

THE BRIGHT AND DARK SIDES OF PERSONALITY, JOB PERFORMANCE, AND
IMBALANCED LEADERSHIP IN MANAGERS

by

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Abstract

There is considerable interest in finding ways to screen for dark personality traits (maladaptive interpersonal and personality tendencies) in personnel selection assessments given their pernicious effects on job performance and leadership behavior. This has proved challenging because of socially desirable response biases and ethical restrictions regulating the use of psychiatric measures. Recent advances in the understanding of the dimensional nature of personality suggest that measures of bright personality can be used to predict dark personality traits. The current research extends this research to the California Psychological Inventory (CPI) and employs multiple regression analyses to examine the bright–dark trait relationships in two samples of managers who underwent employment testing. Study 1 found that CPI scales significantly predicted each of the self-reported Hogan Development Survey (HDS) dark traits. Study 2 extended this research to supervisor ratings and found that CPI scales significantly predicted 6 out of 11 dark traits as rated by supervisors. Supervisor-rated dark traits were also negatively related to supervisor ratings of task performance and contextual performance, as well as positively related to counterproductive workplace behavior and job stress. Evidence also suggested that job stress and self-awareness may moderate the relationship between dark traits and counterproductive workplace behavior. Most of the dark traits were characterized by leadership behavior imbalances related to overdoing and/or underdoing forceful, enabling, or strategic behaviors. Conceptually, this study furthers our understanding of the relationship between dark personality traits and bright personality traits as measured by the CPI. Practically, it provides support for another method to screen for dark personality traits in workplace contexts. It also addresses the lack of observer assessments of dark personality in workplace contexts as well as the lack of research on counterproductive workplace behavior.

Lay Summary

There is considerable interest among industrial psychologists to find ways to screen management job candidates for maladaptive personality traits that negatively affect their workplace relationships and job performance. This has proved challenging because of the legal and practical implications associated with personality assessment in hiring contexts. Recent advances in the understanding of the spectrum of personality suggest traditional personality measures can be used in new ways to assess for maladaptive personality traits. Two studies extend this research to the California Psychological Inventory (CPI), a promising measure of personality commonly used in hiring contexts. Studies examined two samples of managers who underwent personality testing for hiring purposes. Results found that the CPI was able to predict maladaptive personality traits and suggests it is one way to screen for such traits in hiring contexts. In addition, results indicated that maladaptive personality traits were related to poorer job performance and imbalanced leadership behavior.

Preface

This dissertation is original, unpublished, and independent work by the author, Thomas K. Wiens, conducted under the supervision of Dr. Lawrence J. Walker. The data used in Study 1 were obtained from an industrial/organizational psychology consulting firm; the Study 2 data involved data from another industrial/organizational psychology consulting firm, as well as original data collection. The research reported here was approved by the UBC Behavioral Research Ethics Board [certificates # H15-01478, H15-02722, and H16-02229].

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List of Abbreviations

APA: American Psychiatric Association

CPI: California Psychological Inventory

DSM: Diagnostic and Statistical Manual of Mental Disorders

HDS: Hogan Development Survey

LVI: Leadership Versatility Index

MCMI: Millon Clinical Multiaxial Inventory

MMPI: Minnesota Multiphasic Personality Inventory

NEO-PI-R: NEO Personality Inventory Revised

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Chapter 1: Introduction

Problematic and Ineffective Management and the Role of Personality Assessment

A concerning and well-documented finding in the research literature on leadership and job performance regards problematic and ineffective management. One of the best reviews on the matter has concluded that “two-thirds of existing managers are insufferable and at least half will eventually be fired” (Hogan, Hogan, & Kaiser, 2010, p. 3). Other research shows that destructive leadership—tyrannical, exploitive, manipulative, and unreliable—is prevalent, with between 34% and 61% of managers acting in such harmful ways (Aasland, Skogstad, Notelaers, Nielsen, & Einarsen, 2010).

Destructive managers cause tremendous harm to both the employees under their management and their organization at large (Einarsen, Aasland, & Skogstad, 2007). Estimates indicate that each failed senior manager costs an organization between \$750,000 and \$2.7 million, plus other hidden costs such as golden parachutes and severance packages, a disengaged workforce, as well as the costs of lost social and intellectual capital and missed business opportunities (Hogan et al., 2010). Likewise, surveys routinely show that workers experience significant work-related stress and that most working adults (75%) indicate that their boss is the most significant source of this stress (Hogan, 2007).

Given the prevalence of incompetent managers, coupled with its high economic and social costs, the importance of selecting the right managers can hardly be overstated. To help organizations optimize hiring decisions, industrial/organizational researchers and professionals have tended to focus on selecting applicants based on positive personality traits considered to be related to job performance and leadership effectiveness (Barrick & Mount, 1991; Goffin, Rothstein, & Johnston, 1996; Guenole, 2014; Judge, Bono, Ilies, & Gerhardt, 2002). This role of

personnel selection is considered to be vital to support organizations in selecting individuals who will perform well as managers and be effective leaders.

It is theoretically important to note that leadership is often defined in the literature in terms of the individuals who are in a position of authority in an organization (Hogan & Kaiser, 2005). In their review of this literature, these authors compellingly argue that such a definition is problematic and that individuals who rise to senior positions in an organization are not necessarily “examples of real leadership” (p.171); they argue that this is because other factors, such as social and political skills, rather than leadership skills per se, often are the reason that individuals are promoted into management roles. They define leadership as “the ability to build and maintain a group that performs well relative to its competition” (Hogan & Kaiser, 2005, p. 172), although they note that their view differs from other common conceptualizations of leadership that often relate to the ability to influence others (Hogan & Kaiser, 2005; Stogdill, 1974). While there are similarities between managers and leaders, there are also significant differences, and these have been summarized by Algahtani (2014): “Management skills are used to plan, build, and direct organizational systems to accomplish missions and goals, while leadership skills are used to focus on a potential change by establishing direction, aligning people, and motivating and inspiring” (p. 71).

The psychological literature on personality assessment reviewed in this dissertation often uses the terms “leader” and “manager” more or less interchangeably or without clearly defining differences between the terms (e.g., Hogan & Kaiser, 2005; Grijalva, Harms, Newman, Gaddis, & Fraley, 2015; Kaiser & Hogan, 2011). As a result, the terms are sometimes used interchangeably or without strict definitional meanings when reviewing and discussing past research. In terms of defining terms for the current dissertation, it involves two studies that are

concerned with understanding the relationship between normal (viz., bright) and maladaptive (viz., dark) personality traits in a sample of managers, as well as examining the role of maladaptive personality traits on the job performance of managers (i.e., managerial effectiveness) and the ways in which they are related to effective or imbalanced leadership behavior (i.e., leadership effectiveness; Kaiser, LeBreton, & Hogan, 2015).

There are important conceptual differences between management and leadership, but there is also some overlap in the skills needed to be effective in either capacity (Algahtani, 2014). Moreover, leadership skills have been indicated as a core competency for managers and managerial effectiveness (Kaiser & Kaplan, 2006). Both managerial and leadership effectiveness are considered to be vital to the functioning of an organization and are therefore both relevant considerations in personnel selection (Algahtani, 2014; Hogan, 1991; Hogan & Judge, 2013).

Studies in the personnel selection literature have focused on examining the relationships between personality, managerial job performance, and leadership effectiveness. These studies have often revolved around the five-factor model of normal personality traits (viz., neuroticism, extraversion, conscientiousness, agreeableness, and openness; Wiggins, 1996). A meta-analysis has elucidated the relationship between personality and job performance for a variety of professions, including managers. Job performance was defined as a composite of measures relating to job performance ratings, productivity metrics, and other work-related data (e.g., salary, turnover). It was found that job performance among managers was significantly positively related to extraversion ($\rho = .18$) and conscientiousness ($\rho = .22$), and to a lesser extent emotional stability ($\rho = .08$) and agreeableness ($\rho = .10$; Barrick & Mount, 1991).

A more recent meta-analytic review involved 18 studies and a total of 1,864 managers to

assess the relationship between personality traits and an overall measure of adaptive performance at work (Huang, Ryan, Zabel, & Palmer, 2014). Adaptive performance concerns the ability to manage and deal with changing and unexpected work demands, which is an increasingly relevant measure of job performance for managers given the ever more rapidly changing and evolving pace of business. This review found that adaptive work performance among managers was significantly positively related to psychological adjustment ($\rho = .20$) as well as the ambition ($\rho = .20$) but not sociability ($\rho = .03$) aspect of extraversion. It was also related, to a lesser extent, to interpersonal sensitivity (agreeableness; $\rho = .12$), prudence (conscientiousness; $\rho = .10$), and learning approach (one facet of openness to new experience; $\rho = .10$).

A significant amount of research has also examined the relationship between personality and leadership. One meta-analytic review on the matter examined the relationship between personality and leadership effectiveness in a sample of managers (Judge et al., 2002). This review examined leadership effectiveness as a function of leadership emergence (whether a manager is perceived by others to be a leader) and leadership effectiveness (the ability of the manager to influence and direct the performance of his/her group to achieve its goals). The review concluded that higher levels of extraversion ($\rho = .25$) and openness to experience ($\rho = .23$), as well as lower levels of neuroticism ($\rho = -.15$), were associated with overall leadership effectiveness among managers.

There are also several other inventories of normal personality that were not explicitly designed as five-factor model inventories to be used for research purposes but were rather designed with the express practical purpose of predicting important social and job-related outcome variables in applied contexts. One such inventory is the California Psychological Inventory (CPI), which has been extensively researched and used in employment testing contexts

for the purpose of personnel selection (Boer, Starkey, & Hodgetts, 2008; Gough, 1957, 1969; Gough & Bradley, 1996, 2002; Groth-Marnat, 2009). Research on the CPI, like the research on measures of the five-factor model, has also tended to focus on the positive personality traits associated with effective management and leadership (Gough, 1969). This is implicit within its scales, in which higher scores are generally considered to be related to more adaptive functioning and to improved vocational outcomes (Gough & Bradley, 2002; Groth-Marnat, 2009). For example, high scores on the Dominance, Self-Acceptance, Wellbeing, and Achievement scales are generally considered to be related to managerial and leadership effectiveness (Groth-Marnat, 2009).

Some researchers have brought an awareness to the spectrum of positive traits and suggested that higher levels of positive personality traits are not always related to higher levels of job performance and may even, at times, be related to maladaptive behavior (Burch & Anderson, 2008). For instance, some studies have found five-factor traits to have an inverted U-shaped relationship with measures of job performance (e.g., task performance, counterproductive work behaviors, etc.; Ames & Flynn, 2007; Carter, Dalal, Boyce, O'Connell, Kung, & Delgado, 2014; De Fruyt, Wille, & Furnham, 2013; Kaiser & Hogan, 2011; Le et al., 2011). These findings suggest that positive traits may be adaptive up until a certain cutoff point, after which higher levels of these traits may be unassociated with, or even detrimental to, performance (Ames & Flynn, 2007; De Fruyt, De Clercq, et al., 2013; Le et al., 2011).

