

PREDICTING COUNTER-PRODUCTIVE WORKPLACE BEHAVIOR: ITEM LEVEL  
ANALYSIS OF AN INTEGRITY TEST

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Counter-productive workplace behavior (CWB) is defined as any intentional behavior on the part of an organization member viewed by the organization as contrary to its legitimate interests. A growing body of literature reveals that individual variables and pre-employment integrity tests can play a strong role in the prediction of CWB. The empirical literature has failed to clarify which type of individual level antecedents, or types of integrity test items, are more predictive of CWB. The current study evaluated data collected from restaurant employees ( $N=464$ ) that measured items relating to personality tendencies, attitudes toward acceptance of counter-productive behaviors, work and high school background, and admissions of counter-productive behavior. A confirmatory factor analysis revealed a mediocre fit to a typology of CWB (interpersonal CWB vs. organizational CWB). Correlation analysis revealed that only specific attitudinal items and empirically keyed biodata items were significantly related to CWB. Hierarchical regression analysis found that attitudinal items paralleling admissions of CWB contributed variance beyond that of other personality and work and high school background antecedents.

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## CHAPTER 1

### INTRODUCTION

Organizational research tends to focus on the positive-normative behavior of individuals such as increasing job satisfaction, organizational commitment, production levels, and team cohesion. The “darker” side of organizational behavior has not received the same attention and researchers are beginning to focus on these critical behaviors that leave a profound effect on the organization and its individual members. There are several opportunities for employees to contribute value to their organization, but there are also instances where employees can engage in behaviors that are in opposition to the organization’s goals. An accepted term for this type of behavior is counter-productive workplace behavior (CWB), and is defined as any intentional behavior on the part of an organization member viewed by the organization as contrary to its legitimate interests (Sackett & DeVore, 2001).

These types of behaviors are intentional in nature, and do not entail honest, accidental behaviors by employees. For this reason, it is valuable to uncover the process behind these pre-mediated, detrimental acts. Considering the broad array of behaviors that comprise CWB, it is not surprising that research has typically focused on certain types of CWB without trying to integrate this complex construct. Early research efforts addressed specific CWB acts, such as theft or violence in the workplace, in isolation. Recently, however, researchers are attempting to understand this construct as a whole, while also developing models to explain and predict CWB. Terms that are synonymously used to study CWB as a unified construct include: antisocial behavior (Giacalone & Greenberg, 1997), counterproductive behavior (Fox & Spector, 1999), delinquency (Hogan & Hogan, 1989), deviance (Robinson & Bennett, 1995), retaliation (Skarlicki & Folger, 1997), revenge (Bies, Tripp, & Kramer, 1997), and organizational

misbehavior (Vardi & Weitz, 2004). These varying terms reflect different theoretical models and research approaches to this construct.

For the purpose of the current study, the term CWB is most appropriate given its robust definition that incorporates several behaviors that fit into many theoretical models. Beyond the recent trend of studying CWB as a general construct, empirical evidence supports the effort to define it broadly. Self report, other report, and direct judgments of likelihood of co-occurrences all demonstrate positive interrelationships among counterproductive behaviors (Sackett & DeVore, 2001). The purpose of the current study is to first confirm a typology of CWB, and then evaluate what types of individual antecedents are able to best predict CWB.

#### Prevalence and Impact of CWB

Counter-productive workplace behavior is both a pervasive and universal phenomenon, cutting across individuals, jobs, hierarchal levels, occupations, organizations, and geographic borders (Vardi & Weitz, 2004). Employee theft and fraud, one specific form of CWB, is the fastest growing type of crime in the U.S. (Coffin, 2003). There often exists a tendency to think of CWB as occurring under the surface and not worthy of investigating due to the low frequency of its manifestation. Empirical evidence discounts that notion, especially when CWB is studied appropriately and candidly. For example, one study found that at least 75% of all employees have stolen from their employer at least once (Robinson & Greenberg, 1998).

In addition to the tangible expressions of CWB, frequent occurrences of intangible CWB are witnessed in the workplace. More than 90% of adults have experienced emotional abuse in their workplace throughout the course of their career (Hornstein, 1996). Targets of CWB are more likely to quit, have stress-related problems, decreased productivity, and low morale (O-Leary-Kelly, Griffin, & Glew, 1996).



CWB not only directly impacts individuals in the organization, but it also can directly or indirectly impact the overall financial performance of organizations. Economic costs of employee theft are estimated upwards of \$200 billion annually (Greenberg, 1997), substance abuse costs U.S. companies \$200 billion in lost production (Akeroyd-Lear, 2001), and the total cost of workplace violence in the U.S. is \$4 to \$6 billion per year (Towler, 2001). The losses in the financial performance of a firm then impact the economic conditions of the society as a whole. Therefore, a few simple counter-productive acts, or an aggregation of several counter-productive acts in the workplace can leave a profound impact on communities, states, and nations. These figures provide support for investigating CWB due to the tremendous impact it has on organizations and its members. The goal of investigating this construct further is to better understand how the aforementioned statistics can be diminished.

### Typology and Models

Organizing this vast array of behaviors into a useful framework can be a daunting and difficult task. There exist numerous behaviors that an individual can intentionally commit that are contrary to an organization's goals. Developing a typology that can include behaviors ranging from tardiness to workplace violence can be useful for furthering model development which could lead to creating preventative measures to avoid CWB. Hollinger and Clark (1983) were the first researchers to make a significant breakthrough in understanding CWB. They established two categories of employee deviance: a) property deviance, which includes behaviors such as theft and property damage and b) production deviance, which includes behaviors relating to not being on the job as scheduled (absence, tardiness) and behaviors that detract from production while on the job (drug and alcohol use, slow or sloppy work).

Robinson and Bennett (1995) extended this typology into a useful framework. Following a multidimensional scaling analysis, a CWB typology emerged that varies along two dimensions: organizational/interpersonal directed behavior and serious/minor counter-productivity. The resulting four quadrants are: production deviance (organizational/minor), property deviance (organizational/serious), political deviance (interpersonal/minor), and personal aggression (interpersonal/serious). While Hollinger and Clark's (1983) model mainly focused on behaviors intended to harm the organization, Robinson and Bennett (1995) found that CWBs can be directed at individuals as well, which in turn negatively impacts the organization. This interpersonal dimension of CWB includes aggressive or abusive acts that harm supervisors, subordinates, peers, and customers. In a service oriented industry, CWB directed at customers can create a significant negative impact on the organization. Therefore, it is critical to examine CWB from a broader perspective by including all potential situations in which a member of an organization can act against its legitimate interests. Further validation of Robinson and Bennett's (1995) typology reveals the differences between the individuals and situations that bring about organizational directed CWB (e.g., theft) and interpersonal CWB (e.g., sexual harassment) (Robinson & Bennett, 2000). This typology allows researchers to investigate CWB along a familiar framework, and managers to modify strategies to prevent the different types of CWB.

Once CWB is framed around a useful typology, the next step involves exploring the processes leading up to these types of acts. Several models have been developed to understand how counter-productive behavior is manifested in an organizational context. As noted earlier, earlier CWB research tended to focus on certain types of CWBs, such as theft, and models were built to understand that single behavior. Many of the models that address specific CWBs have been integrated into more comprehensive models that investigate CWB as a broad construct.

This current study will utilize such a comprehensive model; however it is still important to discuss the models that have led up to the current integrative approach.

An example of a model explaining a certain type of CWB is Greenberg's (1990) inequity-theft model. This line of work emphasizes the role that social exchange and perceptions of inequity play on individuals that commit theft. When workers feel that they are inequitably paid they may respond by attempting to raise their outcomes, or fair compensation for their work output (Adams, 1965). Greenberg's (1990) experiment demonstrated that an individual's feeling of inequity increased the likelihood of theft. The action of theft was interpreted as an affective reaction due to frustration which leads to a direct attempt to adjust the balance of inequity. Thus, theft is a form of restitution and retaliation as an attempt to redress distributive justice (Greenberg & Scott, 1996). Individual, situational, informational, and interpersonal factors can all moderate this process to restore equity (Greenberg, 1993; 2002). For instance, an environment that condones CWB (organization without an ethics program) combined with an individual of low moral development will lead to the likelihood of employee theft (Greenberg, 2002). Therefore, several factors influence the likelihood of employee theft, making it worthwhile to investigate the relative prediction of different types of individual and situational predictors of CWB. An aim of the current study is to evaluate which types of individual variables are best predictive of CWB.

Another model targeted towards a specific CWB is Spector's (1978) adaptation of the frustration-aggression model. The basis of this framework includes work from the Dollard Miller frustration-aggression theory (Dollard, Doob, Miller, Mowrer & Sears, 1939). Spector (1978) defines frustration as the interference of goal attainment or goal maintenance. The response to this frustration is an emotional reaction resulting in a negative emotional state. This emotional

state may lead to aggression towards another entity or withdrawal from the situation. An example of a frustrating experience would be a manager that is impeding an employee's work process (interfering with goal maintenance). The employee can then react to this frustrating state by either withdrawing from the situation (absenteeism, turnover) or by taking aggressive action towards the manager or organization (personal assault, property destruction). While Spector's (1978) model deals with a somewhat rational approach in committing CWB (i.e., restoring inequity), the frustration model acknowledges the irrational and aberrant behavior often witnessed and defined as CWB.

Spector's (1978) frustration-aggression model and Greenberg's (1990) inequity theft model took separate paths in explaining specific CWB events. However it is evident how their models could be expanded to other types of CWB, and provide more robust explanations of this type of behavior. For instance, Spector's (1978) frustration model describes how employees can engage in aggressive acts towards fellow co-workers or retaliate against the organization as a whole by withdrawing from productive work. These two types of behaviors fall under different quadrants in Robinson and Bennett's (1995) typology of CWB, yet they are predicated by similar types of situations. These models provide a solid theoretical background in which various types of CWBs can be explained in a very general manner. Where these models fall short is their lack of explanation as to why and when an individual would perform one type of CWB over another. Furthermore, these models tend to focus on the situational bases underlying CWB acts, and fail to thoroughly address individual factors related to the manifestation of CWB.

An integrative model developed by Martinko, Gundlach, and Douglas (2001) united the fragmented research existent at that time. In their causal reasoning model, Martinko et al. describe a two-stage process where individuals first perceive some type of disequilibrium (e.g.,

injustice or inequity) in the workplace and then make an attribution for the disequilibrium. These attributions can be directed internally or externally in a stable or unstable manner. Individual differences, such as negative affectivity or emotional stability, and situational variables, such as reward systems or inflexible policies can influence this two stage process. CWB results when an individual attributes the disequilibria to a stable external or internal cause. An unstable explanation for the disequilibria is not likely to influence the expression of CWB, because there would be a lack of causal reasoning. For instance, if a manager yells at an employee, which is an unusual act for that manager, the employee is unlikely to retaliate considering the unstable nature of that event. If an individual attributes their disequilibria to an internal, stable cause, then feelings of guilt and shame are proposed to lead to self-destructive types of CWB, such as drug use, absenteeism, or lower performance. Conversely, when an external, stable attribution is made, anger and frustration lead to retaliatory CWBs, such as aggression or stealing. This model incorporates a wide variety of individual and situational variables, while also discriminating between different types of CWBs. This model does not, however, adequately address the individual variables used in the current study. Furthermore, the types of CWB contradict Robinson and Bennett's (1995) typology of CWB. Organizational directed CWB, such as stealing, and interpersonal directed CWB, such as aggression, are both considered retaliatory types of behavior in this causal reasoning model. While this model integrated the previously fragmented research well, it does not properly fit the direction of the current study.

In contrast, a recent model proposed by Vardi and Weitz (2004) provides a well integrated approach for studying and applying practices to prevent CWB and also adequately fits the current research effort (see Figure 1). This model uses the theory of reasoned action as a conceptual anchor (Fishbein & Ajzen, 1975). The theory of reasoned action proposes that

individual attitudes influence the intention to behave a specific act. Several individual and situational factors influence one's attitudes toward an intention to behave in a particular way. Therefore, it is the intention to behave that most closely predicts actual behavior. This relationship is evident in an organizational context due to the empirical studies which reveal the intent to quit is one of the strongest indicators of employee turnover (Griffeth, Horn, & Gaertner, 2000). This model includes several individual and situational variables that act as antecedents of CWB. Some individual antecedents include personality variables, attitudes, and emotional states. Organizational culture and group norms are examples of situational antecedents that are included in this model, and are supported by other lines of research (Victor & Cullen, 1988; Robinson & O'Leary-Kelly, 1998). The intention to misbehave mediates the relationship between these individual and situational antecedents and expressions of CWB (Vardi & Weitz, 2004). The mediating effect behavioral intentions have on behaviors implies a casual model that flows from antecedents to mediators to behaviors. The intention to behave provides an intervening link between the antecedent-behavior relationship, that otherwise would be small or nil without the mediating effect.

In accordance with the theory of reasoned action, the intention to behave is a result of two forces: the instrumental forces, reflecting one's own belief about his/her own personal interests, and the normative forces, reflecting one's internalized expectations. These individual, situational, and normative forces can then lead to acts of CWB. The resulting counter-productive behaviors range from intrapersonal deviance (e.g., substance abuse), interpersonal misbehavior (e.g., violence and aggression), production misbehavior (e.g. absenteeism), property misbehavior (e.g., theft), and political misbehavior (e.g., misuse of power). The types of CWB included in this model better reflect the typology given by Robinson and Bennett (1995) as well as Hollinger

and Clark (1983). Several management techniques can be developed to prevent CWB along several steps in this model. For instance, an organization may wish to create an employee orientation process that affiliates new members with appropriate norms of ethical behavior (Vardi & Weitz, 2004). A preventative effort may also be implemented earlier in the process by using selection techniques to prevent individuals prone to committing CWB from entering the organization (Vardi & Weitz, 2004). Research that investigates what types of individual characteristics are associated with certain CWBs will augment the screening process required to identify those individuals. The current study is an attempt to delineate what individual level antecedents best predict the occurrence of CWB. The individual level variables included in Vardi and Weitz's (2004) model are listed in Figure 2. The current study will investigate some of these individual level variables, as well as another variable not included in the present model. It is important to note that situational variables also play a pivotal role in the occurrence of CWB, however the prediction and investigation of these types of variables are beyond the scope of the current study.

### Individual Level Antecedents

Before the individual level variables are discussed separately, it is important to discuss the relative importance that individual variables play in the overall prediction of CWB. According to Vardi and Weitz's (2004) model, both individual and situational antecedents relate to the intention to engage in CWB. Separating out the individual and situational factors that influence CWB allows researchers to focus on the most critical and relevant antecedents. When comparing the relative impact of different types of antecedents on CWB, recent research indicates that individual factors can play an instrumental role in explaining CWB over and above

some situational variables (Colbert, Mount, Harter, Witt, & Barrick, 2004; Douglas & Martinko, 2001; Marcus & Schuler, 2004).

Individual difference variables have been shown to be powerful predictors of a specific form of CWB: workplace aggression (Douglas & Martinko, 2001). Among the individual variables included in the study were trait anger, attitude toward revenge, negative affectivity, self-control, and attribution style. Results showed that individual-difference variables accounted for more than 60% of the variance in the incidence of workplace aggression. This finding is both statistically and practically significant. When trying to predict workplace aggression, individual variables comprise the majority of the predictable variance. If individual variables only contributed a negligible portion of predictable variance, it would not be worthwhile to further investigate this class of variables. The strong prediction of these combined individual variables gives further support for evaluating individual antecedents of CWB.

