues for assessing counterproductivity.

Analyses by Robinson and Bennett (1995) yielded a matrix for classifying counterproductive behaviors as they relate to individuals versus the organization and minor versus serious offenses. As such, they found four main classifications of behaviors: production deviance, property deviance, political deviance, and personal aggression. Behavioral examples of these categories are, respectively, wasting resources, stealing, gossiping, and sexual harassment. The individual-organization continuum mirrors earlier classification efforts (Hollinger & Clark, 1982; Mangione & Quinn, 1974) and recent

meta-analyses (e.g., Berry, Ones, & Sackett, 2007) have confirmed the individual-organization distinction in classifying and assessing deviant behavior.

Additional research has been conducted in order to further illuminate the various behaviors that exist within the broad categories of individual and organizational deviance. Gruys and Sackett (2003) identified 11 factors: theft and related factors; destruction of property; misuse of information; misuse of time and resources; unsafe behavior; poor attendance; poor quality work; alcohol use; drug use; inappropriate verbal actions; and inappropriate physical actions. Of the 11 factors, misuse of time and resources had the highest internal consistency (α = .90). Behaviors within this dimension included conducting personal business during work time, spending time on the Internet for non-work purposes, using email for personal purposes, and wasting time while on the job.

Previous research has found that off-task behavior was significantly related to unruliness and theft at moderate levels (Hunt, 1996). Gruys and Sackett (2003) found that misuse of time and resources was highly correlated with the factors of poor attendance, theft and related behaviors, and misuse of information; significant correlations were found with all other dimensions as well. Furthermore, principal components analysis revealed a single factor, suggesting that all dimensions of counterproductive behavior are related. The authors concluded that an individual who is more likely to engage in one type of counterproductive behavior will also be more likely to engage in other types of counterproductive behavior. However, base rates differ across behaviors, such that engaging in one type of behavior does not mean one will engage in all behaviors.

Berry, Ones et al. (2007) note that because constructs relate differently to various facets of deviance, examining narrow facets may allow for more direct examination of the relationships among variables. In lieu of attempting to assess all counterproductive behaviors, we focused on a category of behaviors that was likely to occur and was relatively easily detected (i.e., off-task behavior).

Prior research does point toward a relationship among integrity, ego depletion, and off-task behavior. Many off-task (or misused time) behaviors are conceptually similar to procrastination. Procrastination has been linked to poorer discipline and work performance (Shouwenburg, 1995; Tice & Baumeister, 1997) and is significantly related to conscientiousness (Johnson & Bloom, 1995; Lay, 1997), academic dishonesty (Roig & DeTommaso, 1995), and integrity (Mehrabian, 2000). Furthermore, Vohs et al. (2008) found a significant relationship between ego depletion and off-task behavior. Berry, Ones et al. (2007) found that organizational deviance (wherein off-task behavior is classified) was related to conscientiousness, agreeableness, and neuroticism, the dimensions most consistently linked to integrity (cf., Wanek et al., 2003). Ones et al. (1993) found that integrity predicted externally measured counterproductivity and that this relationship was greater for broad counterproductive behaviors, as opposed to theft admissions. These results help establish integrity, ego depletion, and off-task behavior as valid representations of our constructs of interest.

In the present study, off-task behavior was measured electronically. Screenshots were taken every second, which provided detailed information on what activities were being engaged in during the session. Any time spent browsing the Internet, sending

emails, or engaging in anything other than the quiz was counted as off-task. An activity log also recorded the computer activity during the session. Furthermore, after 30 seconds of inactivity a screensaver appeared. Time spent with the screensaver active allowed for differentiation between an individual who was actively engaged in the task and those who were truly off task. The computer logged the amount of time the screensaver was active. This also captured when off-task behavior was occurring outside of the computer (e.g., using one's phone or reading a magazine) while the assigned quiz was still active. Finally, after 60 seconds of inactivity the computer registered as "inactive" and remained so until the participant reengaged with the computer. Time spent inactive was also recorded as off-task behavior. Additionally, the length of time spent during scheduled break opportunities was also recorded. Greater length of time spent during these opportunities was also considered off task. Finally, all of the above included timestamps, which will allowed for a more complete accounting of activity during the session.