One example concerns assertiveness, a trait that is generally positively related to managerial effectiveness. It has been found that both too high and too low levels of assertiveness can be negatively related to leader and managerial effectiveness (Ames & Flynn, 2007). This is because leaders who are overly assertive can be viewed as aggressive or domineering, which

negatively affects their relationships with coworkers and which negatively affects performance; whereas low levels of assertiveness are related to positive coworker relationships, but negatively related to goal achievement, which is also related to poorer managerial effectiveness (Ames & Flynn, 2007).

Other organizational researchers have noted similar trends by discussing the ways in which strengths can become weaknesses when overused and engender imbalances in leadership behavior (Kaiser & Hogan, 2011). For instance, high levels of the positive characteristic of interpersonal sensitivity was related to being overly democratic and empowering others and insufficiently forceful in pushing for results. Likewise, high levels of ambition were related to the opposite pattern of being overly forceful as a leader and being insufficiently empowering and supportive of others. The latter leadership style is characteristic of a common pattern of managerial failure, of an overly eager manager who is too bossy and overbearing and does not provide his/her workers with sufficient autonomy (McCall & Lombardo, 1983). To summarize, research has demonstrated that certain positive personality traits are related to managerial job performance and leadership, but that overly high levels of these traits can become maladaptive in this regard and are related to ineffective management performance and leadership.

The Dimensional Nature of Normal Personality and Clinical Personality Disorders

While organizational researchers have been gaining an appreciation for the maladaptive extremes of normal personality traits, clinical researchers have been advancing in their understanding of abnormal personality (viz., personality disorders). Specifically, there has been an important conceptual shift toward understanding the clinical personality disorders as quantitatively, rather than categorically, different from normal personality traits (Widiger & Costa, 2012; Widiger & Trull, 2007). In other words, normal and abnormal personality traits

consist of the same underlying dimensions, but just represent different levels on the continua of various personality traits.

Early work on the dimensional nature of personality attempted to understand personality disorders from a five-factor trait perspective. In order to accomplish this, these researchers used theory to conceptualize clinical personality disorders as maladaptively extreme variants of the 30 facets of the five-factor model (Widiger, Trull, Clarkin, Sanderson, & Costa, 1994, 2002). Since then, a slew of theoretical and psychometric research has supported the close relationship between measures of normal and abnormal personality, which appear to be best represented by the five-factor structure of personality (e.g., Butrus & Witenberg, 2015; Costa & McCrae, 1990; Gore & Widiger, 2013; Krueger & Eaton, 2010; Livesley, 2001; O'Connor, 2002; Samuel & Widiger, 2008; Saulsman & Page, 2004; Vachon et al., 2013; Widiger, 2011; Widiger & Costa, 2012; Wiggins & Pincus, 1989). This includes multiple meta-analyses that have given credence to the strength of the relationships between the five-factor model and personality disorders.

For instance, Samuel and Widiger (2008) examined the relationship between each of the facets of the five-factor model and the *Diagnostic and Statistical Manual of Mental Disorders-IV* (DSM-IV; American Psychiatric Association [APA], 1994) personality disorders. They found that each of the personality disorders was significantly related to between 6 (histrionic personality disorder) and 16 (avoidant personality disorder) of the five-factor facets. For example, avoidant personality disorder was characterized by facets such as anxiousness, self-consciousness, depressiveness, and a lack of gregariousness or assertiveness.

In terms of broad traits, they found that all of the traits except for openness (i.e., neuroticism, extraversion, agreeableness, and conscientiousness) were significantly related to various personality disorders. Combining across all personality disorders, it was found that

personality disorders, in general, tended to be positively related to neuroticism ($r = .30$) and negatively related to extraversion ($r = -.14$), agreeableness ($r = -.17$), and conscientiousness ($r = -.13$), and not significantly related to openness ($r = .02$; Samuel & Widiger, 2008). The direction and strength of these correlations are similar to those found by previous meta-analyses on the matter (e.g., Saulsman & Page, 2004, 2005).

More recently, an entire special issue of the *Journal of Personality* (2012) was devoted to demonstrating the evidence that the five-factor model can account for the description of both normal and abnormal personality functioning as well as addressing the related theoretical and practical concerns to move this literature forward (Widiger & Costa, 2012). The study of the relationship between normal and abnormal personality represents a burgeoning area of research that has grown from 56 studies that suggested the link between personality disorders and five-factor traits in 2002 (Widiger & Costa, 2002) to well over 200 of such studies by 2013 (Widiger, Costa, Gore, & Crego, 2013). Indeed, over 25 years of research (Costa & McCrae, 1990; Wiggins & Pincus, 1989) supports the conclusion of this literature that is well summarized by Widiger, Costa, and Samuel (2006, p. 311):

Instruments to assess general personality structure can provide a more comprehensive assessment than instruments confined to the assessment of personality disorders, and the actual boundary between adaptive and maladaptive personality functioning is, at best, unclear.

More recently, the APA (2013) has released an updated version of the DSM (the DSM-5), which includes a provisional section on abnormal personality traits. In an attempt to align itself with research findings and shift its conceptualization of personality to a dimensional, as opposed to categorical, model, this section provides a list of 25 facets of five personality traits that are considered to be the maladaptive variants of the traditional five-factor model (viz., negative affectivity, detachment, antagonism, disinhibition, and psychotism; APA, 2013;

Krueger, Derringer, Markon, Watson, & Skodol, 2012; Krueger, Eaton, Derringer, Markon, Watson, & Skodol, 2011). Research has demonstrated that these abnormal personality traits factor analyze to five factors that resemble the five-factor model of personality (e.g., Thomas et al., 2013) and that the five-factor model of normal personality sufficiently accounts for the covariance between both measures of normal and abnormal personality (Ashton, Lee, de Vries, Hendrickse, & Born, 2012; De Fruyt, De Clercq, et al., 2013; Krueger et al., 2012; Watson, Stasik, Ro, & Clark, 2013).

Once the five-factor model of personality became solidified as a dominant model of abnormal personality, researchers sought to flesh out its maladaptive variants. Because of the dimensional nature of personality, the full spectrum of each personality trait, its adaptive and maladaptive manifestations, can be outlined. This was accomplished by studies that sought to assess the extent to which each of the 30 facets of the five-factor model was characteristic of various personality disorders (Lynam & Widiger, 2001; Miller, Lynam, Widiger, & Leukefeld, 2001). Initially, Lynam and Widiger (2001) used an expert-consensus method, in which they sought the help of 120 experts in rating the characteristics of personality disorders according to the 30 facets of the five-factor framework. The mean score of the experts' ratings was calculated and then each five-factor facet with a mean score of less than 2.00 or larger than 4.00 (on a scale of 1-5) was considered to represent the given personality disorder. Other researchers have used similar expert-consensus models that have supported these findings (Samuel & Widiger, 2004; Sprock, 2002).

This line of research has led to mapping the theoretical continuum of personality in terms of these 30 facets of personality, listing each of the adaptive and maladaptive characteristics across the spectrum of each personality trait (see Table 1; Widiger & Costa, 2012; Widiger &

Mullins-Sweatt, 2009). Within this conceptualization, for example, the conscientiousness facet of competence that is typically associated with casual behavior at “normal low” levels and with efficient behavior at “normal high” levels, is also shown to include the more extreme “maladaptive high” levels that manifest as rigid perfectionistic behavior as well as the “maladaptive low” levels that manifest as lax behavior (Widiger & Costa, 2012). Others have enumerated a list of personality-related problems in living related to various facets of the five-factor model (McCrae, Löckenhoff, & Costa, 2005) and demonstrated that five-factor traits can distinguish various psychiatric conditions (Krueger & Tackett, 2005; Uliaszek, Al-Dajani, & Bagby, 2015).

This renewed understanding of maladaptive personality traits is vital to managerial and leadership personality research, but has often gone ignored as a result of a focus on positive personality traits (Guenole, 2014; John, Robins, & Pervin, 2008; Judge, Piccolo, & Kosalka, 2009). Some have lauded the developments in personality disorder research as “among the most exciting occurrences in personality research since meta-analysis and the Big Five” and called for industrial/organizational researchers to take advantage of these developments because it provides the theoretical and empirical groundwork for understanding maladaptive personality tendencies at work (Guenole, 2014, p. 94).

Specifically, maladaptive personality traits can be understood as maladaptive manifestations of five-factor personality traits. These maladaptive personality patterns are referred to as the dark side of personality or dark-side traits in managerial and leadership research (Hogan & Hogan, 2001); this is in contrast to positive personality traits, which have been the focus of past research (Guenole, 2014) and which are often referred to as bright side personality traits (Judge et al., 2009). In the current study, the term bright-side traits refers to

normal personality, whereas the term dark-side traits refers to maladaptive personality traits, and each of the pairs of terms are used interchangeably just as they are in the related literature (e.g., Furnham, Trickey, & Hyde, 2012; Judge et al., 2009).

Table 1

Description of the Adaptive and Maladaptive Variants of Five-Factor Personality Traits

Five-Factor Facet	Adaptive and Maladaptive Variants			
	Maladaptively high	Normal high	Normal low	Maladaptively low
Neuroticism				
Anxiousness	Fearful, anxious	Vigilant, worrisome, wary	Relaxed, calm	Oblivious to signs of threat
Angry hostility	Rageful	Brooding, resentful, defiant	Even-tempered	Won't even protest exploitation
Depressiveness	Depressed, suicidal	Pessimistic, discouraged	Not easily discouraged	Unrealistic, overly optimistic
Self-consciousness	Uncertain of self or identity	Self-conscious, embarrassed	Self-assured, charming	Glib, shameless
Impulsivity	Unable to resist impulses	Self-indulgent	Restrained	Overly restrained
Vulnerability	Helpless, emotionally unstable	Vulnerable	Resilient	Fearless, feels invincible
Extraversion				
Warmth	Intense attachments	Affectionate, warm	Formal, reserved	Cold, distant
Gregariousness	Attention-seeking	Sociable, outgoing, personable	Independent	Isolated
Assertiveness	Dominant, pushy	Assertive, forceful	Passive	Resigned, uninfluential
Activity	Frantic	Energetic	Slow-paced	Lethargic, sedentary
Excitement-seeking	Reckless, foolhardy	Adventurous	Cautious	Dull, listless
Positive emotions	Melodramatic, manic	High-spirited, cheerful, joyful	Placid, sober, serious	Grim, anhedonic
Openness				
Fantasy	Unrealistic, lives in fantasy	Imaginative	Practical, realistic	Concrete
Aesthetics	Bizarre interests	Aesthetic interests	Minimal aesthetic interests	Disinterested
Feelings	Intense, in turmoil	Self-aware, expressive	Constricted, blunted	Alexithymic
Actions	Eccentric	Unconventional	Predictable	Mechanized, stuck in routine
Ideas	Peculiar, weird	Creative, curious	Pragmatic	Closed-minded
Values	Radical	Open, flexible	Traditional	Dogmatic, moralistically intolerant