A related study investigated the interactive effects of individual and situational variables in the prediction of CWB (Mikulay, Neuman, and Finkelstein, 2001). The participants' level of integrity was measured and three situational variables were manipulated: desirability, group norms, and risk. An individual's level of integrity had a consistent impact on the likelihood of engaging in all CWBs included in the study, while the situational variables revealed less consistent prediction of the CWBs. Of the twelve predicted interactions, only the interaction of integrity and risk was significant in predicting theft. Under this condition, individuals low in integrity were less likely to commit theft under high risk situations than low risk situations (i.e., low likelihood of being caught and weak consequences), where high integrity individuals were unaffected by the different levels of risk.



A recent study explored the interactive effects of personality and perceptions of the work situation on CWB (Colbert et al., 2004). Not surprisingly, the researchers found that employees who had positive perceptions of the work environment were less likely to commit CWB. In addition, highly conscientious and agreeable workers were less likely to exhibit deviant behavior. The major thrust of their research concentrated on the moderating effect personality had on perceptions of the work situation and CWB. Using moderated hierarchical regression procedures, the authors revealed that highly conscientious and highly agreeable individuals do not commit acts of CWB, even when they perceive a negative work environment. This empirical evidence provides even more support for individual difference variables predicting CWB amidst strong situational contexts.

Another line of research revealed that personality variables predict unique variance beyond demographic and organizational justice variables (Henle, 2005). In order to avoid common method bias, the participants had someone close to them fill out the personality portion for them. The participants then indicated their perception of justice at work, involvement in deviant behaviors, and demographic characteristics. Organizational justice explained only a portion of the variance in CWB after controlling for demographic variables (4%), while the personality measures accounted for unique variance beyond justice and control variables (10%).

In a comprehensive analysis of antecedents of CWB, Marcus and Schuler (2004) measured a wide array of individual and situational variables, and explored which variables explained the most variance in the prediction of CWB. Results indicated that individual variables added substantially to the prediction of CWB over and above the influence of the situational variables. Conversely, situational variables contributed a trivial, non-significant amount of variance beyond the individual level variables. More specifically, the authors found that an

individual's level of self-control was by far the best predictor of CWB, and the only variable that obtained a significant beta weight in the full model.

Together, these studies highlight the important role that individual level antecedents play in the broad, complex predictive model of CWB. Considering the impact that individual differences play in CWB, it is worthwhile to study them at a closer level. Vardi and Weitz (2004) discuss several individual level antecedents in their model. Among these variables are an individual's personality, affect and emotion, and attitudes. There exists a large amount of evidence that supports each of these types of individual level variables in predicting CWB. In addition to these variables, life background variables have demonstrated a relationship with CWB, but are not mentioned in the integrative model. However, discussion of these predictors is pertinent to the current study.

### *Personality*

An accepted framework to examine individual differences in organizations is the five-factor model or the "Big Five" which differentiates personalities along five dimensions. The five factors are conscientiousness, extraversion, agreeableness, emotional stability, and openness to experience (Costa & McCrae, 1992). These factors are defined as follows:

1. *Conscientiousness* refers to the extent to which individuals are hardworking, organized, dependable, and persevering versus lazy, disorganized, and unreliable.
2. *Extraversion* concerns the degree to which individuals are gregarious, assertive, and sociable versus reserved, timid, and quiet.
3. *Agreeableness* is the extent to which individuals are cooperative, warm, and agreeable versus belligerent, cold, and disagreeable.

4. *Emotional stability* measures the degree to which individuals are insecure, anxious, and depressed versus secure, calm, and happy.
5. *Openness to experience* refers to the extent to which individuals are creative, curious, and cultured versus practical and having narrow interests.

Research has demonstrated that conscientiousness and emotional stability are associated with high degrees of performance across all occupational groups (Barrick, Mount, & Judge 2001; Salgado 1997). Highly conscientious individuals show greater productivity at work because they spend more time on their assigned tasks, they acquire greater job knowledge, they set goals and persist after them, they go beyond role requirement, and they avoid counterproductive behaviors (Ones and Viswesvaran, 1996a). A recent meta-analysis revealed that low conscientiousness and low agreeableness were valid predictors of deviant behaviors in the workplace as well as turnover (Salgado, 2001). In addition, lower scores on emotional stability, extraversion and openness were predictive of turnover.

Not only do the broad measures of personality predict CWB, but narrow measures can also reliably predict this construct. Two subfacets of conscientiousness, achievement and dependability, revealed a strong negative correlation with CWB (Hough, 1992). Another study measured broad and narrow traits of personality to predict CWB in order to determine the effectiveness of each level of measurement (Ashton, 1998). The current methodological debate among personality researchers, known as the bandwidth-fidelity dilemma, involves the utility of using broad personality traits (e.g., Big Five traits) rather than specific scale components in predicting workplace behavior. Results indicated that conscientiousness and agreeableness had a significant negative correlation with CWB, but two of the narrow traits – risk taking and responsibility- were stronger predictors than the two broad traits (Ashton, 1998). This study

highlights how narrow measures of personality, especially ones related to the criterion, can serve as powerful predictors of CWB.

A study that predicted specific types of CWB revealed that agreeableness and extraversion were associated with CWB directed toward individuals, while conscientiousness was associated with organizational CWB (Lee, Ashton, & Shin, 2001). This finding provides support for using different personality traits to predict different forms of CWB. Further research needs to explore which facet level personality traits are better indicators of different types of CWB in order to fully understand the predictive nature of this variable. As a whole, these various studies provide support for using personality variables to predict CWB, however further systematic investigation of personality variables is needed to uncover the most predictive and parsimonious set of personality variables.

Another individual difference, related to personality, but not encapsulated in the Big Five framework, is locus of control. Individuals with an internal locus of control believe that they control their own rewards, while people with an external locus of control believe that others or luck control rewards (Spector & O'Connell, 1994). Individuals with an external locus of control are more likely to exhibit CWB than those with an internal locus of control (Storms & Spector, 1987). Fox and Spector (1999) further demonstrated that locus of control moderates the relationship between frustration and CWB. Individuals with an external locus of control are more prone to act out in a counter-productive manner when frustrated. Similarly, individuals with higher levels of externality are more likely to behave abusively toward clients at work (Perlow & Latham, 1993). This research reveals that a relationship exists between an individual's beliefs of control of rewards and CWB. If an individual has an external locus of control they are more likely to blame another individual or the organization for any type of situation that prevents them

from reaching their expectations or goals. The CWB may seem like an extreme act of deviant reckoning to the victim, but the same act may seem justifiable to the individual with a high external locus of control.

Related to locus of control is an individual's attribution style. Seligman (1990) differentiated between optimistic attribution style and pessimistic attribution style. Individuals with optimistic styles tend to make stable, internal attributions for success and external, unstable attributions for failure. When something bad happens to these individuals they often attribute the blame to someone else, but recognize that it is an unlikely event that probably won't happen to them again. Conversely, when something bad happens to an individual with a pessimistic style, they are likely to blame themselves and believe that this bad experience will continue to occur. When external, stable, and intentional attributions are made, anger and subsequent aggression were more likely to arise than if internal, unstable, and unintentional attributions were made (Martinko & Zellars, 2001). This research provides further support for trait-like individual differences that can lead to CWB.

### *Emotions and Affect*

In the integrative model, emotions are also considered important antecedents to CWB (Vardi & Weitz, 2004). While emotions are usually considered responses to particular events, some affective experiences can occur similarly for a person throughout multiple situations. Individuals can have stable dispositions which can influence their tendency to experience positive or negative feelings under a number of different circumstances. Organizational research has concentrated on these stable individual differences of positive and negative feelings, also known as affect, because such differences influence how people approach their life and job. Affective experiences are potentially important aspects of an individual's work experience that

can influence performance and job satisfaction (Weiss & Cropanzano, 1996). Individuals with a high degree of positive affectivity (PA) tend to have an overall sense of well-being, see people and events in a positive light, and experience positive emotional states. At the other end of the spectrum, individuals with a high degree of negative affectivity (NA) tend to hold negative views of themselves and others, interpret ambiguous situations in a negative manner, and frequently experience negative emotional states (Isen & Baron, 1992). Individuals measuring high in negative affectivity experience negative moods across situations, regardless of the specific stimulus (Watson & Clark, 1984). This relates to CWB, because individuals with high NA are prone to act aggressively when they constantly experience events in a negative manner (Berkowitz, 1983).

Negative affectivity has a direct impact on interpersonal and organizational deviant behavior (Aquino, Lewis, & Bradfield, 1999), and it also moderates the relationship between fairness perceptions and retaliation (Skarlicki, Folger, & Tesluk, 1999). Martinko and Zellars (1998) argued that individuals who exhibit high NA are more likely to make hostile attributions and as a result are more disposed to workplace aggression. Trait anger and hostility, related emotional variables, have also demonstrated a strong relationship with CWB (Douglas & Martinko, 2001; Fox & Spector, 1999; Giacalone & Knouse, 1990; Lee & Allen, 2001). These studies reveal that an individual's affective traits can predict and moderate several CWBs, and these traits should be included as an individual level antecedent.

### *Attitudes*

Attitudes play an important role in everyday behavior, and can have a significant impact on various types of work behavior (O'Reilly, 1991). Attitudes can be an all encompassing term, so it is important to define exactly what type of attitude will be investigated in the current study.

Some attitudes are evaluations of general workplace conditions, and measures of job satisfaction and organizational commitment have been shown to negatively correlate with CWB (Cohen, 1999). While these global types of attitudes are important in explaining many workplace behaviors, including CWB, the emphasis of the current study is to uncover one's attitudes specifically gauged towards committing CWB. This emphasis differentiates attitudes towards the workplace in general and attitudes surrounding certain acts of CWB. The current study will investigate the latter. In Vardi and Weitz' (2004) integrative model of CWB, attitudes play an important and proximal role in the prediction of behavior. An individual's attitude toward CWB is a function of the individual's important behavioral beliefs that represent the perceived consequences of the behavior and the value the individual attaches to those consequences. Vardi and Weitz (2002) conducted a study that assessed an individual's attitudes toward CWB, more specifically, which type of attitudes predicted different types of CWBs. Attitudes were assessed by measuring the individual's personal belief about which positive or negative outcomes were likely to ensue if they committed the counter-productive acts. The study found that an individual's attitude concerning how they personally value the outcomes of their behavior predicted all forms of CWB. Additionally, they found that this attitude predicted CWB better than the subjective norms of the group. Therefore, an individual's personal attitude toward CWB plays an important role over and above that of normalized group influence for certain types of CWB.

In addition to the research supporting Vardi and Weitz' (2004) model of CWB, other lines of research has found attitudes to play an important role in the occurrence of CWB. Individuals who have tolerant attitudes toward counterproductive behaviors are more likely to commit these behaviors at work (Moretti, 1986). People who view aggressive behavior as

acceptable or justifiable are more likely to engage in aggression than people who view it as unacceptable (Bulatao & VandenBos, 1996). Attitudes towards revenge significantly predict workplace aggression (Douglas & Martinko, 2001). Using a large archival database, Bolin and Heatherly (2001) found relationships among different types of attitudes and different forms of CWB. Theft approval was the best attitudinal predictor of all forms of CWB compared to the other attitudinal predictors: company contempt, intent to quit, and dissatisfaction. Each type of attitude revealed significant relationships with different forms of CWB, which highlights the importance of studying different types of attitudes. Therefore, an important individual variable to include when predicting CWB is the attitude towards committing counter-productive acts. Attitudes defined in this sense reflect the mediating forces in the intention to behave in Vardi and Weitz' (2004) integrative model. Therefore, an individual's attitude toward behaving in a counter-productive manner is a more proximal predictor of CWB than the individual level antecedents. This proximal relationship allows attitudes toward CWB to serve as a useful and important predictor.

### *Background Life Experiences*

Considering the role that past life experiences have on future behavior, it is important to investigate one's background as an individual antecedent in the prediction of CWB. One particular study found that after controlling for demographic variables, aggression against a coworker was positively and significantly predicted by the amount of alcohol consumed and history of aggression (Greenburg & Barling, 1999). While this may be an important finding, asking a job applicant about their past use of alcohol is a violation of the American with Disabilities Act (1990), which precludes this type of question from contributing to a pre-employment selection tool.



A more in depth study compared relationships between individual and situational background data items and integrity test scores (Mumford, Connelly, Helton, Strange, & Osburn, 2001). Through a literature review, seven differential characteristics were identified that can lead to CWB: (1) narcissism, (2) fear, (3) outcome uncertainty, (4) power motives, (5) object beliefs, (6) negative life themes, and (7) lack of self-regulation. Situational variables were also included in the attempt to explain CWB. A set of background items were utilized that Gessner et al. (1995) developed which account for situations that are likely to yield CWB: (1) alienation, (2) non-supportive family, (3) negative role models, (4) life stressors, (5) competitive pressure, (6) exposure to negative peer groups, and (7) financial need. A set of background data items were developed that captured these individual and situational factors and were administered in conjunction with an overt and personality-based integrity test to a sample of college students. Results indicated that individual background characteristics were related to both overt and personality-based integrity test scores, although more highly correlated with the personality-based measures. In addition, strong relationships were found between the situational background items and integrity test scores. In fact, personality-based integrity tests shared a stronger relationship with the situational characteristics than the individual characteristics, thus supporting the importance of background life experiences leading to CWB. The intriguing finding from this study was that the situational background data items accounted for unique variance beyond the individual characteristics when predicting integrity test scores. While integrity test scores typically try to identify enduring traits of the individual, this study highlights the power of incorporating experiential background data items during the selection process. The authors believe that the situational variables may operate in a variety of ways: by encouraging the development of the personality characteristics related to CWB, shaping people's perceptions

of the of the demands needed for success, discounting traditional norms, and justifying counter-productive acts in order to reach a goal. Conversely personality characteristics may lead individuals into situations that present opportunities to engage in CWB. The truth probably lies in a more integrative and interactive model and it is important to explore these background variables when predicting CWB.

An advantage of studying the individual antecedents of CWB is the development of preventative selection tools which attempt to screen out individuals prone to commit CWB before they ever enter the organization. Some of the individual level antecedents of CWB have been discussed, and there exist even more individual variables which can be used to develop a screening device to protect the organization and its members. The findings previously discussed provide a base of support for developing selection measures that tap into the individual characteristics related to CWB. Translating these theoretical models into practical management tools is the next step in preventing CWB. The empirical literature that investigates these practical screening tools complements the aforementioned theoretical framework.

### Integrity Tests

Some pre-employment selection measures aim to assess broad normal adult personality constructs, such as the Big Five, without a desire to predict specific facets of job performance. The goal of this kind of measurement is to adequately and reliably measure the broad construct. Another measurement strategy involves assessing a combination of individual traits related to specific types of job performance. These types of measures are known as criterion focused occupational scales (COPS), as their emphasis is on the prediction of a specific criterion (Ones & Viswesvaran, 2001). When CWB is the criteria of interest, integrity tests are commonly used to predict individuals that have a propensity to engage in those types of behaviors.

### *Overt vs. Personality-Based*

In a review of integrity testing, Sackett, Burris, and Callahan (1989) categorized two types of integrity tests: “overt” and “personality-oriented” tests. Overt tests commonly measure one’s attitudes towards theft and then request admissions of theft or other wrongdoing. A sample admissions item may read, “In the last year, the amount of cash I have taken from my place of employment is...” and the applicant can choose from a) \$0 b) less than \$10, etc.... The rationale underlying overt tests are to measure a job applicant’s attitudes and cognitions toward theft that may predispose them to commit these acts at work. Questions about the frequency and extent of theft, punitiveness towards theft, common rationalizations of theft, and assessment of one’s own honesty are included in the sections measuring their attitudes. Personality measures capture other related constructs, rather than focusing on workplace behavior or attitudes. An example personality item may read, “When I get bored, I like to stir up some excitement”. Personality-based items are not as directly tied to behaviors on the job, but they are less transparent to applicants. Part of the rationale behind the development of personality-based integrity tests is that they can predict a broader spectrum of CWBs by assessing one’s personality, not just their attitudes towards theft. Both of these types of tests are extensively used by a variety of organizations as part of their personnel selection process. The tests have also received a considerable amount of coverage in the literature, with opponents and proponents of the tests citing their usefulness and social implications.