Appendix G

Tables and Figure

Table 1. Study 1 Measures

Construct	Measure
Integrity	Employee Integrity Index Ryan & Sackett (1987)
Self-Control	Brief Self-Control Scale Tangney et al. (2004)
Self-Affirmation	Sources of Validation Scale Harber (1995)
Personality (Big 5)	50-item IPIP Representation Goldberg et al. (2006)

Table 2. Intercorrelations Between Constructs

Construct	Mean	SD	1	2	3	4	5	6	7	8
1. Integrity	224.0	22.6	(.90)	.34*	.46*	-.29*	-.08	.03	.43*	-.40*
2. Conscientiousness	36.6	5.9		(.84)	.39*	-.35*	.09*	.30*	.66*	-.32*
3. Agreeableness	36.2	5.2			(.77)	-.34*	.12	.15	.33*	-.19*
4. Neuroticism	24.0	6.1				(.83)	.01	-.26*	-.42*	.31*
5. Openness	33.9	6.7					(.81)	.28*	.00	.10
6. Extraversion	36.8	5.9						(.84)	.06	.01
7. Self-Control	41.1	7.4							(.81)	-.42*
8. Social Desirability (Integrity Scale)	29.5**	4.4								(.59)

Notes: Integrity scale range (61-305), Personality dimensions scale ranges (10-50), Self-Control scale range (13-65), Social Desirability scale range (9-45).
α located along the diagonal
* $p < .01$
** Low scores indicate socially desirable responding

Table 3. ANOVAs for Order Effects

Construct	df	*F*	*p*
Integrity	(1,165)	.923	.39
Conscientiousness	(1,165)	.051	.82
Agreeableness	(1,165)	.002	.96
Neuroticism	(1,165)	1.096	.30
Openness	(1,165)	.329	.57
Extraversion	(1,165)	.060	.81
Self-Control	(1,165)	.251	.62

Table 4. Variance Explained by Personality & Self-Control

Model Change	df	R	R^2	R^2 Change	F Change	Sig F
Personality	(5,150)	.522	.273	.273	11.245	.000
Personality + Self-Control	(1,149)	.560	.314	.041	8.974	.003

Table 5. Partial Correlations Between Integrity and Personality Dimensions Controlling for Self-Control

Construct	Mean	SD	1	2	3	4	5	6
1. Integrity	224.0	22.6	(.90)	.07	.37*	-.14	-.08	.00
2. Conscientiousness	36.6	5.9		(.84)	.24*	-.10	.12	.35*
3. Agreeableness	36.2	5.2			(.77)	-.23*	.13	.14
4. Neuroticism	24.0	6.1				(.83)	.01	-.26*
5. Openness	33.9	6.7					(.81)	.28*
6. Extraversion	36.8	5.9						(.84)

Notes: Integrity scale range (61-305), Personality dimensions scale ranges (10-50).
α located along the diagonal
* $p < .01$

Table 6. Partial Correlations Between Integrity and Self-Control Controlling for Personality Dimensions

Construct	Mean	SD	Integrity	Self-Control
1. Integrity	224.0	22.6	(.90)	.24*
2. Self-Control	41.1	7.4		(.84)

Notes: Integrity scale range (61-305), Self-Control scale range (13-65).
α located along the diagonal
* $p < .01$

Table 7. Dominance Analysis for Personality Dimensions & Self-Control

Model	General Dominance	Rescaled Dominance*
Conscientiousness	0.0394	12.55%
Agreeableness	0.1366	43.50%
Neuroticism	0.0311	9.89%
Openness to Experience	0.0094	3.00%
Extraversion	0.0023	0.75%
Self-Control	0.0952	30.31%
Total Variance Accounted	0.3140	