Adaptive and Maladaptive Variants				
Five-Factor Facet	Maladaptively high	Normal high	Normal low	Maladaptively low
Agreeableness				
Trust	Gullible	Trusting	Cautious, skeptical	Cynical, suspicious
Straightforwardness	Guileless	Honest, forthright	Savvy, cunning, shrewd	Deceptive, dishonest, manipulative
Altruism	Self-sacrificial, selfless	Giving, generous	Frugal, withholding	Greedy, exploitative
Compliance	Yielding, docile, meek	Cooperative, obedient, deferential	Critical, contrary	Combative, aggressive
Modesty	Self-effacing, self-denigrating	Humble, modest, unassuming	Confident, self-assured	Boastful, pretentious, arrogant
Tender-mindedness	Overly soft-hearted	Empathic, sympathetic, gentle	Strong, tough	Callous, merciless, ruthless
Conscientiousness				
Competence	Perfectionistic	Efficient, resourceful	Casual	Disinclined, lax
Order	Preoccupied w/organization	Organized, methodical	Disorganized	Careless, sloppy, haphazard
Dutifulness	Rigidly principled	Dependable, reliable, responsible	Easygoing, capricious	Irresponsible, undependable, immoral
Achievement	Workaholic	Purposeful, diligent, ambitious	Carefree, content	Aimless, shiftless, desultory
Self-discipline	Single-minded doggedness	Self-disciplined, willpower	Leisurely	Negligent, hedonistic
Deliberation	Ruminative, indecisive	Thoughtful, reflective, circumspect	Quick to make decisions	Hasty, rash

Note. From “Five-factor model of personality disorder: A proposal for DSM-V,” by T. A. Widiger and S. N. Mullins-Sweatt, 2009, *Annual Review of Clinical Psychology*, 5, p. 202. Copyright 2009 by Annual Reviews. Permission to reprint is not required when material from *Annual Reviews* is republished in a dissertation.

Dark-Side Personality Traits

Dark personality traits represent subclinical levels of maladaptive personality tendencies that straddle bright-side personality, on the one side of the personality continuum, and clinical levels of abnormal personality on the other (Hogan & Hogan, 2001; Paulhus & Williams, 2002; Spain, Harms, & LeBreton, 2014). In other words, dark personality traits can be considered to represent subclinical levels of impairment because they do not necessarily represent such significant impairment in life functioning to warrant a clinical diagnosis or psychiatric treatment, although they often interfere with functioning in a similar manner (Hogan & Hogan, 2001). Moreover, subclinical personality disorders usually refer to individuals who are in the normal population, rather than in a clinical setting (Furnham, Richards, & Paulhus, 2013; Ray & Ray, 1982). However, subclinical levels do not necessarily mean milder forms of dysfunction; the general population has a wider level of variability and may therefore include individuals with extremely significant disorders of personality (Furnham et al., 2013).

In terms of the two sides of personality, bright-side personality traits are considered to reflect the dispositional qualities that observers notice when individuals are performing at their best or making an initial impression (e.g., job interview; Hogan & Kaiser, 2005); dark personality traits often remain hidden below the surface and tend to manifest when people let down their guard or when they are under increased stress and struggle to inhibit disruptive impulses and motives (Hogan & Hogan, 2001). Indeed, research has demonstrated that dark personality traits are significantly positively related to job stress, such that high levels of job stress are associated with a stronger expression of dark tendencies (Wille, De Fruyt, & De Clercq, 2013). In summary, “the bright side concerns the person you meet in an interview; the dark side concerns the person who actually comes to work” (Hogan & Kaiser, 2005, p. 171). It is

thought that everyone has both a bright and a dark side to their personality, and the latter becomes more apparent when faced with difficult circumstances or when, for whatever reason, one lets their guard down (Hogan & Hogan, 2007).

Some researchers have suggested taking a functionalist, as opposed to structuralist, approach to understanding dark personality (Harms, Spain, & Wood, 2014). Within this approach, it is suggested that a promising way of understanding dark-side tendencies lies in understanding the underlying psychological underpinnings (i.e., motives, abilities, and perceptions) that are related to maladaptive behavior, as opposed to simply assessing a descriptive account of personality traits using a structuralist approach. For example, it is suggested that certain dark personalities are related to an increased need for power, a decreased capacity for empathy and self-control, and a negative perception of others. Within this framework, it is these individual differences that influence factors such as the extent to which one will disadvantage others for personal gain (i.e., need for power), the ability one has to consider another's perspective and pain (i.e., empathy), the ability one has to regulate one's destructive tendencies (i.e., self-control), as well as perceptions regarding the manner to which others are hostile toward the self (i.e., negative perception of others).

This is in line with other research that has demonstrated that the expression of dark personality tendencies is related to a variety of personal characteristics (Kaiser & Hogan, 2010). For instance, dark traits can be compensated for by strong social skills, which mask these negative characteristics over the short-term; however, individuals' dark characteristics tend to come out over the long-term and can disrupt trust and ruin relationships (Hogan & Kaiser, 2005). Similarly, other intrapersonal factors, such as self-awareness, empathy, psychological adjustment, and self-regulation, are considered to influence the extent to which one's dark

tendencies manifest (Harms et al., 2014; Hogan & Hogan, 2001; Hogan & Warrenfeltz, 2003). It is these intrapersonal characteristics that can influence factors such as the extent to which managers are able to (a) recognize their own maladaptive behaviors (i.e., self-awareness) as well as (b) their destructive effects on other workers (i.e., empathy), and then (c) accept and take responsibility for their inappropriate actions (i.e., psychological adjustment) as well as (d) successfully change their behavior and manage their destructive tendencies (i.e., self-regulation). These personality characteristics represent important individual differences that may represent the underlying psychological underpinnings of dark personality (Harms et al., 2014).

Many of these psychological underpinnings can be measured using personality inventories designed to predict such intrapersonal and interpersonal characteristics. For instance, the CPI was developed for the purpose of predicting such psychological underpinnings and includes scales that are considered to predict individuals' level of empathy, psychological adjustment, and self-regulation (Gough & Bradley, 1996). In terms of self-awareness, some studies have examined this through the measurement of discrepancy scores between self-ratings and other-ratings of a manager's behavior (Church, 1997; Paulhus, Robins, Trzesniewski, & Tracy, 2004; Tangney & Dearing, 2002). Self-awareness regarding one's own dark-trait tendencies is theoretically relevant to the construct of dark personality which, by definition, reflects patterns of dysfunctional or destructive behaviors that operate, at least to some extent, beyond the awareness of the individual (Harms et al., 2014; Hogan & Hogan, 2001; O'Boyle, Forsyth, Banks, & McDaniel, 2012). The relationship between self-awareness and dark personality traits does not appear to have been directly examined, although studies have shown that higher levels of self-awareness are related to higher levels of job performance (Atwater & Yammarino, 1992; Church, 2000; Tiuraniemi, 2008; Van Velsor, Taylor, & Leslie, 1993).

Another potentially relevant psychological underpinning of maladaptive personality functioning is critical thinking ability. From a theoretical perspective, critical thinking ability may allow individuals to overcome, to some extent, the biased perceptions and distorted cognitions that characterize dark personality traits (Hogan & Hogan, 2001), and promoting critical thinking ability in this manner is an effective way to deal with clinical personality disorders (Matusiewicz, Hopwood, Banducci, & Lejuez, 2010). However, only a few studies have examined the relationship between critical thinking ability and dark personality traits. These studies suggest that paranoid, schizoid, obsessive-compulsive, and dependent traits may be negatively related to critical thinking, whereas passive-aggressiveness, histrionic, and schizotypal traits may be positively related to critical thinking (Furnham, 2006; Hogan & Hogan, 1997, 2009).

Dark-Trait Taxonomies

The literature on dark personality has tended to focus on two models of dark personality, the dark triad model (Paulhus & Williams, 2002) and subclinical variants of the DSM-IV (APA, 1994) Axis II personality disorders (Schyns, 2015; Spain et al., 2014). Although there have been recent efforts to expand research to include other forms of dark traits, such as perfectionism (Ozbilir, Day, & Catano, 2015) or feelings of entitlement (Brummel & Parker, 2015), this summary will review the two dominant models in dark personality research and then provide a description of the Hogan Development Survey (HDS) dark-trait taxonomy that is used in the current investigation.

The dark triad model refers to three distinct but related socially aversive personality traits that are characterized by malevolent psychological and behavioral strategies (Paulhus & Williams, 2002). The dark triad comprises Machiavellianism, subclinical narcissism, and

subclinical psychopathy, which represent three related, but empirically distinct, personality styles.

Machiavellianism is characterized by a cold and manipulative personality style that involves ruthless manipulation and taking advantage of others for personal gain (Wilson, Near, & Miller, 1996). The description of this dark trait originates from Niccolo Machiavelli's (1513/1966) book, *The Prince*, which provides a callous guide, relatively free of ethical concerns, to achieving status and power.

Subclinical narcissism is a subclinical manifestation of the clinical personality disorder, which was first included in the DSM-III (APA, 1980). Subclinical levels of narcissism are considered to be normally distributed throughout the population (Foster & Campbell, 2007). The trait is characterized by feelings of grandiosity and superiority, a preoccupation with fantasies of unlimited success, a sense of entitlement, frequent boasting of one's accomplishments, and a lack of empathy and a disregard for others (Raskin & Hall, 1979).

Subclinical psychopathy also consists of subclinical psychopathic tendencies found in individuals in the general population, rather than those in clinical or forensic settings (e.g., Lilienfeld & Andrews, 1996). Subclinical psychopathy is characterized by two broad factors, including an inner attitude of callousness, selfishness, egocentricity, and lack of empathy or remorse, as well as outer behaviors reflecting an unstable and antisocial lifestyle (Harpur, Hakstian, & Hare, 1988).

Whereas the three dark-triad personality styles are empirically distinct, they have in common certain socially aversive behaviors such as self-promotion, aggressiveness, emotional coldness, and deceitfulness (Paulhus & Williams, 2002). More recently, sadism is a fourth dark trait that some have included in this taxonomy to form the dark tetrad (Paulhus & Buckels,

2011). Sadism is characterized by a pattern of cruel, aggressive, and demeaning behavior (Chabrol, Leeuwen, Rodgers, & Sejourne, 2009).

Reviews of the dark triad suggest that these personality styles have significant implications for work behavior and performance (Furnham et al., 2013; O'Boyle et al., 2012). All of the three dark-triad personality traits are related to various counterproductive workplace behaviors (e.g., theft, abuse, office politics; O'Boyle et al., 2012). In terms of the strength of these relationships, narcissism has been found to have the strongest relationship with counterproductive workplace behavior ($r = .43$), Machiavellianism had a moderate relationship ($r = .25$), and psychopathy had a significant but weaker relationship ($r = .07$). Moreover, Machiavellianism ($r = -.07$) and psychopathy ($r = -.10$) were significantly negatively associated with job performance, but narcissism was unrelated ($r = -.03$; O'Boyle et al., 2012). According to more recent findings, narcissism has an inverted U-shaped relationship with job performance (Grijalva et al., 2015), which may have been masked in this earlier review (O'Boyle et al., 2012).