### *Historical Development of Integrity Testing*

Employers attempt to select individuals into their organization that can make positive contributions that create value for the firm and its members. In addition, employers try to avoid hiring individuals that are going to commit counter-productive acts which negatively impact the

organization, its customers, and other stakeholders. One method of screening out “dishonest” or “troublesome” employees that was employed was utilizing a polygraph test to uncover their “real” motivations. In response to its use, the Employee Polygraph Protection Act was passed in 1988, prohibiting most private employers from requiring or requesting pre-employment polygraph exams. This allowed paper-and-pencil based integrity measures to develop and prosper, however Congress did not let them proliferate without further investigation. The Office of Technical Assessment (OTA) published a report in 1990 (OTA, 1990) exploring the use and implications of integrity testing. The OTA maintained that integrity tests should be held to a higher standard than other pre-employment tests, due to the stigma of being mislabeled as dishonest. They were skeptical of integrity tests having high false positive rates (rejection of applicants who would be honest) because of the low base rate of CWB. In addition, they were concerned that if the tests were reliable, then a population of job applicants would be systematically misclassified and denied employment. In other words, several applicants would be denied a position, even though they still may not commit a CWB. This argument was supported by using integrity test cutoff scores and external theft criteria, which often underestimates the prevalence of CWB. Their report concluded that the research to date was not sufficient to prove or disprove claims of validity of integrity tests. Around the same time of the OTA report, the American Psychological Association (APA) appointed a task force to investigate the issues surrounding integrity testing (Goldberg, Grenier, Guion, Sechrest, & Wing, 1991). The APA generally found a more positive conclusion about integrity tests, but encouraged test publishers to adhere to proper documentation of results. Since these reports, integrity tests are still widely used as personnel selection devices to screen individuals for CWB.

### *Issues with Integrity Testing*

One of the biggest issues surrounding integrity testing is that misjudgments made during the testing procedure could incorrectly label someone as dishonest. Honesty is a character trait that is highly valued in our society, and it can be a more serious issue to reject someone on the basis of their level of “integrity” than their ability or knowledge to perform the job. A problem with “failing” an integrity test is that people cannot develop their “honesty” or “integrity”, whereas they can acquire knowledge and skills if they fail an ability test. Therefore, it is much more of a taboo to label someone dishonest than it is to label them as unintelligent. While it is important to not falsely label someone as dishonest, it is also critical that organizations set their cutoff scores high enough to prevent individuals who will commit CWB from getting through the selection process. It is also argued that it may be in the best interest of test publishers and organizations to avoid false negatives (dishonest individuals incorrectly passing the test), even at the expense of increased false positives (incorrectly labeling dishonest individuals) considering the cost of just one severe act of CWB (Gatewood & Field, 2004). This is a difficult balance to negotiate, and in light of making these selection decisions one must acknowledge the size of the organization’s selection pool, other selection procedures used to screen candidates, and team composition.

Another issue closely tied to falsely labeling someone as “dishonest” is the base rate of CWB. It is often cited that integrity tests will produce a large portion of false positives, due to the low base rate of theft, violence, and other forms of CWB. Some approaches wish to negate the effectiveness of integrity tests by determining the exact base rate of certain CWBs and then calculating the false positive rates of integrity tests. This may not be the best approach in evaluating integrity tests, however, because it assumes that integrity tests only measure certain

CWB criteria and the exact base rate of these behaviors is actually quite low. (Sackett & Wanek, 1996). The strong relationship between integrity tests and overall job performance nullifies the former assumption, and there exists considerable evidence that refutes the latter assumption. An investigation of a wide range of CWBs (e.g., coming late to work, arguing with co-workers, cash theft) among fast food and supermarket employees, found that 96% of fast food workers and 94% of supermarket workers admitted to some form of CWB in the past six months (Slora, 1991). These results highlight that while some extreme forms of CWB may have low base rates, other forms of CWB are quite prevalent.

When making employment decisions based on test data, it is the legal responsibility of employers to avoid biased exclusion of certain protected classes (EEOC, 1978). Among these populations are people with psychological disabilities and racial or ethnic minorities. The American with Disabilities Act (1990) prohibits the pre-job offer medical screening of applicants, including psychological tests. Integrity tests run the risk of tapping some “clinical” levels of behavior, thus subjecting them to scrutiny under the ADA. The EEOC notes that a test originally designed to detect mental illness would be viewed as a medical exam, regardless of the test’s use to predict integrity or job performance. Thus, the original intent in designing a psychological test, whether it is for clinical assessment or personnel selection, reflects whether or not it can be considered a medical exam. Integrity tests designed to predict one’s likelihood of committing CWB would not be considered a medical exam because they focus on predicting counter-productive behaviors in a workplace setting. Other widespread measures of personality may fall under the medical screening definition (e.g., MMPI-2™ assessment tool (Butcher, NCS Pearson, Inc., Minneapolis, MN, [www.pearsonnncs.com](http://www.pearsonnncs.com))) and should not be used for pre-employment selection purposes. In relation to creating disparate impact on minority groups,

large scale reviews of integrity tests indicate that they do not reveal a preference for whites over racial or ethnic minorities (Ones et al., 1993; Ones, Viswesvaran, & Schmidt, 1996; OTA, 1990). These findings support the fairness of integrity tests, thus making them somewhat more appealing than mental ability tests that have been shown to contribute to racial differences on test scores.

The issue of faking is another concern with integrity tests. Just as it confounds some personality tests not designed to predict CWB, faking can also be problematic for integrity tests. Some make the argument that the fakers rise to the top of the score distribution and are inappropriately selected over other honest individuals (Douglas et al., 1996). This would be a quite ironic result of trying to screen out the “dishonest” individuals, because it would be exactly those individuals the test would pass on through. The majority of the empirical research concerning this issue reveals that faking integrity tests does not seem to make a difference in the validity of the tests (Ones et al., 1993). Research reveals that students can artificially raise their integrity test scores when instructed to answer as a job applicant; however this still does not affect the criterion-related validity of the tests (Sackett & Wanek, 1996). On average, individuals instructed to fake good on integrity tests compared with those instructed to respond honestly indicate effect sizes over .50, a similar figure found among other personality tests (Ones & Viswesvaran, 1998b). A study that measured the influence of faking found that when experimental groups were told to “fake good” they scored better on overt integrity measures than the total group mean (Ryan & Sackett, 1987). However, when another experimental group was told to respond as if they were applying for a job, they revealed similar scores on the tests as those individuals responding truthfully. This may reflect the difference between a laboratory

study with no consequences for faking and a “real world” situation in which there exist other forms of checking for deception.

Ones and Viswesvaran (1998b) reported a value of .08 as the meta-analytic mean estimate of the correlation between social desirability measures and integrity test scores. The partialling out of social desirability from integrity test validities for CWB and job performance results in no change in the criterion-related validities (Ones & Viswesvaran, 1998b). This provides evidence that there is negligible overlap between the two constructs. The socioanalytic theory of personality (Hogan & Holland, 2003) helps explain why social desirability does not influence criterion-related validity. This theory contends that a job applicant responds to test items to negotiate an identity for oneself, and attempts to stay consistent to that identity by engaging in the appropriate behaviors once they are on the job. Therefore, job applicants who present themselves as honest and conscientious in the hiring process will not likely dramatically change their identity and commit various acts of CWB.

In a meta-analysis that included “respond as an applicant” and “beat the test” conditions, overt tests witnessed a much higher effect size than that of personality-based tests (Alliger & Dwight, 2000). The authors of the meta-analysis contend that this difference is likely due to the fact that personality-based measures contain more subtle items and that they are empirically scored, thus preventing them from response distortion. A subsequent study comparing overt and personality-based tests found that under honesty vs. two faking conditions (fake good and fake the trait of honesty) the tests produced similar results, with personality-based tests indicating less fakability (Hurtz & Alliger, 2002). Coaching test takers to beat the test provided an increase over the honesty condition among all of the tests, however coaching only increased scores over the faking condition among the overt tests, not the personality-based tests (Hurtz & Alliger, 2002).



While these results imply that overt tests are much more susceptible to faking, a review by Sackett, Berry, and Weimann, (2005) suggests that some studies take vastly different approaches when investigating faking differences among overt and personality-based tests. Some of these studies reach different conclusions, thus making it difficult to make any definitive statement on the superiority for either type of test.

While it is important to maintain criterion-related validity in a selection instrument, it is also important to make the applicant feel comfortable throughout the hiring process. Some individuals may have negative impressions of employers that give them integrity tests to determine their readiness for the job. A large review of integrity testing reported several studies in which the majority of applicants indicated having no problem with the relevance or invasiveness of these tests (Sackett & Wanek, 1996). The review noted that integrity tests fall somewhere in the middle of the pack among other pre-employment tests in terms of applicant reactions. Comparing overt and personality-based integrity tests, overt tests were perceived as more face valid and predictive than personality-based measures (Whitney, Diaz, Minehino, & Powers, 1999). Another study found that applicants felt that overt integrity tests were more job relevant than personality-based measures and that their scores on the overt tests would be more important in determining their employment (Neuman & Baydoun, 1998). When rating several different types of integrity test items, the admission based items were perceived as most invasive and easiest to fake among a sample of college students (Dwight & Alliger, 1997). Items relating to protecting others who have engaged in deviant behaviors were considered most job-related (Dwight & Alliger, 1997). This may be due to the fact that many situational interview questions commonly used in pre-employment screenings ask about an applicant's reaction to a co-worker

hypothetically engaging in CWB. These mixed findings warrant additional investigation of applicant reactions to different types of integrity tests.

### *Construct Validity of Integrity Tests*

A debate exists whether or not “dishonesty” or “integrity” is an individual trait. Some argue that it is irrelevant whether or not it exists, because integrity tests are designed strictly to weed out job applicants that have a tendency to commit CWB. When investigating personnel selection procedures, Hough and Schneider (1996) make a distinction between two types of personality traits: basic traits and compound traits. Basic traits emphasize conceptual coherence, high internal consistency, and temporal stability. From a practical perspective, scales or tests that measure basic traits should have high reliability estimates reflecting a high inter correlation among items. In contrast, compound traits are often discovered through “criterion-focused” approaches when items that may not be conceptually identical are retained due to their relationship with the criterion. Therefore, a scale or a test’s ability to share a strong relationship with a criterion measure (e.g., job performance) is of greater concern than the relationship among the items that comprise the test or scale. Hough and Schneider (1996) identified integrity tests as a type of compound trait due to the heterogeneous structure of many of these tests. Integrity tests typically tap a variety of constructs (e.g., conscientiousness, impulsivity, attitudes toward CWB), that relate to one broad criterion, CWB. These varying constructs influence an overall “integrity score”; however consistent relationships between the constructs are of less importance than their overall ability to predict CWB.

Both overt and personality-based integrity tests have been significantly correlated with a variety of the Big Five personality dimensions. Through their meta-analysis, Ones et al. (1993) found integrity tests to correlate with the factors of conscientiousness, agreeableness, and

emotional stability (Ones et al., 1993). More specifically, the majority of the relationships represented by integrity tests could be captured through the construct of conscientiousness (Ones et al., 1993). When comparing the two types of integrity tests, personality-based tests share the strongest relationship with openness, agreeableness, and extroversion, whereas overt tests have high correlations with conscientiousness and extroversion (Neuman & Baydoun, 1998).

Although there exists some overlap between conscientiousness and integrity tests, Ones et al. (1993) revealed that when statistically controlling for conscientiousness, integrity test scores still explain a significant amount of variance with job performance measures. However, when integrity is partialled out of the relationship between conscientiousness and performance, the correlation reaches near zero (Murphy & Lee, 1994). Sackett and Wanek (1996) explain this finding by noting that integrity tests measure one's level of self-control, a related facet of conscientiousness, but not well represented among conscientiousness measures.

Meta-analytic studies determined that integrity tests are not correlated with cognitive ability tests, and that they provide additional validity over these selection measures, especially for low-complexity jobs (Ones et al., 1993). The multiple R of combining an integrity test and a cognitive ability measure is .65, with the incremental validity of .14 for integrity tests over that of a cognitive ability measure (Ones & Viswesvaran, 1998a). Large scale reviews of selection procedures make the conclusion that integrity tests have superior incremental validity compared to other existing non-cognitive predictors while also decreasing adverse impact, thus making it a useful tool in personnel selection (Ones & Viswesvaran, 1998a; Schmidt & Hunter, 1998). There is evidence that some personality-oriented facets are positively related to cognitive ability while the honesty-oriented integrity facets shared a negative relationship (Duehr, Sackett, & Ones, 2003). These findings imply that the near-zero correlations between cognitive ability and

integrity tests may be due to combining the negative and positive relationships among the integrity facets (Sackett et al., 2005). This can be of use to organizations that may wish to minimize the cognitive load on their pre-employment screening by only utilizing certain facets of integrity tests.

### *Predictive Validities of Integrity Tests*

As noted earlier, an integrity test's relation to criteria such as CWB and other aspects of job performance, is often emphasized over that of its theoretical or conceptual coherence. Personnel selection researchers often distinguish between two types of criterion-related validities: concurrent and predictive. Both of these validities reflect the relationship between a test score (e.g., integrity test score) and a relevant criterion measure (e.g., CWB, supervisor rated job performance), however the two methods differ in their data collection techniques. A concurrent validity design entails administering a test to current employees while simultaneously collecting criterion information about those employees. A predictive validity design involves administering a test to job applicants, and then waiting to collect criterion information once they have established enough work experience. The following validity coefficients reflect the latter design, as it reflects a more realistic application of the use of integrity tests (i.e., using job applicant test scores rather than current employees). Ones et al. (1993) conducted the most comprehensive meta-analysis of integrity tests, and revealed that the tests are able to predict a variety of CWBs as well as other performance measures. The meta-analysis revealed the following population validity coefficients: .42 (overt tests with admitted theft), .39 (overt tests with various non-theft criteria), and .29 (personality tests with non-theft criteria) (Ones et al., 1993). Integrity tests also demonstrated high validities with other aspects of job performance. The estimated population validity coefficient between integrity tests and supervisors' ratings of

overall job performance is .41 (Ones et al., 1993). These validity coefficients fare well compared to other selection procedures (Schmidt & Hunter, 1998). Although academic cheating is not usually included in the CWB domain, a recent study found that integrity tests reveal moderate to strong validities in predicting several aspects of academic dishonesty, thus expanding the robust nature of these instruments (Lucas & Friedrich, 2005). A subsequent meta-analysis revealed that integrity tests can be predictive of a wide variety of specific performance measures, not just global measures (Ones & Viswesvaran, 1998a). These specific criteria include: job training performance (.38), production records (.28), accidents at work (.52), and property damage (.69). Therefore, integrity tests have large criterion-related validities with broad and narrow measures of job performance, making them a useful tool in personnel selection.

#### *Overt vs. Personality-Oriented Tests – Predictive Validity*

While integrity testing has been empirically proven to be a valid preventative measure against CWB, not all integrity tests are created similarly. In their meta-analytic studies, Ones et al. (1993) reported mean correlations of .45 among overt tests, .70 among personality-based tests, and .52 between overt and personality-based tests. This indicates that each integrity test may be performing differently and while there is some overlap, these tests are not interchangeable. In a later review of integrity testing, Sackett and Wanek (1996) concluded that there is not enough data from meta-analytic studies to indicate whether overt or personality-based tests are superior predictors of CWB. While overt tests may have larger mean validities ( $\rho = .55$ ) than personality-based tests ( $\rho = .32$ ), the value for the lower tail of the 90% credibility interval is higher for personality-based tests, indicating that validity estimates for overt tests are more variable (Ones et al., 1993). Since there exists some debate as to which type of test is more

predictive of CWB, one can investigate item-level validities to uncover similarities and differences across different tests.