*proportion of variance accounted for, attributable to each variable

Table 8. Study 1 Summary – Hypotheses and Analyses

Hypothesis	Confirmed?	Details
1A: Self-Control-Integrity Positive & Significant Correlation	Yes	S-C-Integrity: $r = .43$, $p < .01$
1B: C, A, N Strongest Relationship to Integrity Among Personality Dimensions	Yes	C-Integrity: $r = .34$, $p < .01$ A-Integrity: $r = .46$, $p < .01$ N-Integrity: $r = -.29$, $p < .01$
1C: Self-Control-Integrity Significant Beyond Personality Dimensions	Yes	Personality $R^2 = .273$, $p < .001$ S-C R^2 Change = .041, $p < .01$

Additional Analyses	Details
Partial Correlations	C-Integrity: *ns* when controlling for S-C S-C-Integrity: $r = .24$, $p < .01$ when controlling for C
Dominance Analysis: Variance Explained in Integrity	A: 43.5% of explained; 13.7% of total S-C: 30.3% of explained; 9.5% of total C: 12.5% of explained; 3.9% of total

Notes: S-C: Self-Control, C: Conscientiousness, A: Agreeableness, N: Neuroticism

Table 9. Study 2 Measures

Construct	Measure
Integrity	Employee Integrity Index Ryan & Sackett (1987)
Ego Depletion Condition	White Bear/Zoo Task Fischer et al. (2008); Wegner et al. (1987)
Interim Task	Task Perceptions Questionnaire (Depletion Check) Burkley (2008); Muraven et al. (2006)
Off-Task Behavior	Full Composite: Standardized Scheduled Breaks + Standardized Unscheduled Breaks + Standardized Unscheduled Inactivity
	Unscheduled Composite: Standardized Unscheduled Breaks + Standardized Unscheduled Inactivity
	Unscheduled Breaks
	Unscheduled Inactivity
	Scheduled Breaks

Table 10. Means for Integrity

Construct		Mean	SD	α
Integrity	Female	227.17	21.66	
	Male	217.35	23.19	
	Total	224.08	22.60	.90
Social Desirability* (Integrity Scale)		24.57*	4.11	

Notes: Integrity scale range (61-305), Social Desirability scale range (9-45).
* Low scores indicate socially desirable responding
** Time in Seconds
***Time elapsed after 1 minute of computer inactivity until activity resumes

Table 11. Depletion Manipulation Check Data

Item	Condition	N	Mean	St. Dev.	df	F
Effort	Control	107	5.03	1.29		
	White Bear	108	5.03	1.21	(1,213)	.001
Difficulty	Control	107	2.61	1.43		
	White Bear	108	3.23	1.52	(1,213)	9.592*
Frustrating	Control	107	2.43	1.52		
	White Bear	108	3.15	1.61	(1,213)	11.100*
Controlled Thoughts	Control	107	4.58	1.28		
	White Bear	108	4.94	1.51	(1,213)	3.617
Inhibited Thoughts	Control	107	3.79	1.48		
	White Bear	108	4.69	1.47	(1,213)	20.450*
Depletion Composite**	Control	107	4.18	1.19		
	White Bear	108	4.82	1.37	(1,213)	13.171*

* $p < .01$
**Mean responses on Controlled Thoughts and Inhibited Thoughts items

Table 12. Off-Task Behavior Means and Correlations

Measure	N	Mean	St. Dev.	1	2	3*	4
1. Scheduled Break Time	216	513.79	367.99		-.03	-.04	-.02
2. Unscheduled Break Time	216	15.43	77.66			-.00	.12**
3. Unscheduled Screensaver Time*	185	83.62	170.91				.96***
4. Unscheduled Inactive Time	216	75.52	295.66				

*Correlations with unscheduled screensaver time include only participants for which both measures were available (i.e., 185 participants)
**$p < .05$
***$p < .01$

Table 13. Off-Task Behavior Composite Model Summary

Predictor	b	Std. Error	t	Sig
(Constant)	-.0038	.1653	-.0230	.9817
Integrity	-.0296	.0072	-4.1125	.0001
Condition	-.0127	.2328	.0545	.9566
Integrity*Condition	.0208	.0102	2.0440	.0422