An important practical limitation of the dark triad for managerial research and professional use is that it is rarely used in occupational settings, especially not for the purpose of personnel selection (O'Boyle et al., 2012). This is largely because measures of the dark triad involve invasive questions about socially undesirable behavior that are not specifically work-related (Furnham, Milner, Akhtar, & De Fruyt, 2014).

There are at least four obstacles for using measures of the dark triad to assess for dark traits in personnel selection. First, inventory items do not directly tap the damaging effects of the dark-triad personality styles at work, which is the focal concern of selection assessments (Guenole, 2014). Second, the questionnaire items risk being considered inappropriate or unethical for use in organizational assessments, because they assess subclinical disorders that

might be considered to be psychiatric or medical in nature, which is generally prohibited in selection contexts (Christiansen, Quirk, Robie, & Oswald, 2014; Guenole, 2014). Third, respondents may have a lack of self-awareness regarding their dark traits, which would diminish the usefulness of a self-report measure (O'Boyle et al., 2012). Fourth, self-report inventories have been suggested to have shortcomings when measuring such socially undesirable characteristics as a result of social desirability biases, which are especially prevalent in such high-stakes workplace contexts (O'Boyle et al., 2012; Viswesvaran, Deller, & Ones, 2007).

It is for these reasons that measures of the dark triad are not suitable for use in certain high-stakes employment testing contexts, such as in selection assessments, and are not used in the current study. One exception to this is the fairly recently validated B-Scan measure of psychopathy (Mathieu & Babiak, 2016). Whereas this provides a measure suitable for workplace contexts it was not used for the current studies because it only focuses on one specific dark trait in the workplace as opposed to the variety of dark traits.

In terms of dark-trait taxonomies based on the DSM-IV personality disorders, the other dominant model of dark personality, there are at least three main published taxonomies assessing subclinical or maladaptive aspects of normal personality in the managerial and leadership literature (Hogan & Hogan, 2001, 2009; Salgado, 2000; Schmit, Kihm, & Robie, 2000). These measures can be classified according to their parallel DSM-IV personality disorders (Kaiser et al., 2015; see Table 2). These three measures have significantly overlapping content as well as analogous clinical personality disorders according to DSM, which represent their more extreme clinical manifestations.

Table 2

Three Taxonomies of Dark Traits and Related DSM Personality Disorders

Axis II Dimension	Analogous Dark-Side Tendencies Among Normal Adults	Measurement Scales		
		Hogan & Hogan (2009)	Moscoso & Salgado (2004)	Schmit, Kihm, & Robie (2000)
Borderline	Moody; intense but short-lived enthusiasm for people, projects, and things; hard to please	Excitable	Ambivalent	
Avoidant	Reluctant to take risks for fear of being rejected or negatively evaluated	Cautious	Shy	
Paranoid	Cynical, distrustful, and doubtful of others' true intentions	Skeptical	Suspicious	Intimidating
Schizoid	Aloof, and uncommunicative; lacking awareness and care for others' feelings	Reserved	Lone	Intimidating
Passive–Aggressive	Casual; ignoring people's requests and becoming irritated or exclusive if they persist	Leisurely	Pessimistic	Passive–Aggressive
Narcissism	Extraordinarily self-confident; grandiosity and entitlement; overestimation of capabilities	Bold	Egocentric	Ego-centered
Antisocial	Enjoy taking risks and testing limits; manipulative, deceitful, cunning, and exploitative	Mischiefous	Risky	
Histrionic	Expressive, animated, and dramatic; wanting to be noticed and the center of attention	Colorful	Cheerful	
Schizotypal	Acting and thinking in creative but sometimes odd or unusual ways	Imaginative	Eccentric	
Obsessive–Compulsive	Meticulous, precise, and perfectionistic; inflexible and rules and procedures	Diligent	Reliable	Micro-managing

Axis II Dimension	Analogous Dark-Side Tendencies Among Normal Adults	Hogan & Hogan (2009)	Moscoso & Salgado (2004)	Schmit, Kihm, & Robie (2000)
Dependent	Eager to please; dependent on the support and approval of others; reluctant to disagree with others, especially authority figures	Dutiful	Submitted	

Note. From “The dark side of personality and extreme leader behavior,” by R. B. Kaiser, J. M. LeBreton, and J. Hogan, 2015, *Applied Psychology*, 64, p. 60. Copyright 2013 by the International Association of Applied Psychology. Reprinted with permission.

Salgado's (2000) measure of dark personality is a measure originally developed in Spanish, named the Cuestionario de Estilos de Personalidad (i.e., Questionnaire of Personality Styles). It assesses 14 personality disorders, 10 of which are listed in the DSM-IV and 4 others that were listed in previous versions of the DSM, but have since been removed from more current versions. The latter four personality disorders consist of depressive, sadistic, self-defeated, and passive-aggressive maladaptive personality styles.

Research using the Cuestionario de Estilos de Personalidad has demonstrated that the majority of the dark personality styles are negatively related to task performance, contextual performance, and overall job performance (Moscoso & Salgado, 2004). These researchers have found that egocentric personality tendencies (i.e., narcissistic personality disorder) negatively predicted contextual performance, as a result of an intense self-focus and disregard for others, and that submissive personality tendencies (i.e., dependent personality disorder) negatively predicted task performance, presumably because of their low levels of emotional stability (Moscoso & Salgado, 2004). It was also found that schizotypal (i.e., socially anxious, isolating, and odd) and passive-aggressive (i.e., passive resistance or hostility) tendencies are among the strongest predictors of poor job performance.

Schmit et al. (2000) developed the second measure, the Global Personality Inventory, which is unique in that it was developed as a global measure, with input regarding the developmental stages from experts around the world. The Global Personality Inventory is a taxonomy of 30 trait facets that were deemed relevant to workplace contexts and that are organized into the broad domains of the five-factor model. Items include trust and consideration (agreeableness), work focus and dutifulness (conscientiousness), taking charge and influence (extraversion), stress tolerance and optimism (neuroticism), as well as vision and social

astuteness (openness). The Global Personality Inventory also includes five other composites (viz., ego-centered, intimidating, manipulation, micro-managing, passive-aggressive) that are specifically related to management failure and two others that tap self-awareness and impression management.

These authors used theory to describe the ways in which each of the Global Personality Inventory facets are related to various important leadership performance domains (e.g., administration, interpersonal skills, and self-management). These five composites have been shown to predict management failure and are negatively related to task leadership, interpersonal leadership, decision-making, and overall leadership (Benson & Campbell, 2007).

Hogan and Hogan (1997, 2009) created the HDS, which is the third measure of dark personality commonly used in organizational settings. The HDS measure assesses 11 dysfunctional personality styles that are based on the DSM-IV Axis II personality disorders, with the exception of passive-aggressiveness that is based on a former version of the psychiatric manual (Hogan & Hogan, 2001). These personality styles represent subclinical variants of personality disorders found in the general population (Hogan & Hogan, 2001). The HDS has been extensively researched and found to have important implications for job performance and leadership behavior (e.g., De Fruyt, Wille, & Furnham, 2013; Gaddis & Foster, 2015; Hogan & Hogan, 1997, 2001, 2009; Kaiser et al., 2015).

The HDS is one of the most extensively researched and commonly used measures of dark personality in the workplace (e.g., Hogan & Hogan, 1997, 2009; Kaiser et al., 2015; Gaddis & Foster, 2015). Indeed, it is the measure of dark personality employed by the majority of research cited in this review. According to Google Scholar, the HDS manual has currently been cited 149 times and the original article describing the HDS taxonomy (Hogan & Hogan, 2001) has been

cited 369 times. Given this extensive research literature and the fact that the HDS was developed for use in organizational settings, it is the taxonomy of dark personality used in the current study. The dark traits of the HDS, along with their related clinical personality disorders, are described in Table 3.

In summary, researchers studying personality have increasingly supported the notion that personality traits reflect a spectrum of personality functioning that encompasses a range of adaptive and maladaptive variants for each trait (Widiger & Costa, 2012; Widiger & Mullins-Sweatt, 2009). Past research in the industrial/organizational literature has often focused on the positive personality traits related to managerial and leadership effectiveness (Burch & Anderson, 2008), which are often referred to as bright traits. However, with the increasing level of awareness of the spectrum of personality, industrial/organizational researchers have focused a greater level of attention on the ways in which maladaptive extremes of positive personality traits are related to problematic or ineffective personality functioning (O'Boyle et al., 2012; Schyns, 2015). The latter have become referred to as dark traits and reflect maladaptive patterns of personality and interpersonal functioning that are similar in nature to, but less severe than, clinical personality disorders (Hogan & Hogan, 2001). The most commonly used taxonomy of dark traits in the occupational and personnel selection literature is the HDS, which consists of 11 dysfunctional personality styles that represent subclinical levels of DSM-IV Axis II personality disorders (Hogan & Hogan, 2001).

Table 3

Description of HDS Dark Traits and Related DSM Personality Disorders

Subclinical Trait	DSM-IV Construct	Description of High Scorers	DSM-IV Descriptions
Excitable	Borderline	Moody and inconsistent concerns; being enthusiastic about persons, ideas, and projects and then becoming disappointed in them	Inappropriate anger; unstable and intense relationships
Skeptical	Paranoid	Cynical, distrustful, overly sensitive to criticism, and skeptical of others' true intentions	Distrustful and suspicious of others; motives of others are interpreted negatively
Cautious	Avoidant	Resistant to change and reluctant to take even reasonable chances for fear of being evaluated negatively	Social inhibition; feelings of inadequacy; hypersensitivity to criticism
Reserved	Schizoid	Socially withdrawn and lacking interest in or awareness of the feelings of others	Emotional coldness and detachment from relationships; indifference to criticism
Leisurely	Passive–Aggressive	Autonomous, indifferent to the requests of others, and often irritable when others persist	Passive resistance to performance expectations; irritable when asked to do unwanted tasks
Bold	Narcissism	Unusually self-confident, unwilling to admit mistakes or listen to advice, and unable to learn from experience	Grandiose sense of self-importance and entitlement; arrogant behaviors and attitudes
Mischiefous	Antisocial	Enjoys taking risks and testing the limits	Disregard for the truth; impulsive; failure to conform to social norms
Colorful	Histrionic	Expressive, dramatic, and desires to be noticed	Excessive emotionality and attention-seeking

Subclinical Trait	DSM-IV Construct	Description of High Scorers	DSM-IV Descriptions
Imaginative	Schizotypal	Acts and thinks in creative and unusual ways	Odd beliefs and thinking; behavior or speech that is eccentric or peculiar
Diligent	Obsessive–Compulsive	Careful, precise, and critical of the performance of others	Preoccupations with orderliness, rules, and control; inflexible
Dutiful	Dependent	Eager to please, reliant on others for support, and reluctant to take independent action	Difficulty making everyday decisions without excessive advice and reassurance; unwilling to express disagreement

Note. From “Leader development and the dark side of personality,” by P. D. Harms, S. M. Spain, and S. T. Hannah, 2011, *Leadership Quarterly*, 22, p. 497. Copyright 2011 by Elsevier. Reprinted with permission. Harms et al. adapted the original descriptions from Hogan and Hogan’s (1997) HDS Manual.