#### *Item-Level Analysis of Integrity Tests*

Some research has investigated integrity tests by evaluating the similarities and differences between the types of items. Researchers take empirical and conceptual approaches to break up the tests into structured facets that reflect the nature of the items. One study found that some facets of two overt integrity tests were differentially related to some of the criterion variables (Nicole & Paunonen, 2002). In addition, some facets had higher correlations with CWB than did the overall score of the integrity tests (Nicole & Paunonen, 2002). An investigation of a popular overt based integrity test revealed that some facets have positive relationships with CWB while other facets share a negative relationship with CWB (Iddekinge, Taylor, & Eidson, 2005). Furthermore, the individual facets added variance beyond the overall score provided by the integrity test (Iddekinge, Taylor, & Eidson, 2005). These studies indicate that overt tests contain several types of items that predict CWB in a very different manner, and it is important to include items and facets that increase an integrity test's predictive ability and exclude those items and faces that limit its predictive ability.

One study examined item level responses across a personality-based integrity test and an overt test (Hogan & Brinkmeyer, 1997). Four themes emerged among the two tests: one factor represented the personality scale, reliability, while the other three factors represented the overt test, punitive attitudes, admissions of illegal drug use, and admissions of theft. A subsequent confirmatory factor analysis was conducted among the four scales, and an overarching factor emerged which the authors claimed to represent conscientiousness. This finding echoes the

conclusions made by Ones et al., (1993), when they investigated several integrity tests at the scale level.

Wanek, Sackett, and Ones (2003) furthered Hogan and Brinkmeyer's (1997) work by examining item level relationships among seven overt and personality-based integrity tests. The authors completed a judgmental sort of the test items and produced 23 distinct composites, which was then reduced into four factors by a principal components analysis procedure. The four components contained: Antisocial behavior (e.g., theft admissions), socialization (e.g., locus of control), positive outlook (e.g., viewing people as basically good), and orderliness/diligence. Among the four factors, antisocial behavior had the largest correlation with integrity tests in general (.63), while orderliness/diligence had the smallest correlation (.31). Overt tests had a larger average correlation with positive outlook than personality-based tests, while personality-based test shared a stronger relationship with socialization than did overt tests. Consistent with earlier analysis, factors among these integrity tests (antisocial behavior and socialization) correlated highly with the same Big Five dimensions found in previous studies: conscientiousness, agreeableness, and emotional stability. Waneck et al., (2003) suggest the next step of analysis would be to investigate the predictor-criterion relationships between the four factors found across these seven integrity tests.

#### Current Study

There exists considerable support in the literature that CWB is an important aspect of work performance and that organizations can create methods to prevent these types of behaviors from occurring. The purpose of this study involves a deeper analysis of the individual antecedents that lead to CWB. To this point, the integrative models of CWB do not differentiate which type of individual antecedents (e.g., attitudes, background variables, personality) can

better predict CWB. Among the integrity test literature, there is still not conclusive evidence about which type of item (personality or overt) best predicts CWB. This study will contribute to the development of theoretical models of CWB as well as practical strategies in constructing integrity tests

### *Research Questions*

Before predictors are compared with each other, it is important to create an adequate measure of the criteria. Based on Robinson and Bennett's interpersonal vs. organizational CWB typology, it is expected that their model will adequately fit the data.

*Hypothesis 1.* Robinson and Bennett's (1995) two factor (interpersonal vs. organizational) typology of CWB will fit the self reported CWB criteria using a confirmatory factor analytic approach.

The next step involves comparing the criterion-related validity of each type of predictor. Previous research provides support for each of these types of predictors; however their unique variance has not been compared at an item level.

### *Attitudinal Items*

Considering the relation between attitudes and intention to behave, an individual's attitude towards certain types of CWB can serve as a powerful method to screen individuals with a propensity towards CWB. Many overt integrity tests are constructed under this pretense, and ample evidence has shown the predictive validities of these types of tests. The current study includes specific attitudinal items that are directly related to the criteria measures, and general attitudinal items that reflect broad assumptions and beliefs about CWB. Both types of attitudinal items are expected to be related to the criteria.

*Hypothesis 2.* Attitudinal items will be significantly correlated with CWB.



### *Personality items*

The vast amount of literature discussing the role that personality plays in the prediction of CWB provides support for these types of items. Furthermore, personality-based integrity tests have been shown to exhibit consistently high correlations with several measures of CWB.

*Hypothesis 3.* Personality items will be significantly correlated with CWB.

### *Biodata Items*

Biodata items are distinct items that ask individuals about past behavior which are theorized to shape the person's behavior and identity in relation to a certain construct (Mael, 1991). Numerous studies have shown biodata items to be valid predictors of traditional (performance ratings) and nontraditional (team performance) work criteria (Stokes & Cooper, 1994). More recently biodata measures have been shown to correlate with integrity tests, at a level that integrity tests correlate with each other (Solomonson, 2000). The individual and situational background measures relating to integrity test scores were composed of types of biodata items (Mumford et al., 2001). While further investigation into the criteria related validities of biodata instruments is needed, it is evident that biodata is related to the integrity construct.

*Hypothesis 4.* Biodata items will be significantly correlated with CWB.

Since there exists minimal research examining which type of item is more predictive than others, it makes it difficult to generate a hypothesis that highlights one significant predictor over the other. Each type of item can be arguably more predictive than its counterpart based on previous research, but without empirical comparisons, a hypothesis must be grounded on general theoretical bases.

When considering attitudinal items, overt integrity tests have shown higher mean validities than their personality-based counterparts (Ones et al., 1993). In addition, attitudes towards CWB are considered more proximal to the behavioral act than personality or biographical antecedents (Vardi & Weitz, 2004). It is the proximal role of attitudinal items that suggest it is a better predictor of CWB than its distal counterparts.

With regard to personality items, broader personality variables may be better predictors of a broad and complex (i.e., multidimensional) performance criterion such as CWB (Ones and Viswesvaran, 1996). This argument, and the fact that personality-based integrity tests are less variable in their prediction of CWB, gives support for personality predictors (Ones et al., 1993).

One advantage that biodata items have over that of both personality and attitudinal items is that there exists less transparency in the item content, thus making it less susceptible to faking. This resilience to faking will increase the item's variance which allows the item to better differentiate between individuals that are likely to commit CWB. Furthermore, biodata instruments are empirically keyed to the criterion of interest, which allows non-linear relationships to be captured among the response options. A recent study also found biodata scales to provide incremental validity over measures of cognitive ability and Big Five personality constructs on a variety of work performance criteria (Mount, Witt, & Barrick, 2000).

These three types of items have not been directly compared to each other when investigating CWB; however previous research suggests that proximal variables are more predictive than distal variables (Vardi & Weitz, 2004). Among the distal variables, both biodata items and personality items have similar empirical and theoretical evidence that supports their predictive ability. Exploring their unique contributions will be important for theory development and the practical application of screening techniques to prevent CWB.

*Hypothesis 5.* Attitudinal items will explain variance beyond that of personality and biodata items in the prediction of CWB.

## CHAPTER 2

### METHOD

#### Participants

Archival data from 464 restaurant employees who completed the counter-productivity questionnaire will be used. The mean age of the sample was 27 years old, with 52% ( $n=241$ ) of the participants being male. Most of the sample was White (63%;  $n=292$ ), with others being Hispanic (21%;  $n=96$ ), African American (8%;  $n=36$ ), and Asian (4%;  $n=19$ ). The sample was highly educated, with 21% ( $n=96$ ) having at least a high school diploma or equivalent, 48% ( $n=222$ ) with some college, 12% ( $n=55$ ) had an associate or technical degree, 15% ( $n=67$ ) had a bachelors degree, 2.4% ( $n=11$ ) had attended some graduate school, and 3% ( $n=12$ ) had attained a graduate degree. Among the type of restaurant workers, 81% ( $n=375$ ) of the employees worked in full service restaurants and 72% ( $n=328$ ) were “front of house” employees (e.g., servers, bartenders), while 28% ( $n=75$ ) were “back of house” employees (e.g., cooks, utility workers).

#### Questionnaire Development

Batrus Hollweg, International initiated a research project in order to investigate counter-productive workplace behavior (CWB) in the restaurant industry. The purpose was to construct a screening test that could be used to evaluate hourly applicants who would be likely to exhibit counter-productive behaviors. Executives were interviewed and focus groups were conducted separately with managers and hourly employees to identify the most common counter-productive behaviors in a restaurant environment. Data were content analyzed by industrial psychologists, management consultants, and outside legal experts ( $n=10$ ). Eight categories of counter-productivity were evident (Food Tampering, Cash Theft, Sexual Harassment, Substance Abuse, Anti-Diversity, Product Theft, Disrespect for Others, and Unreliability). A 300 item

questionnaire was developed to adequately assess these types of behaviors and possible antecedents. Items included in the questionnaire were developed by the same industrial psychologists, management consultants, and outside legal experts ( $n=10$ ) who determined the categories of CWB. Item development and selection procedures were based on content relating to the CWB literature and information collected in the interviews and focus groups.

Participants were recruited through flyers and through their organization which informed them of the study. For participants to qualify for the study, they must have had at least six months of restaurant experience. One set of participants completed the questionnaire at a community college in the Dallas/Fort Worth area, while others were from the Culinary Department at Florida International University. All participants were given the questionnaire, instructed to answer the questions honestly, and were assured of anonymity. No names were requested. Participants received a cash payment of \$40 upon completion of the assessment instruments.

Participants completed the 300 item “Work Topics Questionnaire” (Batus Hollweg, 2004) that measured several components of counter-productive behavior among restaurant staff. This original questionnaire measured personality tendencies, attitudes of counter-productive behaviors, work and high school background, and admission of counter-productive behavior. The questionnaire was separated into two equal sections. The first section (Section A) consisted of personality items and some general attitudes about CWB. Section A response options ranged from (0) *strongly disagree* to (4) *strongly agree*. Some of these items were worded in a positive manner, while a relatively equal amount of items were worded in a negative manner. Section B consisted of biodata items, admissions of counter-productivity, and attitudinal items that paralleled the admission items. Response options varied throughout this section.

## Procedure

The 300 questionnaire items were grouped into the appropriate variables for the current study. The admissions of CWB were used as the criteria (e.g., “How often do you pinch or grab co-workers of the opposite sex?”). I sorted the criteria into interpersonal CWB and organizational CWB based on the content of the items. The intended target of the act was used as a guiding explanation for sorting them into the appropriate categories. This judgmental sort resulted in 21 organizational CWB items and 28 interpersonal CWB items (see Appendix A for sample items).

The antecedents were then grouped into their appropriate categories. Specific attitudes towards CWB were grouped based on their parallel relation to the admission items. All of these items were located in Section B of the questionnaire. While the admission based items asked how often an individual engaged in the behavior, the specific attitude items asked the individual the acceptability of the behavior (e.g., “It is acceptable to pinch or grab co-workers of the opposite sex.”). This grouping resulted in 47 specific attitudinal items (see Appendix B for sample items). Next, I sorted the general attitudes towards CWB. These items included, but were not limited to: the prevalence of CWB, beliefs about organizational and societal policies, and assumed impact of CWB. All of these items came from Section A of the questionnaire. These items did not parallel any of the admission based items, but they still reflected an individual’s attitude about constructs related to CWB. This grouping resulted in 38 general attitudinal items (see Appendix C for sample items). I sorted the personality items based on their content as well. These items were considered to assess one’s personality as they directly asked participants about their personal tendencies to think or behave (e.g. “You prefer to show up early for appointments”). The personality items reflected several constructs related to CWB as discussed

in the previous section. All of the personality items came from Section A, and the sorting resulted in a total of 69 items (see Appendix D for sample items). Finally, biodata items were grouped together based on Mael's (1991) conceptual rationale that considers the historical, objective, and external nature of the items (e.g., "In high school, how often did you study for tests?"). Most of the biodata items were collected from the beginning of Section B, and three items came from Section A. This grouping resulted in 28 biodata items (see Appendix E for sample items). Other items in the 300 item questionnaire were not included in the study because of their lack of conceptual fit into the antecedents and criteria of interest.

### Analysis

A confirmatory factor analysis was performed to test the first hypothesis that proposed a two factor structure of CWB: interpersonal vs. organizational CWB. Fit indices were examined to determine if the two factor structure fit the data, and modification indices were evaluated in order to identify if any improvement could be made in altering the model by dropping items that did not load appropriately. Upon determining an adequate fit of the criteria, composite scales were created by summing the items within each CWB factor (organizational and interpersonal).

The second through fourth hypotheses, which predicted each antecedent group to correlate significantly with the criteria, was tested through zero-order correlations. Each antecedent category was summed to create a composite score, and then correlated with the interpersonal and organizational CWB composite score. A significant correlation between each antecedent and the criteria would provide support for the hypotheses.

Finally, hierarchical multiple regression was performed to assess whether the attitudinal items explained a significant amount of variance beyond that of the personality and biodata items in the prediction of CWB, as proposed in the fifth hypothesis. Based on the hypothesis, the types

of antecedents were entered in the following order: Personality items, biodata items, general attitudinal items, specific attitudinal items. After each type of antecedent was entered into the regression equation a significant change in  $R^2$  indicated whether each antecedent explained variance beyond the previous antecedent. In order to provide support for the fifth hypothesis, the attitudinal items would have to contribute a significant  $R^2$  change after entering the personality and biodata items.



## CHAPTER 3

### RESULTS

The results are reported in order by each hypothesis. The confirmatory factor analysis and model estimation sections reports the statistical tests of the first hypothesis regarding the factor structure of the criteria. Next, the antecedent and criteria correlations section reports the descriptive information of the antecedent scales and their correlation with the criteria. Finally, the hierarchical regression of counter-productive workplace behavior (CWB) antecedents and criteria section reports information regarding the fifth hypothesis, in which attitudinal items were proposed to explain variance beyond the personality and biodata antecedents.

#### Confirmatory Factor Analysis

In order to ensure a valid and reliable measure of CWB criteria, a confirmatory factor analysis was performed to test whether the proposed CWB typology fit the data. A two factor model of CWB was hypothesized, assigning 49 self report criterion items to either an interpersonal or an organizational CWB factor. It was hypothesized that 28 items would load on the interpersonal CWB factor and 21 items would load on the organizational CWB factor.

Sample size was deemed adequate as there were more than five individuals for each variable (Gorusch, 1983), and the sample size was over 300 (Guadagnoli & Velicer, 1988). The “does not apply” or “not sure” response options were considered as missing values, which decreased the overall sample size. Less than 3% of the data values were missing, however due to listwise deletion of missing cases, the sample size was reduced to 309. Assumptions of univariate and multivariate normality were evaluated. Univariate outliers were determined by examination of  $z$ -scores where the data were  $\pm 3.29$  standard deviations from the mean, which indicates a critical value at a probability level less than 0.001. Multivariate outliers were identified utilizing

Mahalanobis distance, a statistic that estimates the multivariate distance between a given case and sample means (called “centroids”). A conservative estimate of a multivariate outlier is indicated by a value of the Mahalanobis distance exceeding the critical value in a chi square table at a probability level of 0.001 (Tabachnick & Fidell, 2001). There were several univariate outliers for each item and some multivariate outliers, however due to the nature of the data, outliers were expected. Specifically, 33 out of the 49 items contained univariate outliers, and there were 47 multivariate outliers in the entire dataset. The outliers found were not due to incorrect data entry or improper sampling; rather the population distribution contained some extreme values (Tabachnick & Fidell, 2001). Deletion of outliers would not only decrease sample size, but also leave out valuable data points that reflect the population distribution of the construct being inspected. Considering the careful development of the scale and the nature of the data, some outliers were expected due to the few people that report serious offenses of CWB. By deleting these cases, information would be lost on the individuals that admit to the exact behavior intended for investigation in this study. Furthermore, alterations made to these data points would only be necessary for cases causing extreme influence on the data. Therefore, the outliers were left in for the analysis. The following analyses should be evaluated in light of these points; however the model estimation is not expected to be greatly distorted from these findings.