Model	df	F	R^2	Sig
Full	(3,212)	6.1449	.0800	.0005
Interaction	(1,212)	4.1780	.0181	.0422

Table 14. Effect of Integrity on Off-Task Behavior Composite Between Conditions

Condition	b	Std. Error	t	Sig	LLCI(b)	ULCI(b)
Control	-.0296	.0072	-4.1125	.0001	-.0438	-.0154
White Bear	-.0088	.0072	-1.2319	.2193	-.0230	.0053

Table 15. Effect of Depletion Condition on Off-Task Behavior Composite Across Levels of Integrity

Integrity	b	Std. Error	t	Sig	LLCI(b)	ULCI(b)
High (+1SD)	.4926	.3295	1.4948	.1365	-.1570	1.1422
Mean	.0158	.2327	.0667	.9461	-.4430	.4746
Low (-1SD)	-.4611	.3295	-1.3992	.1632	-1.1106	.1885

Table 16. Unscheduled Breaks + Unscheduled Inactivity Composite Model Summary

Predictor	b	Std. Error	t	Sig
(Constant)	.0286	.1378	.2076	.8358
Integrity	-.0280	.0060	-4.6730	.0000
Condition	-.0518	.1940	-.2668	.7899
Integrity*Condition	.0194	.0085	2.2900	.0230

Model	df	F	R^2	Sig
Full	(3,212)	7.9981	.1017	.0000
Interaction	(1,212)	5.2439	.0222	.0230

Table 17. Effect of Integrity on Unscheduled Breaks + Unscheduled Inactivity Composite Between Conditions

Condition	b	Std. Error	t	Sig	LLCI(b)	ULCI(b)
Control	-.0280	.0060	-4.6730	.0000	-.0399	-.0162
White Bear	-.0086	.0060	-1.4461	.1496	-.0204	.0031

Table 18. Effect of Depletion Condition on Unscheduled Breaks + Unscheduled Inactivity Composite Across Levels of Integrity

Integrity	b	Std. Error	t	Sig	LLCI(b)	ULCI(b)
High (+1SD)	.3963	.2746	1.4431	.1505	-.1450	.9376
Mean	-.0489	.1940	-.2521	.8012	-.4312	.3334
Low (-1SD)	-.4941	.2746	-1.7991	.0734	-1.0354	.0473

Table 19. Unscheduled Breaks Model Summary

Predictor	b	Std. Error	t	Sig
(Constant)	18.8573	7.3116	2.5791	.0106
Integrity	-1.1745	.3185	-3.6880	.0003
Condition	-6.6009	10.2927	-.6413	.5220
Integrity*Condition	.9072	.4495	2.0181	.0448

Model	df	F	R^2	Sig
Full	(3,212)	4.9033	.0649	.0026
Interaction	(1,212)	4.0728	.0180	.0448

Table 20. Effect of Integrity on Unscheduled Breaks Between Conditions

Condition	b	Std. Error	t	Sig	LLCI(b)	ULCI(b)
Control	-1.1745	.3185	-3.6880	.0003	-1.8023	-.5467
White Bear	-.2673	.3173	-.8425	.4005	-.8927	.3581

Table 21. Effect of Depletion Condition on Unscheduled Breaks Across Levels of Integrity

Integrity	b	Std. Error	t	Sig	LLCI(b)	ULCI(b)
High (+1SD)	14.3521	14.5725	.9849	.3258	-14.3736	43.0778
Mean	-6.4668	10.2925	-.6283	.5305	-26.7555	13.8220
Low (-1SD)	-27.2856	14.5724	-1.8724	.0625	-56.0109	1.4397

Table 22. Unscheduled Inactivity Model Summary

Predictor	b	Std. Error	t	Sig
(Constant)	56.5862	15.7344	3.5963	.0004
Integrity	-2.1440	.6853	-3.1285	.0020
Condition	5.5148	22.1496	.2490	.8036
Integrity*Condition	1.2806	.9674	1.3238	.1870

Model	df	F	R^2	Sig
Full	(3,212)	3.8172	.0512	.0108
Interaction	(1,212)	1.7523	.0078	.1870