Dark Personality and Managerial Effectiveness

The first significant work to uncover the role of dark-side personality in managers involved an extensive 30-year study examining the causes of failed executives at a large US-based retailer (Bentz, 1967, 1985). These executives were intelligent and talented individuals who had undergone extensive assessment and selection procedures to ensure their fitness for the position. Yet, they failed to perform as managers and this was largely due to maladaptive personality tendencies (Bentz, 1985; Hogan & Hogan 2001; Hogan & Judge, 2013). This initial study pioneered research on the effects of dark personality characteristics and managerial derailment—the failure of managers with successful track records to meet career expectations (McCall & Lombardo, 1983).

The influential role of dark personality and its impact on managerial and leadership behavior has been receiving increasing levels of attention in industrial psychology research and is becoming recognized as being of central importance in derailing otherwise successful managerial careers (e.g., Benson & Campbell, 2007; Guenole, 2014; Hogan & Hogan, 2001; Judge et al., 2009; Kaiser et al., 2015; Paulhus & Williams, 2002; Spain et al., 2014). Dark personality traits are quite common in the workplace, with estimates suggesting that about 16% of workers meet diagnostic criteria for a clinical personality disorder (Ettner, Maclean, & French, 2011), and likely more exhibiting problematic subclinical levels of such traits. Estimates of subclinical dark personality traits in the workplace flagged 19-25% for being at risk of at least one dark personality tendency (De Fruyt, Wille, & Furnham, 2013). Given the significant role of dark personality in managerial performance coupled with its prevalence, it is no surprise that this represents a burgeoning area of research (Hogan et al., 2010). Indeed a review on the matter has suggested that managerial failure is more a result of having destructive personality tendencies

rather than lacking positive personality traits (Hogan & Kaiser, 2005).

The negative consequences of dark personality traits on managerial and leadership effectiveness are widespread. Dark-side personality traits not only predispose managers to derailment, but they also prevent nonmanagers from ascending to managerial positions (Furnham, Crump, & Chamorro-Premuzic, 2007). They are related to a host of organizational (e.g., absenteeism) and interpersonal (e.g., aggression) counterproductive workplace behaviors (Christiansen & Tett, 2013). Moreover, they are associated with poor job performance, a lack of citizenship behavior, workplace deviance, abusive supervision, and lower levels of positive leadership styles (e.g., transformational leadership; Moscoso & Salgado, 2004; Spain et al., 2014). Of particular importance to personnel selection is that dark-side personality traits may be better predictors of leadership performance than traditional bright-side traits and/or contribute incremental validity over and above bright-side traits in predicting leadership behavior (e.g., De Fruyt, Wille, & Furnham, 2013; Grijalva et al., 2015; Harms et al., 2011; Harms, Spain, Hannah, Hogan, & Foster, 2011, cited in Kaiser et al., 2015; Hogan & Hogan, 1997, 2009; Quirk, Christiansen, Wagner, & McNulty, 2003).

More recently, an entire special issue of the journal, *Applied Psychology* (2015), was devoted to the study of dark personality in the workplace (Schyns, 2015). The aim of this issue was to summarize the current state of knowledge on the topic and set an agenda for future research (Schyns, 2015). Two of the studies found in this issue are particularly relevant to the current study. The first article concerns the specific managerial skills and competencies that are negatively affected by dark personality traits (Gaddis & Foster, 2015) and the second article more closely examines how dark traits relate to imbalanced leadership behavior (Kaiser et al., 2015).

In order to determine the specific managerial skills and competencies that are influenced by dark personality traits, a meta-analysis reviewed the relationship of dark personality traits to key managerial skills and competencies considered to be the most germane to leadership effectiveness and managerial performance (Gaddis & Foster, 2015). In order to accomplish this, these researchers examined a large archive of expert ratings on the work behaviors considered to be most crucial to managerial success. Of particular note was the scope of their database, including expert ratings from across the globe on over 250 managerial positions. Managerial performance was examined in the context of Hogan and Warrenfeltz's (2003) comprehensive taxonomy of managerial competencies, the domain model of competencies (Hogan & Kaiser, 2005; see Figure 1).

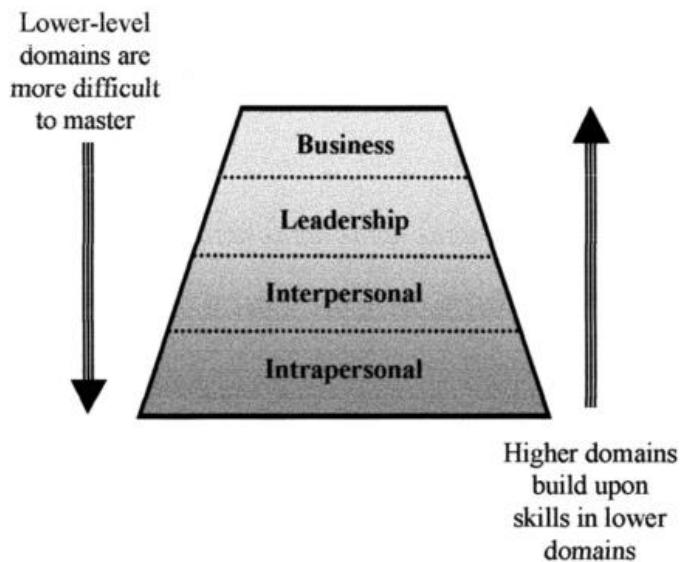


Figure 1. The domain model of managerial competencies. From “The deeper work of executive development: Outgrowing sensitivities,” by R. B. Kaiser and R. B. Kaplan, 2006, *Academy of Management Learning & Education*, 5, p. 464. Copyright 2006 by the Academic of Management. Reprinted with permission.

The domain model of competencies provides an encompassing classification of the domains of skills considered to be important for managerial effectiveness: (a) intrapersonal skills (viz., psychological adjustment, attitudes toward authority, and self-control), (b) interpersonal skills (viz., seeing other's perspective, anticipating other's expectations, and acting according to other's expectations), (c) leadership skills (viz., recruiting, retaining, and motivating a talented group of people, as well as projecting a vision and persisting through adversity), and (d) business skills (e.g., planning, monitoring budgets, and mapping strategies). It is important to note that these domains of skills form an overlapping developmental sequence, in which the former skills are required in order for the latter skills to develop (Hogan & Warrenfeltz, 2003). For instance, it is apparent that intrapersonal and interpersonal skills form the foundation on which to build leadership skills, and that without such skills it would be impossible to hone the skills in the leadership domain. It is also thought that the earlier skills (e.g., intrapersonal and interpersonal skills) are more difficult to teach than the later skills (e.g., business and leadership skills; Hogan & Warrenfeltz, 2003). This is vital in regards to managerial personality assessment, because it is these foundational skills that are crucial to managerial success and that form the "human side of the enterprise" (Hogan & Warrenfeltz, 2003, p. 79).

In line with the theory of the domain model of competencies, it was found that the foundational levels of managerial competencies were considered to be the most related to managerial success (Gaddis & Foster, 2015). It was found that managerial success was rated as a result of primarily intrapersonal skills, including trustworthiness, work attitude, achievement orientation, dependability, and adaptability/flexibility; although, interpersonal skills and a couple of leadership skills (i.e., leading others and decision making/problem solving) were also considered to be fundamental to managerial effectiveness. This is in line with Hogan and

Warrenfeltz's (2003) domain model, which considers intrapersonal and interpersonal skills as foundational precursors for higher-level business and leadership skills and as vital to managerial effectiveness.

Upon locating the managerial skills and competencies most related to managerial effectiveness, these researchers examined the ways in which these fundamental managerial skills were impacted by dark personality traits. It was found that, in general, dark-side personality traits had a pernicious effect on these various managerial skills (Gaddis & Foster, 2015). This is in line with the conceptualization of dark personality traits as maladaptive interpersonal and intrapersonal personality tendencies (Hogan & Hogan, 2001). They also found that higher levels of dark personality traits were related to poorer ratings of overall leadership performance (Gaddis & Foster, 2015).

However, not all dark personality traits were equally damaging and some dark traits were found to be more “toxic” than others (and therefore more predictive of job performance; Gaddis & Foster, 2015, p. 44). For instance, the personality tendencies characterized by moving away from others when under stress (e.g., skeptical/paranoid personality disorder or cautious/avoidant personality disorder) were found to have a consistently negative impact on various indices of managerial performance.

Whereas it is clear that personality traits affect managerial performance, a second study in this special issue examined more directly how dark traits are related to imbalances in various leadership behaviors (Kaiser et al., 2015). This was accomplished by assessing the relationship between dark personality traits and “extreme” leadership behavior. In a large-scale study involving 320 managers who were rated by 4,906 co-workers, these authors found that both low and high levels of dark personality traits were associated with greater imbalances in leadership

behavior. Optimal leadership behavior, on the other hand, was typically associated with a midrange level of each dark personality tendency. For instance, high levels of the excitable dark trait (i.e., intense and erratic emotions) were related to “too much” forceful leadership behavior and “too little” enabling behavior, whereas low levels of this dark trait were related to the opposite pattern (i.e., “too little” forceful leadership behavior and “too much” enabling behavior). Similarly, high levels of the dutiful dark trait (i.e., deferential and dependent on others) were related to “too much” enabling leadership behavior and “too little” forceful leadership behavior, whereas low levels of the dark trait were related to the opposite pattern of leadership behavior (Kaiser et al., 2015). Similar patterns were noted for many of the dark traits, which were found to be related to imbalanced and less effective leadership by either overdoing or underdoing various leadership behaviors (Kaiser & Hogan, 2011; Kaiser et al., 2015).

The dark traits special issue of *Applied Psychology* (Schyns, 2015) concluded that dark personality traits are important predictors of managerial effectiveness and leadership behavior and more research is needed to better understand the role of dark traits in leadership and managerial success and failure. An agenda for future research on dark personality was put forth and three of these areas form lines of inquiry in this dissertation. First, research on dark traits has focused almost exclusively on using self-report measures and needs to examine such traits using observer ratings (Gaddis & Foster, 2015); this is because self-reported dark traits are associated with response biases and evidence shows that observer ratings of bright personality traits are more accurate than self-reported bright traits in predicting job performance (Oh, Wang, & Mount, 2011). Second, the need to move beyond broad measures of overall job performance to assess more specific aspects of job performance and in particular further explore the relationship between dark personality traits and counterproductive workplace behavior (Burch & Andersen,

2008; Gaddis & Foster, 2015). Third, a topic that has been singled out as of great importance for future investigation, and that is the primary focus of this dissertation, is to examine novel ways to detect dark personality traits for screening managerial applicants in employment selection assessments, which has proved to be particularly challenging (Schyns, 2015).