LISREL 8.52 (Jöreskog & Sörbom, 2000) was used to perform confirmatory factor analysis on all of the proposed models. In order to determine model fit, appropriate fit indices, item loadings, squared multiple correlations of the items, and modification indices were reviewed for each proposed model. Maximum likelihood estimation was employed to estimate all models. As recommended for CFA, multiple fit indices were reviewed to determine fit of the model (Bollen, 1989). These fit indices included minimum fit function of chi-square, root mean

square error of approximation (*RMSEA*), non-normed fit index (*NNFI*), comparative fit index (*CFI*), and standardized root mean square residual (*SRMR*). Additional fit indices not discussed in the results were reviewed and are included in Appendix F.

In confirmatory factor analysis, a model is specified, parameters for the model are estimated using sample data, and the parameters are used to produce the estimated population covariance matrix. The model was specified by assigning each item to its respective factor, either interpersonal or organizational CWB. Next, the model was estimated using maximum likelihood procedures, as it is recommended for medium sample sizes (Tabachnick & Fidell, 2001). Estimation methods in confirmatory factor analysis attempt to minimize the difference between the observed and estimated population covariance matrices. A “good fit” of these matrices is often indicated by a non-significant  $\chi^2$ . A non-significant chi-square would indicate that overall fit of the over-identified model (more data points than estimated parameters) is no worse than the “perfect” fit of the just-identified version of the model (data points and parameters are equal). In other words, the model being tested is not significantly worse than a model that perfectly reproduces the sample covariance matrix. Therefore, low and non-significant  $\chi^2$  values are desirable and constitute a good fit of a model to the data. A strong limitation of  $\chi^2$  statistic as a goodness of fit index is its sensitivity to sample size and assumptions underlying the  $\chi^2$  test statistic (Bentler, 1988). To overcome this limitation, various alternative overall model fit indices were reviewed.

One set of fit indices are known as comparative fit indices. An example of this is the Bentler-Bonnett (1980) normed fit index (*NFI*), which compares the fit of the current hypothesized model to that of an “independent model” in which all the relations between the variables are set to zero. This independent or null model can serve as a good base model against

which to compare successive models. The purpose of the hypothesized model is to specify relationships between variables with the goal to achieve significant improvement in model fit, as reflected in the *NFI*. The *NFI* ranges from 0 to 1. Higher values (greater than .90) indicate an acceptable fit, while lower values (less than .85) indicate an unacceptable fit (Hu & Bentler, 1995). The non-normed fit index (*NNFI*) adjusts the *NFI*, by taking into account sample size, due to the fact that the *NFI* may underestimate the fit of the model in smaller sample sizes (Bearden, Sharma, & Teel, 1982). The comparative fit index (*CFI*; Bentler, 1988) also assesses fit relative to other models, but uses a noncentral  $\chi^2$  distribution with noncentrality parameters. Interpretation of the *CFI* is similar to that of the *NFI* and *NNFI*. The root mean square error of approximation (*RMSEA*; Browne & Cudeck, 1992) estimates the lack of fit in a model compared to a perfect model. *RMSEA* values closer to zero indicate a better fit, with values above .10 indicating a poor fit, and values below .08 indicating an acceptable fit (Browne & Cudeck, 1992).

There also exist fit indices based on the residuals. The root mean square residual (*RMR*) and the standardized root mean square residual (*SRMR*) are the average differences between the sample variances and covariances and the estimated population variances and covariances. *RMR* and *SRMR* have a range from 0 to 1. Good fitting models have lower values, with .08 serving as a desired standard (Hu & Bentler, 1999). It is recommended to report the *SRMR* and a comparative fit index; therefore both of these values were captured and evaluated (Hu & Bentler, 1999).

### *Model Estimation*

As shown in Table 1, the hypothesized two factor model of CWB revealed a mediocre fit to the data,  $\chi^2(1126, N = 309) = 4159.50, p < .05$ , as indicated by the comparative fit index (*CFI*)

= .89 and non-normed fit index (*NNFI*) = .89 (Hu & Bentler, 1995). However, the root mean square error of approximation (*RMSEA*) = .12 indicated an unacceptable fit (Browne & Cudeck, 1992). All items loaded significantly, at the 0.05 level, on the designated factor in each of the models.

Modification indices indicated some items that cross loaded, which led to the deletion of four items (indicated in Appendix A). The content of the items also gave a theoretical basis to delete them for further analysis. For example, item 79 read, “How often have you taken tips that were not yours?” and was proposed to load on the interpersonal CWB factor. Although someone may take tips that do not belong to them, their intent is perhaps not to impact a particular person. Many times, one probably doesn’t know who the tips belong to, and the act is similar to taking cash from the restaurant. Items 91 and 93, pertain to serving customers contaminated or improperly prepared food and both were proposed to load on the interpersonal CWB factor. Many workers may have knowingly served spoiled food, but it does not imply that they spoiled the food themselves. Some workers may be obligated to serve food, no matter the condition, without having the intent to harm someone. In addition, some workers may not be concerned about the quality of food in general, and not intentionally trying to harm a particular person. This last argument provides a better explanation for deleted item 94, which asked how often the individual intentionally contaminated food they prepared or served to a customer. Individuals that contaminate food may often display unreliable food preparation rather than overt hostility towards other people. All four of these items belonged to the interpersonal CWB factor, which may point to the complex nature of this particular facet of CWB.

Model 2 proposed the same two factors without the four items that cross loaded, and revealed a significant improvement in the fit of the model,  $\chi^2_{\text{diff}}(182, N = 309) = 902.16, p < .05$ .

If models are nested (subsets of each other), the difference between the original model fit and the modified model fit to the data is also a  $\chi^2$  distribution ( $\chi^2_{\text{diff}} = \chi^2_{\text{orig}} - \chi^2_{\text{modif}}$ ,  $df = df_{\text{orig}} - df_{\text{modif}}$ ) allowing testing for significance in change of fit. In this case some parameters were trimmed (deleted), allowing one to test the two nested models. Other fit indices also revealed improvements due to decreases in the *RMSEA* statistic bringing it closer to .10 (Browne & Cudeck, 1992) and the *SRMR* statistic as it approached the .08 standard (Hu & Bentler, 1999). A slight increase was observed in the *CFI* and *NNFI* values, indicating an acceptable fit.

An examination of the correlation between the two factors (.82) led to a proposed third model that included only one factor. Model 3 did not indicate any improvement by any of the fit indices. Therefore, Model 2 was the best model among the three tested models. While the *RMSEA* and *SRMR* fit indices indicated an unacceptable fit for Model 2, the *NNFI* and *CFI* indicated an acceptable fit to the data. These findings indicate that there can be substantial improvement to the model providing only marginal support for Hypothesis 1.

Means, standard deviations, and alpha coefficients are presented in Table 2 for the CWB scales. As Table 2 indicates, the interpersonal CWB ( $\alpha = .91$ ) and organizational CWB ( $\alpha = .89$ ) scales reveal high internal consistency providing evidence that items in each scale are measuring a homogenous construct. Therefore, the criterion scales are reliably measuring each type of CWB, and not other constructs or chance errors. This provides support for using these criteria scales for further analysis, because the composite scales contain items that are highly related to one another. Inspection of these scales revealed only two univariate outliers among both scales, which was substantially fewer than the previous item level analysis.

## Antecedent and Criteria Correlations

The next step involved examining the relationship between the types of antecedents and the two factor typology of CWB. The composite scales of the criteria (interpersonal CWB and organizational CWB) and antecedent variables were inspected for multivariate assumptions. The criteria scales and the specific attitudinal scale were positively skewed (as was expected due to the nature of the data collected). The personality scale, general attitudinal scale, and biodata scale revealed normal distributions. Very few outliers were found among all of the antecedent variables. More specifically, there were two outliers for the general attitudinal scale, five outliers for the specific attitudinal scale, one outlier for the personality scale, and no outliers for the biodata scale. The outliers were left in for analysis for reasons already discussed. Means and standard deviations for all of the antecedents are presented in Table 3 and correlations between the antecedents and the CWB criteria are presented in Table 4. The antecedents and criteria scales were both scored in the positive direction, therefore positive correlations were expected (i.e., a higher score on the antecedent scale is associated with higher reports of CWB on the criteria scale).

Hypothesis 2 proposed that the attitudinal items would be significantly correlated with the CWB criteria. As noted in the previous sections, there existed two types of attitudinal items in the original questionnaire. The specific attitudinal items measured the participants' acceptance of engaging in CWB, and directly paralleled the CWB criterion items. The general attitudinal items measured several different attitudes related to CWB, but did not directly parallel the CWB criteria.

Before investigating the specific attitudinal items as an antecedent, correlations were conducted to assess whether these types of items are distinctly different than the self-reported

criteria items. If the paralleled attitudes were highly correlated ( $>.8$ ) with the admission criteria, then evaluating the specific attitudes as an antecedent would be inappropriate. In other words, if self-reported acceptance of the behavior is the same as reported admission of the behavior itself, then the distinction between the antecedent and criterion would be blurred. However, if the correlations were moderate, then a distinction could be made between the attitudinal items and the criterion items. For example, with moderate correlations, some individuals in the sample may engage in CWBs but deem them unacceptable while conversely some individuals may not engage in CWBs but find them quite acceptable. Table 5 presents these correlations and it is apparent that the paralleled items are not identical due to the moderate correlations observed (not all item descriptions are used to prevent exposure of item content). Correlations ranged from .14 to .53, with an average correlation of .42.

The specific attitudinal items and general attitudinal items were then summed to create a composite scale. The internal consistency estimates were considerably higher for the specific attitudinal items ( $\alpha = .96$ ) than the general attitudinal items ( $\alpha = .76$ ), although both were at a reasonable level. The specific attitudinal items revealed strong and statistically significant correlations with interpersonal CWB ( $r = .63, p < .01$ ) and organizational CWB ( $r = .70, p < .01$ ). The general attitudinal items revealed small correlations, indicating a negligible relationship with both factors of CWB. Therefore, Hypothesis 2 was supported by the specific attitudinal items relationship with CWB, but not by the general attitudinal items relationship.

Hypothesis 3 proposed that personality based items would be significantly correlated to the criteria as well. The personality items were summed and then correlated with the two CWB factors. The personality scale revealed low internal consistency ( $\alpha = .57$ ), indicating that several constructs were included in the scale, rather than one, homogenous construct. The small



correlations indicated in Table 4, reveal that the personality items do not share a significant relationship with the criteria. Therefore, Hypothesis 3 was not confirmed.

The biodata items were unique in that a priori scoring was not present as it was with the attitudinal and personality antecedents. The biodata scale was developed by empirically scoring the data from the developmental sample, a two-thirds random sample of the full sample. While some recommendations vary for the size of the developmental sample, England (1961) suggests that one-third more individuals be included in the developmental sample compared to the hold-out sample (cross-validation sample). This suggestion has been accepted by later applications of biodata as well (Hogan, 1994). For each item, weights were assigned to each response option based on the standardized mean criterion score of the participants selecting that particular option. This weighting technique involves converting the standardized criterion mean for each response option to a scoring weight by multiplying times ten and rounding to a whole integer. A rational process was used along with this procedure and is discussed in further detail below. The standardized mean criterion consisted of both interpersonal and organizational CWB criterion items in order to avoid over reliance of either scale.

A rational calibration was performed to limit the sample-specific impact of empirically keyed items while also avoiding illogical scoring. For instance, if a linear trend was apparent among some of the response options, but one option's mean was not in line with the others, the scoring was adjusted to reflect the linear trend. Response options that were selected by only a few people were rationally calibrated as well due to the possible exaggeration of mean criterion scores provided by a few people. For example, one response option may have a high standardized mean criterion score (e.g., .6, .8), but only have one or two cases contributing to that mean score. Assigning an extreme positive weight could be taking advantage of chance

variation in the sample. The empirical and rational method to score biodata items is widely used in practice and supported and encouraged in the biodata literature (Mael & Hirsch, 1993).

Response options ranged from -2 to +2, in order to have consistent variability with the other types of antecedents. (i.e., a range of five response values). Limiting the response values fell in line with the rational approach of scoring biodata items by not taking advantage of developmental sample characteristics. A high correlation in the developmental sample could be reached by assigning the exact standardized mean criterion score to each response option; however the correlation would be expected to drop greatly when response weights are applied to the hold-out sample. Therefore, larger mean criterion values (e.g., above +/- 0.4) were limited to values of +/- 2, in order to establish scoring weights that would generalize to the hold-out sample.

The items were then summed and correlated with the remaining one-third hold-out sample (i.e., cross-validated). The biodata scale indicated a modest reliability estimate of internal consistency ( $\alpha = .72$ ), however many biodata scales are not known for high internal consistency considering the nature of the items. A hold-out sample was used for the correlations with the criteria, because of the maximization of sample specific variation in the developmental sample. The hold-out sample correlation reveals a more generalizable and comparable validity coefficient. The biodata scale provided support for Hypothesis 4, due to its strong cross-validated correlation with interpersonal CWB ( $r = .61, p < .01$ ) and organizational CWB ( $r = .60, p < .01$ ). Correlations with the other antecedents were performed using the full sample once it was determined the weights generalized. The full sample provided a better estimation of the true relationships between the antecedents.

## Hierarchical Regression of CWB Antecedents and Criteria

Hypothesis 5 stated that the attitudinal items would explain variance beyond that of the personality and biodata items, due its proximal relationship to the counter-productive behaviors. Despite exclusion of several cases due to missing values, the sample size was still adequate to test the multiple correlation ( $N > 50 + 8m$ ), and to test individual predictors ( $N > 104 + m$ ), where  $m$  is the number of predictors (Green, 1991). It is critical to have a substantial cases-to-predictor ratio when using multiple regression in order to detect a meaningful relationship. The formulas used for calculating an adequate cases-to-predictor ratio assumes a medium-size relationship and the following error rates,  $\alpha = .05$  and  $\beta = .20$ . This hypothesis was tested using hierarchical multiple regression analyses.

The personality scale was entered in Step 1, followed by the biodata scale in Step 2, and then the two types of attitudinal items were added in Steps 3 and 4. Considering that the personality and biodata variables were more distal in their relationship with CWB than the attitudinal variables, it was expected that the attitudinal variables would explain variance above and beyond that of personality and biodata. While personality variables have received considerable support in the literature for having a relationship with CWB, biodata variables had not received the same attention, so it was important to detect whether biodata variables explained any variance beyond the personality variables. In hierarchical regression, predictors entered early in the sequence retain as much variance as possible, while subsequent predictors are evaluated on the variance added to the full model. A summary of the regression analysis is provided in Table 6.