Table 23. Scheduled Break Time Model Summary

Predictor	b	Std. Error	t	Sig
(Constant)	501.8668	35.7954	14.0204	.0000
Integrity	-.5784	1.5591	-.3710	.7110
Condition	23.7141	50.3900	.4706	.6384
Integrity*Condition	.5075	2.2008	.2306	.8179

Model	df	F	R^2	Sig
Full	(3,212)	.1208	.0017	.9478
Interaction	(1,212)	.0532	.0003	.8179

Table 24. Study 2 Summary – Hypotheses and Analyses

Hypothesis	Confirmed?	Details
2A: Integrity*Condition Significant	Yes	Interaction added significantly to variance in model over Integrity & Condition
2B: Integrity-Off-Task Weaker in Depleted Condition	Partially	Integrity-Off-Task significant in control, but not depleted, condition. However, overlap in beta-weights
2C: Off-Task Greater in Depleted Condition for High Integrity Participants	No	Off-Task behavior did not differ as a function of condition for high integrity participants
2D: Off-Task No Different Across Conditions for Low Integrity Participants	Yes	Off-Task behavior did not differ as a function of condition for low integrity participants

Additional Analyses	Details
Model-Off-Task^ ^Standardized Unscheduled Breaks + Standardized Unscheduled Inactivity	Significant interaction; Interaction pattern same as in full composite
Model-Off-Task^ ^Unscheduled Breaks	Significant interaction; Interaction pattern same as in full composite
Model-Off-Task^ ^Unscheduled Inactivity	Significant model; Non-significant interaction
Model-Off-Task^ ^Scheduled Breaks	Non-significant model and interaction

Notes: ^ indicates specific measure of off-task behavior in additional analyses, identified below each heading.

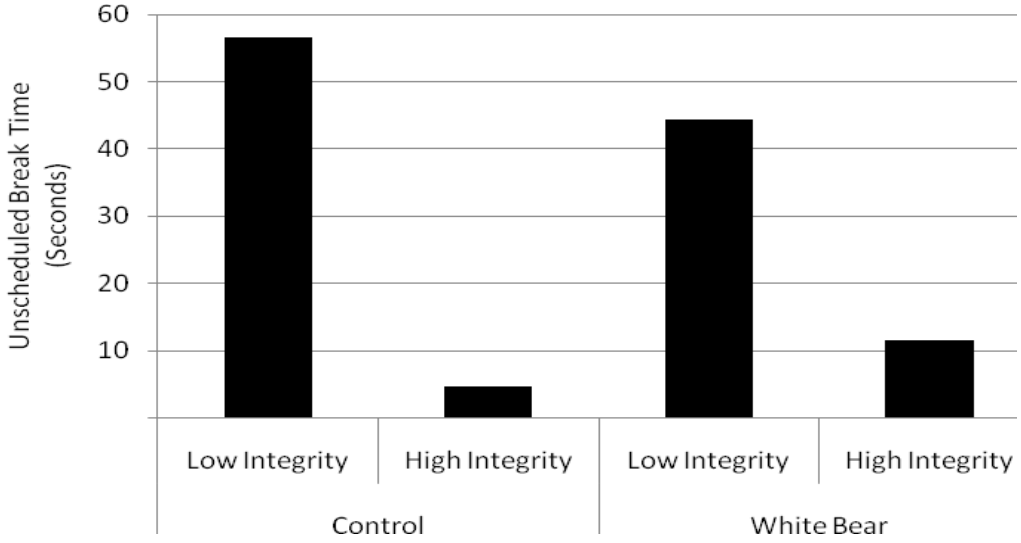

Figure 1. Mean Unscheduled Break Time for High and Low Integrity Participants Between Conditions

Vita

Joshua D. Bazzy was born and raised in San Antonio, Texas where he graduated from Douglas MacArthur High School. He earned his Bachelor of Arts degree in Psychology from Harding University and Master of Science degree in Industrial and Organizational Psychology from Lamar University. His Doctor of Philosophy degree in Industrial and Organizational Psychology from the University of Tennessee was conferred in the spring of 2012.