Assessing Dark Personality Traits in Managerial Selection Contexts

Given the costly role of dark personality characteristics, the assessment of dark personality traits is of great importance in managerial selection assessments. It is also of significant ethical concern, in order to ensure a safe and productive work environment (Guenole, 2014). However, the assessment of dark personality traits for high-stakes employment purposes has been suggested to be particularly challenging as a result of (a) the effects of respondent social desirability biases during testing (Viswesvaran et al., 2007), (b) the fact that respondents likely have a lack of self-awareness regarding their dark tendencies (O'Boyle et al., 2012), and (c) ethical and legal concerns and restrictions regarding the use of tests that are considered to be of a psychiatric or medical nature in personnel selection contexts (Christiansen et al., 2014; Guenole, 2014). As a result, many of the measures of maladaptive personality traits typically used in research or clinical settings are not considered to be appropriate in personnel selection contexts (Christiansen et al., 2014; Guenole, 2014).

One possible way to screen for dark traits in employment testing contexts is to examine extreme scores on measures of normal personality that are suggestive of maladaptive personality functioning (De Fruyt et al., 2009). This possibility has arisen out of a series of studies in the clinical psychology literature that investigate the relationship between normal personality traits and clinical personality disorders (Widiger & Costa, 2012; Widiger & Trull, 2007). In this literature, clinical researchers have been examining the five-factor model's potential to provide a

dimensional understanding and measurement of the DSM-IV categorical conceptualization of clinical personality disorders and its ability to aid with diagnosing clinical personality disorders (Widiger, Lynam, Miller, & Oltmanns, 2012). This line of research has suggested that measures of normal personality traits are significantly and meaningfully predictive of clinical personality disorders (e.g., Hengartner, Ajdacic-Gross, Rodgers, Müller, & Rössler, 2014; Quirk et al., 2003; Reynolds & Clark, 2001).

For instance, a meta-analysis seeking to examine the relationship between clinical personality disorders and bright traits found that each of the 10 DSM-IV clinical personality disorders can be meaningfully distinguished by individual patterns of the five-factor personality traits (as measured by the NEO-PI-R; Saulsman & Page, 2004). For example, avoidant personality disorder is characterized by a significant positive relationship with neuroticism and a negative relationship with extraversion, whereas narcissistic personality disorder is positively related to extraversion and negatively related to agreeableness. This quantitative review demonstrated that correlations between individual domain-level traits and personality disorders ranged from nonsignificant relationships for unrelated trait-disorder pairs, to relationships as high as $r = .49$, for those pairs that were associated.

Other work has found that the relationship between the five-factor model and clinical personality disorders is even stronger when taking a narrower measure and including information at the facet, rather than the domain, level of personality (Quirk et al., 2003). Seeking to examine the relationship of five-factor traits to clinical personality disorders these researchers found that five-factor facets accounted for, on average, 41% of the variance of various clinical psychological and personality disorders. For example, five-factor measures were able to predict substantial portions of maladaptive personality tendencies such as antisocial tendencies (i.e.,

psychopathic deviance, $R^2 = .50$), paranoia ($R^2 = .42$), obsessiveness ($R^2 = .53$), and anger ($R^2 = .58$). These researchers found that using five-factor measures increased the accuracy of clinical diagnostic classification by 8% to 23% beyond the clinical measures of abnormal personality. It was also found that five-factor model was able to provide incremental validity, above and beyond measures of abnormal personality, in predicting clinical personality disorders (Quirk et al., 2003).

The five-factor model has also shown promise in predicting personality disorders in nonclinical populations or subclinical dark traits, which is of particular relevance to the current investigation. For instance, a meta-analysis concluded that the five-factor model was a stronger predictor of personality disorders in nonclinical ($r = .55$) than in clinical ($r = .40$) samples (Saulsman & Page, 2004). Recently, a study involving a large population-based community sample found that the five-factor model could account for as much as 77% of the total variance of all of 10 DSM-IV personality disorder dimensions (Hengartner et al., 2014). Other reviews on nonclinical samples have found that the five-factor model can explain substantial amounts of dark traits, including narcissistic (31% and 42%), psychopathic (88%), passive-aggressive (40%), dependent (40%), avoidant (49%), borderline (45%), antisocial (31%), paranoid (30%), and obsessive-compulsive tendencies (18%; Butrus & Witenberg, 2015; O'Boyle, Forsyth, Banks, Story, & White, 2014).

A few studies have found similar patterns of findings using subclinical measures of dark traits as opposed to clinical measures of personality disorders, although the findings have been of smaller effect sizes (Furnham, 2014; Furnham & Crump, 2005; Furnham & Crump, 2014a, 2014b). The former are appropriate for, and commonly used in, organizational settings, suggesting the research in the clinical psychology literature is applicable for organizational

researchers. For example, one such study employing the HDS has mirrored the research using clinical measures of personality disorders, finding that bright-side personality traits (i.e., NEO-PI-R) are significantly related to and share between 8% (Leisurely/Passive–Aggressive) to 43% (Cautious/Avoidant) of the variance of various dark-side traits (Furnham & Crump, 2005). In addition, the HEXACO model, which consists largely of the five-factor model as well as a sixth Honest–Humility dimension (Lee & Ashton, 2004), has shown evidence of being able to predict dark-triad traits beyond that of the five-factor model (Lee & Ashton, 2005).

Given the findings on the relationship between bright traits and clinical and subclinical personality disorders, some organizational researchers have started to use measures of the former (bright traits) to assess for dark traits in personnel selection contexts. For instance, De Fruyt and colleagues (2009) suggested that compounds (i.e., linear combinations) of the 30 five-factor facets could be used to predict dark traits in employment testing contexts and to screen for individuals with high levels of dark traits (see Table 4 for the linear combinations of five-factor facets).

Table 4

Linear Combinations of Five-Factor Facets

Personality Disorder	Five-Factor Linear Combination
Paranoid	N2 + E1(r) + E2(r) + O4(r) + O6(r) + A1(r) + A2(r) + A3(r) + A4(r) + A6(r)
Schizoid	E1(r) + E2(r) + E3(r) + E4(r) + E5(r) + E6(r) + O3(r) + O4(r)
Schizotypal	N1 + N4 + E1(r) + E2(r) + E6(r) + O5 + C2(r)
Antisocial	N1(r) + N2 + N4(r) + N5 + E3 + E4 + E5 + O4 + A1(r) + A2(r) + A3(r) + A4(r) + A5(r) + A6(r) + C3(r) + C5(r) + C6(r)
Borderline	N1 + N2 + N3 + N5 + N6 + O3 + O4 + A4(r) + C6(r)
Histrionic	N4(r) + N5 + E2 + E4 + E5 + E6 + O1 + O3 + O4 + A1 + C5(r) + C6(r)

Personality Disorder	Five-Factor Linear Combination
Narcissistic	N2 + N4(r) + E1(r) + E3 + E5 + O3(r) + O4 + A1(r) + A2(r) + A3(r) + A4(r) + A5(r) + A6(r)
Avoidant	N1 + N4 + N5(r) + N6 + E2(r) + E3(r) + E5(r) + E6(r) + O4(r) + A5
Dependent	N1 + N4 + N6 + E3(r) + A1 + A4 + A5
Obsessive—Compulsive	N1 + N5(r) + E5(r) + O3(r) + O4(r) + O5(r) + O6(r) + C1 + C2 + C3 + C4 + C5 + C6

Note. N = neuroticism; E = extraversion; A = agreeableness; C = conscientiousness; O = Openness; r = reverse scored. From “A simplified technique for scoring DSM-IV personality disorders with the five-factor model,” by J. D. Miller, R. M. Bagby, P. A. Pilkonis, S. K. Reynolds, and D. R. Lynam, 2005, *Assessment*, 12, p. 413. Copyright 2005 by Sage Publications. Adapted and reprinted with permission.

Using this assessment method, dark trait tendencies are predicted by five-factor compounds that consist of unweighted linear combinations of between 7 and 17 five-factor personality facets (De Fruyt, Wille, & Furnham, 2013; Wille et al., 2013). A cutoff score, suggested to be around 1.5 SD of the compound mean, is then used to indicate managers at risk for maladaptive personality tendencies (Miller et al., 2008). For example, within this scheme the obsessive-compulsive personality disorder is measured by the following combination of five-factor facets: Anxiety, Impulsiveness (reverse scored), Excitement seeking (reverse scored), Feelings (reverse scored), Actions (reverse scored), Ideas (reverse scored), Values (reverse scored), and all six facets of Conscientiousness (viz., Competence, Order, Dutifulness, Achievement striving, Self-discipline, and Deliberation; De Fruyt, Wille, & Furnham, 2013; Wille et al., 2013).

The five-factor compounds have received some empirical investigation in employment testing contexts. For instance, in two samples of individuals undergoing employment testing it was found that the five-factor compounds were significantly correlated to dark traits with most correlations showing large effect sizes (De Fruyt et al., 2009). The same study also examined

three other samples of individuals who completed measures of normal personality for employment testing purposes and found that the five-factor compounds were able to predict, to some extent, relevant outcome variables, such as one's performance on a behavioral selection interview, being recommended for the job following a selection assessment, as well as self-rated work competencies (De Fruyt et al., 2009). These five-factor compounds have also been found to significantly predict other important career outcomes, such as income, management level, number of subordinates, job and career satisfaction, and job stress (De Fruyt, Wille, & Furnham, 2013; Wille et al., 2013).

These studies suggest that normal personality traits show potential for screening dark personality traits for the purpose of personnel selection. An important advantage of measuring dark personality from combinations of normal personality traits in selection contexts is that it allows for an indirect measure of dark personality using noninvasive items, which avoids ethical, legal, and practical issues surrounding the use of more invasive tests of maladaptive personality characteristics in such employment settings (Harms et al., 2014). It also shifts the focus of assessment from a clinical construct to subclinical manifestations of these personality tendencies that are often less problematic and more common in the general population (De Fruyt, Wille, & Furnham, 2013).

The literature on the five-factor model suggests that bright personality traits can predict maladaptive personality traits, but little research has extended beyond using the popular NEO-PI-R five-factor inventory (Costa & McCrae, 1992) or other similar five-factor model inventories (e.g., Hogan Personality Inventory; Hogan & Hogan, 2007). Extending this literature to other measures of normal personality that are designed, and commonly used, for personnel selection would be particularly helpful for industrial/organizational practitioners using such measures in

applied contexts and it would also further the conceptual understanding of bright–dark trait relationships.

One study that has recently ventured beyond the use of a five-factor model measure examined the relationship between dark personality (i.e., HDS) and the common Myers-Briggs Type Indicator (Furnham & Crump, 2014c). They found some overlap between the tests, especially between the thinking–feeling personality type and various dark-side traits. Yet, the Myers-Briggs itself is more of a popular, rather than theoretically and psychometrically rigorous, instrument that is less than ideal for selection contexts (McCrae & Costa, 1989). Future research is needed to extend this research to other commonly used and psychometrically sound measures of normal personality designed for personnel selection purposes.