As can be seen, the biodata scale added substantially to the prediction of interpersonal CWB ( $\Delta R^2 = .350, p < .01$ ) and organizational CWB ( $\Delta R^2 = .394, p < .01$ ), while the personality

scale failed to predict either type of CWB. The general attitudinal scale did not explain any substantive variance in this model, however the gain by adding the specific attitudinal items was significant for interpersonal CWB ( $\Delta R^2 = .182, p < .01$ ) and organizational CWB ( $\Delta R^2 = .230, p < .01$ ) after controlling for the previous types of antecedents. This finding gives partial support for Hypothesis 5. The full model with all four predictors accounted for 53% of the variance in interpersonal CWB and 62% of the variance for organizational CWB.

Considering the range of the number of items and reliability estimates among the antecedent scales, analyses were run again after trimming the scales to create a more equal comparison. Since the specific attitudinal scale had an extremely high reliability estimate, it was evident that several items could be trimmed, and high internal consistency could be maintained. From a practical perspective, a scale in an integrity test with 69 items would be excessive and take considerable time on the job applicant and the organization. The personality and general attitudinal scales had lower reliabilities, which suggested that their reliability estimates could be boosted by possibly trimming some items that did not fit within the scale. In order to determine which items should be trimmed, all of the antecedent scales were analyzed by inspecting the corrected item-total correlations and the alpha-if-deleted statistics. If the alpha level could be increased by deleting a particular item, or if the item-total correlation was relatively small or negative, then that item would be deleted. Once the appropriate items were deleted, the scales were reconstructed and analyzed. The resulting number of items per scale, means, and standard deviations for all of the trimmed antecedents are presented in Table 7 and correlations between the trimmed antecedents and the CWB criteria are presented in Table 8. The regression analysis for the trimmed antecedents is presented in Table 9.

Although the scales contained about the same number of items, and the personality scale increased its reliability estimate tremendously, the results are similar to the previous analyses. This analysis provides support for trimming the number of specific attitudinal items, considering that it still maintained a strong relationship with the criteria despite the fact that over half of the items were deleted. The biodata scale still maintained a strong relationship with the criteria; however, few items comprised that scale to begin with, so a dramatic effect was not expected. After trimming the antecedent scales, the results for each of the respective hypotheses remained the same.

These results provided support for Hypotheses 4, partial support for Hypotheses 2 and 5, marginal support for Hypothesis 1, and no support for Hypothesis 3. A confirmatory factor analysis was performed to test the two factor model of CWB as proposed in Hypothesis 1. Some fit statistics indicated an acceptable fit, while others indicated an inadequate fit. Further testing of the number of factors of CWB is recommended for future research. The specific attitudinal items correlated substantially with CWB; however the general attitudinal items failed to correlate with CWB, providing only partial support for Hypothesis 2. Hypothesis 3 was not confirmed due to the fact that the personality items did not correlate with CWB. The biodata items correlated at a high level with CWB, providing support for Hypothesis 4. Finally, Hypothesis 5 was partially supported due to the fact that the specific attitudinal items explained additional variance beyond the personality and biodata items, while the general attitudinal items failed again to explain any variance of CWB.

## CHAPTER 4

### DISCUSSION

The present study investigated a typology of counter-productive workplace behavior (CWB) and the relationships among the antecedents of CWB. The results supported some of the hypotheses proposed, while other hypotheses failed to replicate previous research. In Hypothesis 1, Robinson and Bennett's (1995) typology of CWB was proposed to fit the data. This typology includes two factors: interpersonal CWB and organizational CWB. A confirmatory factor analysis indicated a mediocre fit. Four items were deleted because of high cross loadings, which improved the fit of the two factor model, indicated by a chi-square difference test. Other fit indices did not improve substantially to a desired level that would have indicated a strong fit. While there existed some discrepant interpretations from the fit indices, the two scales revealed high internal consistency which suggested the two scales reliably measured their intended construct. A high correlation among the two factors led to another test of a one factor model. Surprisingly, this model indicated a poorer fit than the two factor model. The lack of fit for the one factor model was especially interesting, considering the similar correlation patterns among the antecedents and the two criteria scales. The antecedents correlated very similarly with the two criteria scales, indicating a higher order factor may be present. However, there may be additional antecedents not included in this study that may share different relationships with the two CWB factors.

Considering the mediocre findings with the two factor model, and the poor fit of a one factor model, it may be possible that more factors are present; however this would need to be empirically tested using a theoretical framework. The current study addressed Robinson and Bennett's (1995) widely accepted two factor typology of CWB, and further work should test the

various other factors involved with CWB. Considering the wide array of behaviors included in this construct, it can be difficult to create a reliable, yet parsimonious typology of CWB. The data in the current study may fit a number of factors that may not generalize to a different sample, where different types of CWB are realized or defined. A meta-analytic investigation may be warranted once enough studies are collected to interpret the number of factors in this elusive construct.

A possible explanation for an additional factor may be the difference between interpersonal CWB intended for co-workers versus customers. Restaurant employees, or customer service employees, may exhibit a high need to please their customer, while also sabotaging or degrading their co-workers. Further research needs to investigate the difference between CWB displayed to members within the organization and those outside of the organization. Although a better model fit was desired, analysis continued by investigating the antecedents of CWB using this measure of interpersonal and organizational CWB.

Hypotheses 2-4 proposed that several types of individual level antecedents would share a significantly positive relationship with the CWB criteria. These antecedents include: personality variables, biodata variables, and attitudinal variables. The results indicated that the biodata scale and the specific attitudinal scale significantly correlated with the CWB criteria; however the personality scale and the general attitudinal scale failed to correlate at all. The specific attitudinal scale contained items that paralleled the CWB criteria, highlighting the importance of measuring attitudes that closely reflect the behaviors being predicted. In Vardi and Weitz' (2004) model of CWB, an attitude towards engaging in CWB plays a more proximal role than the other individual level antecedents. While the model considers these types of attitudes as mediating forces, the current study did not investigate their mediating effects using statistical procedures. However, it

seems that the lack of correlation between the personality scale and the specific attitudinal scale indicates that personality variables do not act through the attitudinal mediators.

Despite considerable support for broad and narrow measures of personality predicting CWB, the results did not replicate these findings. One explanation for this finding may be that the personality items included in the scale were not trimmed or validated, however their content is very similar to other personality based personnel selection tools providing support for their face validity. In addition, the personality variables measured constructs related to many of the CWBs included in the study which should lead one to suspect at least a small relationship to exist. However, because many constructs were combined into a general personality scale, a low reliability estimate was witnessed. This indicates that several constructs were assessed in the scale, but each construct may not have a similar relationship with the criterion. For instance, some items relating to conscientiousness may share a strong relationship with the criterion, but other items in the scale relating to a non-predictive construct of CWB may diminish that relationship. As noted in the introduction, however, integrity tests usually consist of items measuring several constructs, where predicting the criterion is a more important goal than having internal consistency. Furthermore, once several items were trimmed from the personality scale, while greatly increasing its reliability, a relationship was still not evident with the criteria. A similar finding was found with the general attitudinal items, in that several constructs relating to CWB were assessed, but the overall scale failed to identify a strong relationship with the criterion even after item trimming was performed. This evidence points to the fact that the internal consistency of these measures did not greatly impact their correlations with the criteria. The personality items and general attitudinal items should have been somewhat correlated with



CWB, but the lack of evidence supporting this should promote further inquiry into the use of personality items and general attitudinal items in the prediction of CWB.

The biodata scale, which was empirically and rationally scored, revealed a strong relationship with the CWB criteria as well. There existed some evidence that biodata scales can predict CWB, however the literature on biodata measures and CWB is not as vast as personality or attitudinal predictors. While a high correlation is expected using the sub sample from which the items were scored, the biodata scale maintained a high correlation when cross validated. Research in the field of personnel selection reveals that biodata can be a valid predictor of many other aspects of work performance, and this study adds the realm of CWB to that list (Mount, Witt, & Barrick, 2000).

Hypothesis 5 stated that the attitudinal items would explain variance above and beyond that of the other types of antecedents. The specific attitudinal items explained a significant amount of variance beyond the other variables, but the general attitudinal items did not add any predictive variance to the full model. As witnessed with the correlation analysis, the specific attitudinal scale and the biodata scale were the only significant predictors of the CWB criteria in the full regression model. These results were maintained even after trimming several of the scales to have a comparable number of items and reliabilities. In particular, over half of the specific attitudinal items were trimmed, and it still was able to explain a significant amount of variance over the other items. The biodata scale and the specific attitudinal scale each had separate and distinct advantages over the other scales, thus allowing them to be better predictors.

The specific attitudinal scale had the advantage of measuring attitudes towards the exact behaviors used in the criterion. This highlights the importance of having the content of the predictor and criterion measures in line with each other. It was not enough for the personality

and general attitudinal item scales to measure constructs and behaviors closely related to the self reported behaviors to achieve substantial prediction. This has implications for test validation, as it suggests that higher validities can be realized when the predictor and criterion are very similar to each other. If the criterion in this study used external measures of theft or other CWBs, the specific attitudinal items may not have seen the same level of predictive ability. Furthermore, if supervisors rated the participants on dependability, then the personality items related to that construct may have witnessed higher validities. Further investigation of content and construct similarity among predictors and criterion measures may bring new light into the prediction of CWB.

Another explanation for the high correlations among the specific attitudinal items and the criteria could be common method variance. The specific attitudinal items were presented directly after the criteria items and had a frequency response scale similar to the criteria items. The parallel construction of the content of the items also influenced the method variance. In other words, the construction and administration of the questionnaire could have influenced the respondents to answer the specific attitudinal scale and criteria items in a similar manner. In contrast, the personality and general attitudinal items were located in a different section of the questionnaire and contained responses identifying their level of agreement with the statements, rather than indicating a frequency response. These methodological factors need to be considered when reviewing the findings.

The biodata scale had the advantage of being empirically scored, thus capturing non-linear trends in the data. When responding to sensitive items regarding CWB, some individuals that engage in CWB may tried to mask their true response choice when filling out a questionnaire or personnel selection test. There can be some important trends in these response patterns that

would otherwise be missed with a normal Likert-type scale. For instance, individuals that engage in CWBs may admit to acting aggressively three to four times in the past year, but not to five or more. Therefore, weighting the “three to four” response option heavily could capture that response trend. The empirically and rationally scored keys were able to cross-validate well, however further testing on a new and different sample is recommended to evaluate the generalizability of the weights. The hold-out sample was probably not considerably different than the development sample, considering all participants were in the same position level and the industry. Applying these weights to a sample in another industry or location would indicate how sample specific these response patterns were in the current study.

Altogether the variables explained a considerable amount of variance in the criteria, 53% and 62% for interpersonal CWB and organizational CWB, respectively. Once again, this provides support for the influence of individual level variables explaining CWB. Although no situational variables were included in the current study, the fact that the majority of variance was explained by individual level variables is promising for the utility of personnel selection methods in preventing CWB. In other words, there are individual characteristics (e.g., specific attitudes toward CWB), that can be assessed in order to determine one’s propensity to engage in CWB. There still exists considerable variance unaccounted for by individual variables; therefore future work should incorporate the role of situational variables that bring about CWB. Furthermore, the interaction of situational and individual variables could provide a clearer picture of how CWB is manifested.

### Implications

The findings of the study are important on practical and theoretical grounds. Not only did the study address the measurement of CWB as a criterion measure, but also the antecedents that

predict this type of behavior. Many studies tend to focus on one aspect of CWB, but the data provided in this study allowed investigation of several aspects of this construct.

The variables included in the study were derived from a research initiative to create an integrity test to be used as a pre-selection tool for the restaurant industry. From a practical perspective, this study contributed to the investigation of integrity tests as predictors of CWB. Research has been conducted from a broad perspective providing evidence for these types of instruments as valid predictors of job performance and CWB (Ones et al., 1993). The present study took a deeper look at what types of variables and constructs contribute to the relationship between types of integrity test items and CWB. The few studies that assembled and compared scales across integrity tests grouped them on the basis of their relation to certain types of CWB (e.g., theft admissions, turnover, orderliness). The current study took a different approach by grouping the items according to the different types of integrity tests used in personnel selection (i.e., overt, personality-based, biodata). The current literature did not currently have a clear-cut answer as to which type of test (overt vs. personality-based) was more effective in the prediction of CWB, therefore it was important to compare the types of items comprising these instruments in the same sample. A direct comparison of these types of integrity tests is often difficult to achieve because they are proprietary instruments that are often used in different samples and with different industries. This study used the same sample in one industry to directly compare which type of items are better predictors. The findings suggest that overt tests that assess attitudes towards CWBs are more valid predictors than personality measures due to the high correlations between the specific attitudinal variables and the criteria. This study also introduced empirically keyed biodata items as valid indicators of CWB. Previous literature had not

compared the predictive validity of biodata measures to the other more common overt and personality-based measures.

Overall these findings can provide guidance to test developers and practitioners that wish to create integrity tests or decide which types of integrity test to employ. It is important to note that while the current study found the attitudinal items predicted CWB better than the personality items, there are other practical advantages to using personality scales in personnel selection. Valid and reliable personality measures can predict other forms of job performance (Barrick & Mount, 1991), and can also provide insight into an employee's work style that can be used for further development. Attitudinal or biodata scales, while highly predictive of CWB, are limited in their use for development due to the nature of the items.

This study also revealed the relationship between different types of individual antecedents of CWB and their relationship with CWB using a theoretical framework. While considering Vardi and Weitz' (2004) integrative model of CWB, the current analysis revealed that attitudes towards engaging in CWB play a strong role in the process of engaging in CWB. The current study found that if individuals believe that a certain act of CWB is acceptable, they may be more prone to actually engage in that behavior. This finding reflects the instrumental force described in Vardi and Weitz' (2004) model of CWB. According to the model, an instrumental force involves an evaluation of the outcome or consequence of engaging in CWB to achieve a specific goal. If the person deems the outcome as worthwhile then the occurrence of that behavior is more likely. With respect to the current study, this instrumental force may also increase the acceptability of engaging in the counter-productive act. For example, if a restaurant server feels that they are underpaid and the chances of being caught stealing a small amount food or cash from the restaurant is minimal, then they may deem that behavior more acceptable.

However, if a restaurant server is content with their pay and is gravely concerned with the consequences of stealing from the restaurant, theft is likely to be viewed as unacceptable behavior. Further investigation of the mediating effects of attitudinal items should be explored to help augment the model.

Although the personality variables were not supported as valid antecedents of CWB, future work should consolidate the findings of previous studies to uncover how these variables influence the process of CWB. For instance, personality variables may only play a strong role in a setting where greater autonomy and less supervision is present. Furthermore, personality variables may only predict certain types of CWB that are closely related to the personality scale. While this study created a heterogeneous composite of personality items, future work can compare narrow, but homogeneous personality scales in the prediction of CWB.

This study addressed individual level variables, however situational variables included in Vardi and Weitz' (2004) model of CWB should be investigated as well. In applied research, the situation is not as easily manipulated or predicted as individual variables, so creative methods to measure situations must be utilized.

#### Limitations

Although this study contributed some worthwhile findings, several limitations need to be mentioned. One possible limitation of the study is that the findings may not be generalizable to other populations. In particular, this study involved job incumbents in a certain position in a certain industry. While the CWB collected and measured was appropriate for this sample, it may not be appropriate for other industries. The restaurant industry is full of opportunities to act in a counter-productive fashion, considering the high level of interaction with co-workers and customers, direct handling of food and cash, and close personal relationships among co-workers

and managers. Other industries or types of jobs may experience greater constraints on the incidence of CWB, therefore the types of CWB may differ. Conversely, there are also positions with an even greater opportunity to engage in CWB and can impact a greater number of people than an hourly restaurant worker (e.g., an accountant or an executive).

In addition, a greater sample would have been desired to test some of the statistical effects. While the 464 cases provided a large enough sample to test the amount of variables in the factor analytic and regression procedures, the high amount of missing response options limited the size of the sample. Although relationships were discovered, and statistical procedures did not suffer any malfunctions, the high amount of missing cases should be considered when interpreting the results.