The California Psychological Inventory and the Assessment of Dark Personality Traits

The CPI is a broadband inventory of personality that is designed for, and extensively used in, employment contexts and shows promise for assessing maladaptive personality traits in hiring contexts (Boer et al., 2008; Gough, 1957, 1969; Gough & Bradley, 1996, 2002; Groth-Marnat, 2009). It has a wealth of research related to predicting important social and job outcomes with a total of 50 years of research and 2,000 citations (Boer et al., 2008; Groth-Marnat, 2009). In terms of its relationship with maladaptive personality traits, it is related to and shares about 40% of its items with the well-known Minnesota Multiphasic Personality Inventory (MMPI) clinical measure of maladaptive personality functioning (e.g., Gough & Bradley, 1996; Higgins-Lee, 1990; Holliman & Guthrie, 1989; Megargee, 1966; Rodgers, 1966; Schut, Hutzell, Swint, & Gaston, 1980). Likewise, a great deal of studies have suggested that the CPI is able to tap various forms of maladaptive personality functioning, including the types of maladaptive interpersonal and intrapersonal tendencies that resemble dark-side personality traits (e.g.,

Alterman et al., 2003; Alterman, Rutherford, Cacciola, McKay, & Boardman, 1998; Edelmann & Vivian, 1988; Jay & John, 2004; Leroux, Vincent, McPherson, & Williams, 1990; Molinari, Kunik, Snow-Turek, Deleon, & Williams, 1999; Standage, 1990; Standage & Ladha, 1988). However, the literature on the CPI and maladaptive personality traits is limited in at least two ways.

First, the majority of the research on the CPI and maladaptive personality tendencies focuses on clinical constructs of personality disorders that differ, to some extent, from the subclinical dark traits examined in organizational research and practice (Boer et al., 2008; Hogan & Hogan, 2001; Groth-Marnat, 2009). A second and related limitation is that the literature on the CPI and maladaptive personality tendencies is quite dated (a search of the PsycINFO database reveals that the majority of studies on the matter were published between the 1960s and 1990s). This also suggests that the measures of maladaptive personality functioning employed in this literature tend to differ from more contemporary conceptualizations of dark traits (such as the HDS, which did not appear in the academic literature until 2001; Hogan & Hogan, 2001). Indeed, the relationship between the CPI and the HDS has not been examined in the academic literature to date. In general, the CPI literature on maladaptive personality functioning suggests that it shows promise to assess for dark traits, but does not necessarily speak to the specific relationships between its scales and the various HDS dark traits (although these past studies do serve to inform our hypotheses). A more in-depth review of the literature on the CPI and maladaptive personality tendencies is provided in Appendix A, rather than in the Introduction, given that it is quite large and unwieldy.

The CPI holds promise in predicting dark personality traits not only because of its rich research history, but because of its breadth of scope as well. It provides an assessment of lower-

level personality traits, which are thought to “be sufficient to forecast or conceptualize most if not all consequential and recurring forms of interpersonal behavior” (Gough & Bradley, 1996, p. 60). Using narrower, lower-level traits provides a finer-grained analysis that is thought to better predict job performance (Bergner, Neubauer, & Kreuzthaler, 2010; Judge, Rodell, Klinger, Simon, & Crawford, 2013; Paunonen & Ashton, 2001) and that contributes incremental validity beyond the broad five factors of personality in predicting various important social behaviors (Paunonen, 1998; Quirk et al., 2003). One concern with much of the five-factor research on job performance is that the use of broad omnibus measures of the five-factor model is “far and away the most common way of treating the Big Five traits,” which often neglects examining the narrower facet level (Judge et al., 2013, p. 879).

It has not been until more recently that an emphasis has been placed on examining facet-level information in predicting job performance, which was recently recognized by a review that cast the call to “reconsider the dominant way in which personality is assessed [at the factor level]” and offering an approach that accounts for both the broad (viz., higher order) and narrow traits (viz., lower order; Judge et al., 2013, p. 893). Other research on the genetic underpinnings of personality have also demonstrated that there are important facet-specific nuances that can be overlooked when examining scores at the broad domain, rather than the narrow facet-level of personality (Briley & Tucker-Drob, 2012).

One important advantage that the CPI holds over commonly used five-factor measures (e.g., NEO-PI-R; Costa & McCrae, 1992) for personnel selection purposes is its emphasis on predictive validity and practical utility in applied contexts (Boer et al., 2008; Groth-Marnat, 2009). The CPI was designed to optimize its ability to predict important social behavior and outcomes rather than to provide a parsimonious and conceptually clear description of personality

traits (Boer et al., 2008; Groth-Marnat, 2009). The CPI's focus on predictive validity aligns well with Harms and colleagues' (2014) call to take a functionalist approach to screening for dark traits by assessing their psychological underpinnings (i.e., motives, abilities, and perceptions) as opposed to the common structuralist trait approach represented by the five-factor model. The latter focuses on providing a conceptually clear description of the structure of personality traits and emphasizes optimizing psychometric properties for research purposes rather than seeking to predict maladaptive personality tendencies (Costa & McCrae, 1992; Harms et al., 2014). In addition to its functional orientation, the CPI's scales tap many of the relevant psychological characteristics proposed to underlie dark personality traits, including scales related to empathy, psychological adjustment, self-control, need for status, and sociability (Gough & Bradley, 2002; Harms et al., 2014).

The breadth of the CPI may also provide another advantage over the five-factor model in assessing dark personality. One criticism against using the five-factor model to assess for dark personalities is that it does not tap the full spectrum of personality descriptors (Paunonen & Jackson, 2000). These authors demonstrated that the five-factor model struggles to account for various adjectives associated with dark personality traits, such as deceptiveness, honesty and ethicalness, egoism and snobbishness, masculinity and femininity, and conservatism (Harms & Spain, 2015). Although the CPI was not designed as a comprehensive measure of maladaptive personality functioning, it represents promise in tapping some of these areas relevant to dark personality that may not be sufficiently assessed by inventories based on the five-factor model (Gough & Bradley, 2002).

The CPI was designed using an empirical criterion-keying method with the primary goal of predicting important social outcomes (Boer et al., 2008; Gough & Bradley, 2002). It consists

of 434 items with 20 core scales and many supplementary scales (because of its open-system philosophy) that have been extensively used to predict various social behaviors, including numerous factors related to successful leadership and managerial potential (see Groth-Marnat, 2009). Table 5 provides a description of each of the CPI scales. The CPI has also been developed to be used in organizational settings (as well as other settings) in that its items were designed to be appropriate for such settings and it has been shown to be relatively robust to social desirability biases (Ellingson, Sackett, & Connelly, 2007), which is considered to be a significant problem in high-stakes workplace contexts (O'Boyle et al., 2014). The predictive validity of the test is considered to be relatively robust to social-desirability biases in responding in large part because the majority of the CPI scales were designed using an empirical keying criterion (Groth-Marnat, 2009).

Table 5

Description of CPI Scales

CPI Scale	High Scorers	Low Scorers
Capacity for status	Ambitious; desires success	Dislikes competition
Dominance	Confident; assertive	Cautious; quiet
Empathy	Understands feelings of others	Distrustful of others' feelings
Independence	Self-sufficient; self-motivated	Seeks assistance of others
Self-acceptance	High self-regard	Low self-regard
Sociability	Outgoing; extraverted	Shy; introverted
Social presence	Self-assured in social settings	Reserved in social settings
Communality	Fits in; is a "team player"	Nonconforming
Good impression	Tries to please others	Unconcerned with others' impressions
Responsibility	Responsible; reliable; dutiful	Careless; self-centered

CPI Scale	High Scorers	Low Scorers
Self-control	Controls emotions; self-disciplined	Lacks control over emotions; impulsive
Socialization	Follows rules and norms	Prone to break rules and norms
Tolerance	Accepting; fair; nonjudgmental	Hostile to others; distrustful
Well-being	Feels healthy; cheerful	Feels unhealthy; complains
Achievement via conformance	Driven to succeed; prefers clearly defined settings; organized	Difficulties with strict rules; lacks perseverance
Achievement via independence	Driven to succeed; prefers less rigid settings; intelligent	Difficulties in ambiguous settings; lacks interest in intellectual pursuits
Intellectual efficiency	Intelligent; focused; insightful	Lacks motivation and/or aptitude for intellectual pursuits
Flexibility	Likes change; bored by routine	Prefers steady situations; conservative
Femininity/Masculinity	Sensitive; high-strung	Decisive; unsentimental
Psychological mindedness	Perceptive; insightful	Practical; focuses on people's actions and not motives

Note. From “Personality characteristics of juvenile offenders: Differences in the CPI by age at first arrest and frequency of offending,” by M. B. Donnellan, X. Ge, and E. Wenk, 2002, *Personality and Individual Differences*, 33, p. 729. Copyright 2002 by Elsevier. Adapted and reprinted with permission.

The CPI scales can be conceptually broken down into two broad domains: (a) internal control, characterized by disciplined effectiveness, integrity, and social conformity, and (b) interpersonal effectiveness, characterized by extraversion, self-confidence, assertiveness, and social poise (Groth-Marnat, 2009; Gough & Bradley, 2002). Both of these domains are significantly related to dark personality traits and critical to managerial effectiveness, which also reinforces the potential of the CPI to tap dark personality traits among managers (Gaddis & Foster, 2015; Hogan & Hogan, 2001; Hogan & Warrenfeltz, 2003).

Much of the research on the CPI was conducted several decades ago because the CPI was developed over half a century ago (Gough, 1957). However, more recently researchers have reconfigured the CPI scales, using item analysis, to develop a CPI–Big Five measure, in order to create a bridge to connect the vast literature on the CPI with the current dominant five-factor model (Soto & John, 2009). This revised measure has reinvigorated the use of the CPI in research as well as brought to the fore a half century of research on the instrument (Briley & Tucker-Drob, 2012; Soto & John, 2009). In addition, factor-analytic studies have suggested that the CPI scales cover most of the general five-factor personality traits albeit not perfectly so (Groth-Marnat, 2009; Gough & Bradley, 2002).

In summary, the current investigation seeks to build on previous research on the CPI by examining its relationship to the 11 HDS dark personality traits. A main hypothesis of this investigation is that the CPI will be significantly predictive of dark personality traits and will show its utility as a way to screen for these dark traits in personnel selection contexts. This investigation has significant practical implications for industrial/organizational practitioners and also adds to the conceptual understanding of bright–dark trait relationships. In addition, the current investigation seeks to build on this literature that has focused on self-report measures of dark traits by employing an observer-rating measure of dark traits. The latter is important for furthering our understanding of the ways in which observer ratings of dark traits are related to bright traits as well as important job and leadership outcome variables.