Of greater concern for practitioners is the fact that job incumbents, rather than job applicants were used to collect data on the antecedents. Through a meta-analytic investigation of integrity tests, incumbent samples were found to have greater validities than applicant populations with respect to CWB (Ones et al., 1993), so the validity coefficients obtained in the current study may be higher than the actual validities when integrity tests are used with job applicants. Considering the nature of the items used in integrity tests and antecedent scales in the current study, current employees may respond in a more honest manner than applicants, thus adding variance to the predictor. Job applicants may respond differently to these types of items taking into account the high stakes situation when applying for a job. It could be that the attitudinal items are less variable in the applicant population due to a socially desirable response effect, thus making them weak predictors of the criterion. While the specific attitudinal predictors are rather transparent, the biodata items leave less room to “fake good” considering they are more objective in nature. A limitation of biodata items, however, is that they are often

difficult to generalize to other samples due to the empirical scoring procedure. A larger sample from a different industry using job applicants would be the next logical test of these variables to see if the findings generalize.

Some other limitations include general measurement issues when collecting self-report data on several variables at one time. Common method bias can influence these findings due to the fact that all information was provided at one time in a self-report fashion. In addition, the parallel construction of the specific attitudinal items and the criteria may account for common method variance that could bias the relationship between those variables. A future study could measure the antecedents at one point in time and then collect self and other reports of CWB several weeks or months later. This procedure would include data points from several different time periods and several different sources. With respect to the construct of interest (i.e., CWB), concurrent validation studies done on overt integrity tests may blur the boundary between validity and reliability (Ones et al., 1993). Some validation studies collect data on an overt integrity test at the same time they collect self-reported incidences of CWB. A problem with this method is that many overt integrity tests contain admission items, which are exactly what is collected in the criterion measure. Therefore, the relationship between the predictor and the criterion is blurred. This study combated this bias by showing that the attitudinal items were distinctly separate from the criteria. The criterion items asked about previous or current behavior, while the attitudinal items asked about acceptance of that behavior.

A related limitation involves the self-report of CWB, rather than collecting objective and verifiable incidents of CWB. An objective measure of CWB would be desired, however that is very difficult in practice in order to collect the data required. Many of the CWBs documented in a work setting are more extreme; therefore, the person committing the act is not likely to be



retained. This makes data collection complicated considering that it may be difficult for an ex-employee to fill out a research questionnaire measuring types of antecedents after they have been fired by their organization for engaging in CWB. Although some criticize the use of self-reports as measures of CWB, research has shown that self-report criteria tend to result in higher estimates of validity than external measures of CWB (Ones et al., 1993). Many critics are concerned that socially desirable responses will bias the data, thus limiting it for further inspection. However, the higher validity estimates reveal that the data is not limited and in fact can yield higher validities than objective data. This finding can be explained by the fact that many CWBs go undetected, warranting the use of admission criteria rather than external observations. Many of the minor incidents of CWBs go unnoticed by others (e.g., food handling, small cash theft, leaving work for others), and therefore cannot be collected through the use of an objective measure. If the participants feel safe reporting acts of CWB, then a richer dataset can be investigated, as opposed to the sparse and more extreme objective measures of CWB. The current study assured the participants of anonymity in their responses, which augmented the collection of candid admissions of CWB.

#### Future Research

One of the primary thrusts of the current study was to better understand CWB as a construct and the instruments used to predict this behavior (i.e., integrity tests). Although it is apparent that CWB is widespread and costly to organizations further research needs to define and characterize this construct in a consistent manner. The research so far has concentrated on certain aspects of antecedents (individual vs. situational) or types of CWB (e.g., theft, absenteeism, aggression) which limits a thorough understanding of the construct. Researchers have advanced valuable ideas in their separate streams of research; however each line of research has its own

operational definition of CWB. One method to address this is by further investigating integrative models, such as Vardi and Weitz' (2004) model. Testing the relationship between well established variables, based on theoretical grounds, can provide researchers and practitioners a framework to address CWB. An empirical examination of these models can help further define the individual and group processes involved in CWB.

Integrity tests face many of the same issues regarding their own construct definition. Future research should continue to investigate and compare the common types of integrity tests (e.g., overt and personality based), but should also examine new types of integrity tests. These include biodata instruments (Solomonson, 2000), conditional reasoning tests of aggression (James, McIntyre, Glisson, Bowler, & Mitchell, 2004), and situational judgment tests (Becker, 2005). While these tests have been used to assess other personality and work related constructs, they are recently being created to predict CWB and should be compared to the more common forms of integrity tests. A better understanding of the construct and criterion-related validity of these instruments will help organizations prevent CWB through their pre-selection process.

Finally, this sample was comprised of hourly level employees, as is most other integrity test research. Understanding the different types of CWB associated with management positions would be worthwhile considering the greater responsibility assigned to those positions. Not only can managers independently engage in CWB, they can also influence their direct reports in engaging in CWB, thus creating a culture of counter-productivity. Most integrity tests are typically constructed for hourly positions and little research exists that examines tests used to screen management populations for potential CWB. Further work should extend the findings by comparing which types of integrity test items are better predictors in a management population. Perhaps managers respond differently, considering their job may be a greater stake testing

situation, thus causing them to respond in a socially desirable way. Management applicants may possess clearer insight into the nature of these tests, and put greater effort into choosing the “appropriate” answers. This makes it quite difficult for test developers to find valid, yet non-transparent items to use in a measure of integrity for management.

In conclusion, the research findings uncovered some of the relationships among CWB and its antecedents. Future work should extend these findings into new populations, which include job applicants, management positions, and new industries. Further testing of integrative models of CWB should be explored to better understand the process and vast amount of variables included. By better understanding CWB as a construct, researchers and practitioners can develop interventions to predict and ameliorate these harmful behaviors.

Table 1

*Fit Statistics for CWB Typology*

Proposed Model	# factors	$\chi^2$	<i>df</i>	<i>RMSEA</i>	<i>NNFI</i>	<i>CFI</i>	<i>SRMR</i>
1	2	4159.50	1126	.115	.889	.893	.0904
2	2	3257.33	944	.106	.897	.902	.0838
3	1	4271.66	1127	.118	.885	.890	.0914

*Note.* *N* = 464 cases; *RMSEA* = root mean square error of approximation; *NNFI* = non-normed fit index; *CFI* = comparative fit index; *SRMR* = standardized *RMR*.

Table 2

*Descriptive Statistics and Coefficient Alphas for CWB Criteria*

Type of CWB	<i>M</i>	<i>SD</i>	$\alpha$	<i>N</i>	No.
Interpersonal	41.33	12.55	.91	377	24
Organizational	32.65	10.01	.89	338	21

*Note:* No. = Number of items included in each scale. *N* is different for each scale because of missing values for items that comprise the scale.

Table 3

*Descriptive Statistics for CWB Antecedents*

Antecedent Scales	<i>M</i>	<i>SD</i>	<i>N</i>	No.
Personality	120.09	13.02	418	69
Biodata	-11.79	11.54	237	28
General Attitude	58.64	13.26	429	38
Specific Attitude	65.99	21.92	365	47

*Note:* No. = Number of items included. *N* is different for each scale because of missing values for items that comprise the scale. Personality and general attitudinal response option values ranged from 0 to 4. Specific attitudinal response option values ranged from 1 to 5. Biodata response option values ranged from -2 to +2, therefore a negative mean is possible.

Table 4

*Correlations among CWB Antecedent and Criteria Scales*

CWB Scale	1	2	3	4	5	6
1. Personality	(.57)	-.05	.57**	.02	.04	-.01
2. Biodata <sup>a</sup>	-	(.72)	-.06	.41**	.61**	.60**
3. General Attitude	-	-	(.76)	-.02	.01	-.04
4. Specific Attitude	-	-	-	(.96)	.63**	.70**
5. Interpersonal CWB	-	-	-	-	(.91)	.72**
6. Organizational CWB	-	-	-	-	-	(.89)

*Note:* *N* ranges from 292 to 349 for correlations with criteria scales (not including the biodata scale) using pairwise deletion for missing values. Internal consistency reliabilities (Chronbach's  $\alpha$ ) are given in parentheses along the main diagonal. CWB Criteria are positively scored, therefore positive correlations are expected.

\*\* $p < .01$

<sup>a</sup> Biodata correlations with the criteria reflect hold-out sample value. *N* = 70 and 65 for the correlations with interpersonal and organizational CWB, respectively. Correlations with other antecedents were used with the full sample (*N* ranges from 193 to 224).

Table 5

*Correlations among Parallel Attitudinal and Admission Items*

#Criteria / #Attitudinal	Item Description	<i>r</i>
q31 / q95		.41
q32 / q96		.41
q33 / q97	...pinch or grab co-workers of the opposite sex	.52
q34 / q98		.48
q36 / q99		.48
q52 / q103	...made up an illness in order to get out of a scheduled shift at work	.43
q53 / q102		.45
q54 / q104		.30
q55 / q105		.14
q56 / q106	...quit a job while in the middle of a shift	.30
q57 / q107		.36
q58 / q108		.29
q59 / q109		.36
q60 / q111		.36
q61 / q112	...argued in anger with a boss or supervisor	.34
q62 / q113		.48
q63 / q114		.47
q64 / q116		.49
q65 / q115		.50

*(table continues)*

Table 5 (*table continued*).

#Criteria / #Attitudinal	Item Description	<i>r</i>
q66 / q117		.53
q67 / q118		.45
q68 / q119		.51
q69 / q121	...given poor service to a customer because you did not like their race	.45
q70 / q122		.52
q71 / q123		.32
q72 / q124		.29
q73 / q125		.44
q74 / q126		.42
q75 / q127		.35
q76 / q130		.35
q77 / q128		.41
q78 / q129		.48
q79 / q132		.44
q80 / q133	...pocketed cash that should have been placed in the cash register	.39
q81 / q131		.50
q82 / q134		.47
q83 / q135		.52
q84 / q136		.38
q86 / q137	...come to work hung over from alcohol	.52

(*table continues*)

Table 5 (table continued).

#Criteria / #Attitudinal	Item Description	<i>r</i>
q87 / q138		.43
q88 / q139		.52
q89 / q140		.49
q90 / q145	...sabotaged the work of other employees	.35
q91 / q143	...knowingly served a customer improperly or poorly prepared food	.31
q92 / q144	...knowingly ignore rules regarding the handling of food	.39
q93 / q150		.47
q94 / q146		.45

*Note:* *N* ranges from 422 to 451 using pairwise deletion. Attitudinal items begin with, “It is acceptable to...”; Criteria items begin with, “How often have you...”. All correlations are significant at the  $p < .01$  level. Sample items are used with permission by the copyright holders, Batrus Hollweg International Selection Services Ltd. and Prevent Loss, Ltd.



Table 6

*Hierarchical Regression of CWB Antecedents and Criteria*

Step and Antecedent	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	$\beta$
Interpersonal CWB				
Step 1. Personality Scale	.044	.002		.05
Step 2. Biodata Scale	.593**	.352	.350**	.40**
Step 3. General Attitude Scale	.593**	.352	.000	.01
Step 4. Specific Attitude Scale	.731**	.534	.182**	.47**
Organizational CWB				
Step 1. Personality Scale	.008	.000		.01
Step 2. Biodata Scale	.627**	.394	.394**	.41**
Step 3. General Attitude Scale	.628**	.394	.000	-.02
Step 4. Specific Attitude Scale	.790**	.624	.230**	.53**

*Note:* *N* = 192 and 179 for interpersonal CWB and organizational CWB respectively because of pairwise deletion of missing values. CWB Criteria are positively scored, therefore positive correlations are expected.

\*\**p* < .01.

Table 7

*Descriptive Statistics for Trimmed CWB Antecedents*

Antecedent Scales	<i>M</i>	<i>SD</i>	<i>N</i>	No.
Personality	39.64	13.62	439	32
Biodata	-9.98	10.99	286	22
General Attitude	46.14	13.45	433	33
Specific Attitude	41.56	15.19	390	30

*Note:* No. = Number of items included. *N* is different for each scale because of missing values for items that comprise the scale. Personality and general attitudinal response option values ranged from 0 to 4. Specific attitudinal response option values ranged from 1 to 5. Biodata response option values ranged from -2 to +2, therefore a negative mean is possible.

Table 8

*Correlations among Trimmed CWB Antecedent Scales and Criteria Scales*

CWB Scale	1	2	3	4	5	6
1. Personality	(.84)	-.02	.65**	.06	.06	.02
2. Biodata <sup>a</sup>	-	(.74)	-.06	.34**	.54**	.59**
3. General Attitude	-	-	(.81)	-.01	.02	-.03
4. Specific Attitude	-	-	-	(.96)	.63**	.69**
5. Interpersonal CWB	-	-	-	-	(.91)	.72**
6. Organizational CWB	-	-	-	-	-	(.89)

*Note:* *N* ranges from 304 to 357 for correlations with criteria scales (not including the biodata scale) using pairwise deletion for missing values. Internal consistency reliabilities (Chronbach's  $\alpha$ ) are given in parentheses along the main diagonal. CWB Criteria are positively scored, therefore positive correlations are expected.

\*\* $p < .01$

<sup>a</sup> Biodata correlations with the criteria reflect hold-out sample value. *N* = 79 and 73 for the correlations with interpersonal and organizational CWB, respectively. Correlations with other antecedents were used with the full sample (*N* ranges from 193 to 224).

Table 9

*Hierarchical Regression of Trimmed CWB Antecedents and Criteria*

Step and Antecedent	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	$\beta$
Interpersonal CWB				
Step 1. Personality Scale	.059	.004		.00
Step 2. Biodata Scale	.547**	.299	.295**	.37**
Step 3. General Attitude Scale	.547**	.299	.000	.05
Step 4. Specific Attitude Scale	.725**	.526	.227**	.51**
Organizational CWB				
Step 1. Personality Scale	.018	.000		.01
Step 2. Biodata Scale	.576**	.332	.332**	.39**
Step 3. General Attitude Scale	.576**	.332	.000	.01
Step 4. Specific Attitude Scale	.777**	.604	.272**	.56**

*Note:* *N* = 238 and 218 for interpersonal CWB and organizational CWB respectively because of pairwise deletion of missing values. CWB Criteria are positively scored, therefore positive correlations are expected.

\*\**p* < .01.

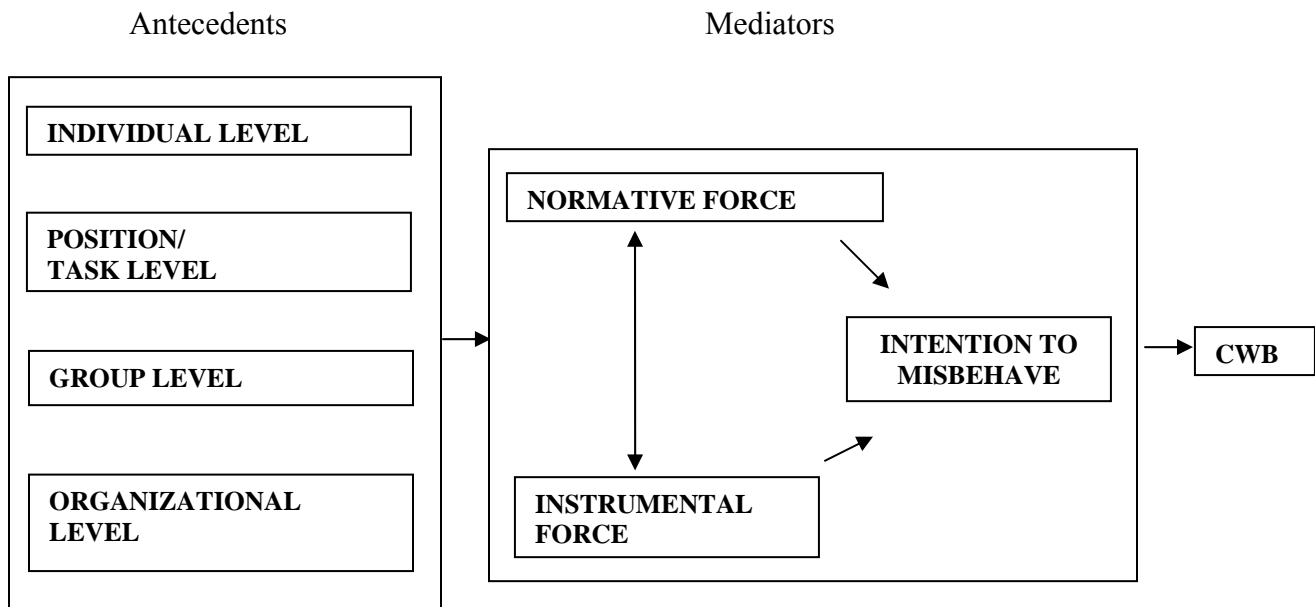


Figure 1. Adapted full integrative model of CWB. (Vardi & Weitz, 2004)

From *Misbehavior in organizations: Theory, research, and management*. (p. 251), by Y. Vardi and E. Weitz, 2004, Mahwah, NJ: Lawrence Erlbaum Associates. Copyright 2004 by Lawrence Erlbaum Associates. Adapted with permission of the author.

Note: The original model includes CWB as a type of Organizational Misbehavior (OMB). Other types of OMB are included in the original model (e.g. falsifying records to benefit the organization), but are not addressed in the current study.

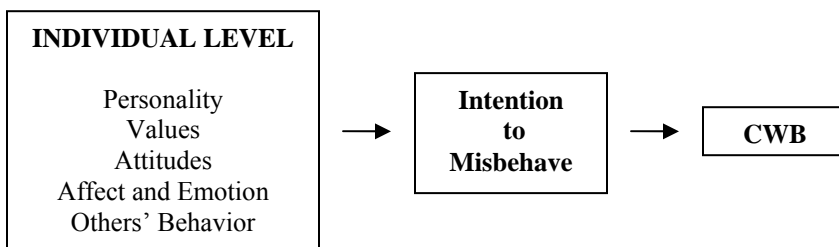


Figure 2. Individual-level antecedents of CWB. (Vardi & Weitz, 2004)

From *Misbehavior in organizations: Theory, research, and management*. (p. 116), by Y. Vardi and E. Weitz, 2004, Mahwah, NJ: Lawrence Erlbaum Associates. Copyright 2004 by Lawrence Erlbaum Associates. Adapted with permission of the author.

Note: The original model includes CWB as a type of Organizational Misbehavior (OMB). Other types of OMB are included in the original model (e.g. falsifying records to benefit the organization), but are not addressed in the current study.

APPENDIX A  
CRITERIA ITEMS

Organizational CWB

52. How often have you made up an illness in order to get out of a scheduled shift at work?
- a. never
  - b. 1 to 2 times
  - c. 3 to 4 times
  - d. 5 to 6 times
  - e. 7 or more times
  - f. not sure
  - g. does not apply
80. How often have you pocketed cash that should have been placed in the cash register?
- a. never
  - b. 1 to 2 times
  - c. 3 to 4 times
  - d. 5 to 6 times
  - e. 7 or more times
  - f. not sure
  - g. does not apply
81. How often do you take food or drinks from the restaurant and not pay for it?
- a. never
  - b. rarely
  - c. sometimes
  - d. often
  - e. always
  - a. does not apply
88. How often do you drink alcohol just before coming to work?
- a. never
  - b. rarely
  - c. sometimes
  - d. often
  - e. always
  - f. does not apply
92. How often do you knowingly ignore rules regarding the handling of food?
- a. never
  - b. rarely
  - c. sometimes
  - d. often
  - e. always
  - f. does not apply
-

### Interpersonal CWB

33. How often do you pinch or grab co-workers of the opposite sex?
- never
  - rarely
  - sometimes
  - often
  - always
  - does not apply
61. How often have you argued in anger with a boss or supervisor?
- never
  - rarely
  - sometimes
  - often
  - always
  - does not apply
67. How often do you tease co-workers whom you dislike?
- never
  - rarely
  - sometimes
  - often
  - always
  - does not apply
69. How often have you given poor service to a customer because you did not like their race?
- never
  - 1 to 2 times
  - 3 to 4 times
  - 5 to 6 times
  - 7 or more times
  - not sure
  - does not apply
70. How often have you avoided helping a co-worker because you did not like their race?
- never
  - rarely
  - sometimes
  - often
  - always
  - does not apply
79. How often have you taken tips that were not yours?\*
- never
  - 1 to 2 times
  - 3 to 4 times
  - 5 to 6 times
  - 7 or more times
  - not sure
  - does not apply

91. How often have you knowingly served a customer improperly or poorly prepared food?\*
- a. never
  - b. 1 to 2 times
  - c. 3 to 4 times
  - d. 5 to 6 times
  - e. 7 or more times
  - f. not sure
  - g. does not apply
93. How often have you knowingly served a customer contaminated or spoiled food?\*
- a. never
  - b. 1 to 2 times
  - c. 3 to 4 times
  - d. 5 to 6 times
  - e. 7 or more times
  - f. not sure
  - g. does not apply
94. How often have you intentionally contaminated food you prepared and/or served to a customer?\*
- a. never
  - b. 1 to 2 times
  - c. 3 to 4 times
  - d. 5 to 6 times
  - e. 7 or more times
  - f. not sure
  - g. does not apply

---

*Note:* All items are scored in the positive direction (1 to 5). “Not sure” and “Does not apply” response options included as missing values.

\*Items deleted for second model in CFA

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APPENDIX B  
PARALLELED SPECIFIC ATTITUDES

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*Paralleled Specific Attitudes*

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97. It is acceptable to pinch or grab co-workers of the opposite sex.
103. It is acceptable to make up an illness in order to get out of a scheduled shift at work.
116. It is acceptable to call a co-worker an insulting name.
122. It is acceptable not to help out co-workers if you do not like their race.
131. It is acceptable to take food from work for yourself and not pay for it.
135. It is acceptable to accept cash stolen by a co-worker.
140. It is acceptable to take illegal drugs just before coming to work.
143. It is acceptable to knowingly serve a customer improperly or poorly prepared food.
144. It is acceptable to ignore rules regarding the handling of food.
145. It is acceptable to sabotage the work of other employees.
150. It is acceptable to intentionally tamper with food you prepare and/or serve to a customer.

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*Note:* Response options: Never (1), Rarely (2), Sometimes (3), Often (4), Always (5). All items are scored in the positive direction. “Does not apply” response option included as a missing value.  
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APPENDIX C  
GENERAL ATTITUDES

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*General Attitudes*

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- 51. Most employers don't really care about their employees.
- 84. Most people are too uptight about following the rules.
- 88. Most people are too careless with their cash.
- 106. Most employees would steal if they knew they would not get caught.
- 108. Most restaurants expect a certain amount of theft by their employees.
- 117. Co-workers should notify management if they are aware of theft by other employees.\*
- 119. When an employee steals from the company, it makes other employees look bad.\*
- 126. Restaurants that serve alcohol but expect their employees not to drink alcohol on the job are being unreasonable.
- 129. If employees do drugs on their own time, it is of no concern to their employer.
- 138. Different points of view make for better solutions to problems.\*

---

*Note:* Response options ranged from "Strongly Disagree" to "Strongly Agree".

\*Reverse scored items (Strongly Disagree = 4, Strongly Agree = 0).

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APPENDIX D  
PERSONALITY ITEMS

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*Personality Items*

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- 31. You prefer to show up early for appointments.\*
- 33. Keeping your word is very important to you. \*
- 46. You tend to treat others politely whether they deserve it or not. \*
- 49. You enjoy teasing other people.
- 54. You find it hard to trust people who do not look like you.
- 70. You usually go with your first impulse without thinking things through.
- 75. You sometimes act without thinking.
- 78. You are the kind of person who will stand up and say something if others are misbehaving. \*
- 83. You can usually find a way to get around rules.
- 95. You would not hesitate to get even with a supervisor who wronged you.
- 133. You reach out to people who are from different backgrounds than your own.\*
- 139. Sometimes you find yourself making judgments about others based on their appearance.
- 140. You try to wait until you get to know someone before forming an opinion about them.\*

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*Note:* Response options ranged from “Strongly Disagree” to “Strongly Agree”. \*Reverse scored items (Strongly Disagree = 4, Strongly Agree = 0).  
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APPENDIX E  
BIODATA ITEMS

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*Biodata Items*

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23. School teachers used your work as a good example for other students.\*
- a. strongly disagree
  - b. disagree
  - c. neither agree nor disagree
  - d. agree
  - e. strongly agree
148. In high school, how many times did you get expelled/suspended from school?
- a. 0
  - b. 1-2
  - c. 3-4
  - d. 5-6
  - e. 7 or more
  - f. not sure
  - g. does not apply
8. How often did a parent or guardian speak to you about the importance of working hard?
- a. never
  - b. rarely
  - c. sometimes
  - d. frequently
  - e. not sure/cannot remember
14. In high school, how often were you in fights or arguments with classmates?
- a. never
  - b. rarely
  - c. sometimes
  - d. often
  - e. always
  - f. does not apply
23. In high school, how often do/did you study for tests?
- a. every day throughout the semester
  - b. on a weekly basis throughout the semester
  - c. a few days before the test
  - d. the day before the test
  - e. do/did not study for tests
  - f. not sure/do not remember
30. In high school, how often did you attend parties where others openly used illegal drugs?
- a. every week
  - b. a couple of times a month
  - c. once a month
  - d. every few months
  - e. once or twice a year
  - f. never
  - g. don't remember/not sure

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*Note:* All items were empirically scored.

\*Items from Section A in original questionnaire.

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APPENDIX F  
CFA FIT STATISTICS

Model 1 – Two Factors

Degrees of Freedom = 1126  
Minimum Fit Function Chi-Square = 4159.495 (P = 0.0)  
Normal Theory Weighted Least Squares Chi-Square = 5689.748 (P = 0.0)  
Estimated Non-centrality Parameter (NCP) = 4563.748  
90 Percent Confidence Interval for NCP = (4331.767 ; 4803.062)

Minimum Fit Function Value = 13.505  
Population Discrepancy Function Value (F0) = 14.817  
90 Percent Confidence Interval for F0 = (14.064 ; 15.594)  
Root Mean Square Error of Approximation (RMSEA) = 0.115  
90 Percent Confidence Interval for RMSEA = (0.112 ; 0.118)  
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000

Expected Cross-Validation Index (ECVI) = 19.116  
90 Percent Confidence Interval for ECVI = (18.363 ; 19.893)  
ECVI for Saturated Model = 7.955  
ECVI for Independence Model = 96.580

Chi-Square for Independence Model with 1176 Degrees of Freedom = 29648.611  
Independence AIC = 29746.611  
Model AIC = 5887.748  
Saturated AIC = 2450.000  
Independence CAIC = 29978.545  
Model CAIC = 6356.349  
Saturated CAIC = 8248.343

Normed Fit Index (NFI) = 0.860  
Non-Normed Fit Index (NNFI) = 0.889  
Parsimony Normed Fit Index (PNFI) = 0.823  
Comparative Fit Index (CFI) = 0.893  
Incremental Fit Index (IFI) = 0.894  
Relative Fit Index (RFI) = 0.853

Critical N (CN) = 92.770

Root Mean Square Residual (RMR) = 0.0696  
Standardized RMR = 0.0904  
Goodness of Fit Index (GFI) = 0.570  
Adjusted Goodness of Fit Index (AGFI) = 0.532  
Parsimony Goodness of Fit Index (PGFI) = 0.524

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Model 2 – Two Factors without cross-loaded items

Degrees of Freedom = 944  
Minimum Fit Function Chi-Square = 3257.330 (P = 0.0)  
Normal Theory Weighted Least Squares Chi-Square = 4183.119 (P = 0.0)  
Estimated Non-centrality Parameter (NCP) = 3239.119  
90 Percent Confidence Interval for NCP = (3042.353 ; 3443.305)

Minimum Fit Function Value = 10.576  
Population Discrepancy Function Value (F0) = 10.517  
90 Percent Confidence Interval for F0 = (9.878 ; 11.180)  
Root Mean Square Error of Approximation (RMSEA) = 0.106  
90 Percent Confidence Interval for RMSEA = (0.102 ; 0.109)  
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000

Expected Cross-Validation Index (ECVI) = 14.172  
90 Percent Confidence Interval for ECVI = (13.534 ; 14.835)  
ECVI for Saturated Model = 6.721  
ECVI for Independence Model = 79.937

Chi-Square for Independence Model with 990 Degrees of Freedom = 24530.499  
Independence AIC = 24620.499  
Model AIC = 4365.119  
Saturated AIC = 2070.000  
Independence CAIC = 24833.500  
Model CAIC = 4795.853  
Saturated CAIC = 6969.008

Normed Fit Index (NFI) = 0.867  
Non-Normed Fit Index (NNFI) = 0.897  
Parsimony Normed Fit Index (PNFI) = 0.827  
Comparative Fit Index (CFI) = 0.902  
Incremental Fit Index (IFI) = 0.902  
Relative Fit Index (RFI) = 0.861

Critical N (CN) = 100.096

Root Mean Square Residual (RMR) = 0.0654  
Standardized RMR = 0.0838  
Goodness of Fit Index (GFI) = 0.624  
Adjusted Goodness of Fit Index (AGFI) = 0.587  
Parsimony Goodness of Fit Index (PGFI) = 0.569

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Model 3 – One Factor

Degrees of Freedom = 1127  
Minimum Fit Function Chi-Square = 4271.664 (P = 0.0)  
Normal Theory Weighted Least Squares Chi-Square = 5920.679 (P = 0.0)  
Estimated Non-centrality Parameter (NCP) = 4793.679  
90 Percent Confidence Interval for NCP = (4556.453 ; 5038.224)

Minimum Fit Function Value = 13.869  
Population Discrepancy Function Value (F0) = 15.564  
90 Percent Confidence Interval for F0 = (14.794 ; 16.358)  
Root Mean Square Error of Approximation (RMSEA) = 0.118  
90 Percent Confidence Interval for RMSEA = (0.115 ; 0.120)  
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000

Expected Cross-Validation Index (ECVI) = 19.859  
90 Percent Confidence Interval for ECVI = (19.089 ; 20.653)  
ECVI for Saturated Model = 7.955  
ECVI for Independence Model = 96.580

Chi-Square for Independence Model with 1176 Degrees of Freedom = 29648.611  
Independence AIC = 29746.611  
Model AIC = 6116.679  
Saturated AIC = 2450.000  
Independence CAIC = 29978.545  
Model CAIC = 6580.546  
Saturated CAIC = 8248.343

Normed Fit Index (NFI) = 0.856  
Non-Normed Fit Index (NNFI) = 0.885  
Parsimony Normed Fit Index (PNFI) = 0.820  
Comparative Fit Index (CFI) = 0.890  
Incremental Fit Index (IFI) = 0.890  
Relative Fit Index (RFI) = 0.850

Critical N (CN) = 90.436

Root Mean Square Residual (RMR) = 0.0742  
Standardized RMR = 0.0914  
Goodness of Fit Index (GFI) = 0.560  
Adjusted Goodness of Fit Index (AGFI) = 0.522  
Parsimony Goodness of Fit Index (PGFI) = 0.516

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