The Current Investigation

The current investigation entails two studies that, together, seek to address two main lines of inquiry. The first study examines the relationship that bright personality traits (as measured by the CPI) have with dark personality traits. This study employs a self-report measure of dark

personality traits (the HDS) that is commonly used in personnel selection contexts. The goal of these analyses is to examine the hypothesis that the CPI scales are able to predict dark personality traits and to examine the extent to which they are (or are not) able to do so.

The second study seeks to extend these findings in two broad ways. It examines the relationship between bright personality traits (CPI) and dark personality traits as rated by an observer, namely one's direct supervisor at work. It also builds on the first study by investigating the relationship that dark personality traits have with managers' job performance as well as the specific ways in which dark traits are related to ineffective and imbalanced leadership behavior. In terms of the former, job performance is generally considered to include three broad domains that include task performance (i.e., performance on specific in-role tasks), contextual performance or citizenship behavior (i.e., positive workplace behaviors, such as altruism, courtesy, and civic virtue), and counterproductive workplace behavior (i.e., deviant and destructive workplace behavior; Viswesvaran & Ones, 2000). The relationship between dark traits and each of these three measures of job performance was assessed. In terms of ineffective and imbalanced leadership behavior, this refers to the extent to which managers neglect or overfocus on leadership behaviors related to leading others (i.e., the interpersonal aspects of leadership) and what tasks they focus their time on (i.e., the task-related aspects of leadership; Kaiser, Overfield, & Kaplan, 2010). It was hypothesized that dark traits would be related to poorer job performance on all three indices as well as to imbalances in leadership behavior.

The current investigation involves two samples of managers working in business contexts. It should be noted that the skills required for workplace success vary depending on the specific demands of a particular occupational context. In regards to a business management context, managers need to have strong interpersonal skills as well as the ability to lead others,

establish trust, and follow-through with commitments (Gaddis & Foster, 2015). Success in managerial jobs also requires strong problem-solving and decision-making skills as well as the ability to flexibly adapt to circumstances (Gaddis & Foster, 2015). Likewise, the ability to maintain a positive attitude at work as well as a focus on achievement and accomplishing goals are important for success in such contexts (Gaddis & Foster, 2015). Management positions also tend to attract individuals with a certain type of personality. For instance, individuals who work in management roles in business settings have been found to differ from other types of professions (e.g., physicians, clergy, teachers) and tend to be most strongly characterized as extraverted and conscientious, but also as emotionally stable, agreeable, and open to experience (Barrick & Mount, 1991).

Chapter 2: Study 1

Study 1: Overview and Hypotheses

The primary aim of Study 1 is to examine the relationship between bright personality traits and dark personality traits in a sample of managers in an employment-testing context. Specifically, Study 1 seeks to build on the literature examining the bright–dark traits relationships, which has largely focused on the five-factor model inventories (Saulsman & Page, 2004), by extending it to another measure of bright traits designed for use in applied employment contexts (i.e., the CPI). Study 1 examined the relationship between the CPI and self-reported dark traits (as measured by the HDS) in managers and similarly assessed the CPI's ability to predict self-reported dark personality traits.

Specific hypotheses were examined and these were based on previous empirical studies as well as theoretical research. These hypotheses are largely based on past correlational studies that often relied on clinical measures of maladaptive personality functioning or personality disorders that share some similarities but also differ in significant ways from the more modern taxonomy of dark traits employed in the current study. Therefore, the following hypotheses are used to guide our discussion of the findings of the current study but should be considered relatively tentative and exploratory.

In terms of critical thinking ability, it is the only nonCPI variable employed in Study 1 and it is hypothesized to be a potential psychological underpinning of dark traits. Past research has found some evidence that critical thinking ability is negatively related to paranoid, schizoid, obsessive-compulsive, and dependent traits, whereas it is positively related to passive-aggressiveness, histrionic, and schizotypal traits (Furnham, 2006; Hogan & Hogan, 1997, 2009). As a result we hypothesize that critical thinking ability will be negatively related to the Skeptical,

Reserved, Diligent, and Dutiful dark traits as well as positively related to the Leisurely, Colorful, and Imaginative dark traits .

In terms of the moving-away dark traits, these reflect maladaptive interpersonal tendencies related to withdrawing from others (Hogan & Hogan, 2001; Horney, 1950). As such, they are generally hypothesized to be negatively related to CPI scales related to extraversion. The hypothesized relationships for the specific moving-away dark traits are now discussed.

The Excitable dark trait is characterized by emotional volatility (Hogan & Hogan, 1997, 2001) and its relationship with the CPI has not been directly examined in past research. However, much of the CPI literature has examined its relationship with antisocial personality disorder (i.e., Mischievous dark trait), which shares some similarities with borderline personality disorder traits (i.e., Excitable dark trait; Paris, 1997; Paris, Chenard-Poirier, & Biskin, 2013). Our hypotheses are based on this work and expect the Excitable dark trait to be related to scales related to impulsive and risky behavior as well as patterns of hostile interpersonal behavior. Theoretical work based on the conceptual relationships shared between five-factor model traits and personality disorders (McCrae, Costa, & Piedmont, 1993; Widiger & Costa, 2012) also suggests that the Excitable dark trait is negatively related to each of the facets of neuroticism, suggesting low scores on the Independence, Self-Acceptance, and Wellbeing scales.

The Skeptical dark trait represents a paranoid personality style that is characterized by being distrustful of others (Hogan & Hogan, 1997, 2001). Our hypotheses are based on two past studies examining a similar cluster of personality types (schizophrenia spectrum personality pathology), which found that such personality tendencies were distinguished by low scores on the Flexibility, Achievement via Independence, Tolerance, and Socialization scales, as well as higher scores on the Communality and Femininity/Masculinity scales (Stein, Rozynko, & Pugh, 1971; Worling, 2001). Likewise, theoretical work also suggests that the Skeptical dark trait is

related to lower levels of agreeableness and having more difficulties trusting others (low Tolerance scores; McCrae et al., 1993; Widiger & Costa, 2012).

The Cautious dark trait is characterized by a fear of being evaluated negatively by others and a reluctance to take chances for fear of being judged (Hogan & Hogan, 1997, 2001). Past research examining similar maladaptive personality tendencies related to social anxiety found it to be significantly negatively related to most of the CPI scales although it had mixed findings related to the Self-Control scale (Bryant, Trower, Yardley, Urbieta, & Letemendia, 1976; Kish & Timmons, 1971; Schuerger, Foerstner, Serkownek, & Ritz, 1987; Stein et al., 1971). Theoretical work also suggests that this dark trait is related to low levels of independence (Widiger & Costa, 2012). Therefore, the Cautious dark trait was hypothesized to have a negative relationship with most CPI scales and the Independence scale in particular.

The Reserved dark trait is characterized by being socially withdrawn and lacking interest in or awareness of others (Hogan & Hogan, 1997, 2001). Our hypotheses are based on two past studies on a cluster of individuals with a personality style (schizophrenia spectrum personality pathology) that shares some similarities (being interpersonally detached) but also some differences (being unusual or suspicious of others) with the Reserved dark trait. These studies found that this personality style was characterized by high scores on the Flexibility, Achievement via Independence, and Tolerance scales and low scores on the Communal and Femininity/Masculinity scales, which form the basis for our hypotheses (Butler & Bieliuskas, 1972; Worling, 2001). In addition, theoretical work also suggests that the Reserved dark trait is related to low levels of empathy and sociability (Widiger & Costa, 2012).

The Leisurely dark trait is characterized by indifference toward others and passive-aggressive behavior (Hogan & Hogan, 1997, 2001). This dark trait's relationship with the CPI has received little empirical investigation, but one study examined the intercorrelations between

the CPI and various personality disorders, including passive-aggressiveness (Holliman & Guthrie, 1989). This study found that passive-aggressive personality tendencies were related to low scores on scales related to extraversion, conscientiousness, conformity and following rules, intellectual sophistication, and psychological mindedness; we hypothesized that similar findings would emerge in Study 1.

In terms of the moving-against-others dark traits, these reflect maladaptive interpersonal tendencies related to being overly assertive and aggressive (Hogan & Hogan, 1997, 2001). As such, they are generally hypothesized to be positively related to CPI scales related to extraversion, social dominance, and self-confidence. Hypotheses for the specific moving-against-others dark traits are now discussed.

The Bold dark trait is reflective of an individual who is overly self-confident and unwilling to admit mistakes or take advice (Hogan & Hogan, 1997, 2001). Our hypotheses are informed by research on narcissistic personality tendencies and the CPI that suggests this dark trait is related to lower scores on the Socialization and Self-Control scales and higher scores on the Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance, Independence, Empathy, and Communality scales (Mumford, Connelly, Helton, Strange, & Osborn, 2001; Wink & Gough, 1990; Worling, 2001). Theoretical work also suggests that this self-aggrandizing personality style is characterized by low levels of trust and high levels of achievement striving (McCrae et al., 1993; Widiger & Costa, 2012).

The Mischievous dark trait is reflective of a personality style that enjoys taking risks and testing the limits (Hogan & Hogan, 1997, 2001). The vast majority of the research conducted on the CPI and maladaptive personality traits has focused on antisocial (i.e., Mischievous) personality tendencies in general and on this dark trait's negative relationship with the Socialization scale in particular (Gough & Bradley, 1996; Groth-Marnat, 2009). Of particular

relevance, past research conducted in workplace contexts has found that antisocial personality tendencies are negatively related to the Socialization scale as well as the Responsibility and Self-Control scales (Collins & Bagozzi, 1999; Mumford et al., 2001; Sarchione, Cuttler, Muchinsky, & Nelson-Gray, 1998). Other research has suggested that this antisocial dark trait is generally positively correlated to scales related to social dominance, sociability, and confidence as well as negatively related to the Intellectual Efficiency, Tolerance, Wellbeing, Achievement via Independence, Good Impression, and Empathy scales (e.g., Adams & John, 1997; Alterman et al., 2003; Barnett & Hamberger, 1992; Carbonell, Moorhead, & Megargee, 1984; Fisher, Jenkins, Harrison, & Jesch, 1993; Gough, Wenk, & Rozynko, 1965; Kish, 1971; McMillen, Pang, Wells-Parker, & Anderson, 1992; Reise & Wink, 1995; Reynolds & Nichols, 1976). We hypothesize that similar findings will emerge in Study 1, particularly the negative relationships between the Mischievous dark trait and the Socialization, Responsibility, and Self-Control scales. In addition, mixed findings have been observed in past research on the Flexibility scale, which was positively related to some aspects of antisocial traits (e.g., impulsivity), but negatively related to others (e.g., violent behavior; Alterman et al., 2003; Hooley & Hiller, 2000).

The Colorful dark trait is descriptive of an individual who is excessively dramatic and attention-seeking (Hogan & Hogan, 1997, 2001). This dark trait has not been examined in previous research, but it does share some similarities with narcissistic personality tendencies related to a bold interpersonal style, a desire for excessive admiration, being self-centered, and an enviousness of others (DSM-5; APA, 2013). Because of this similarity, previous research on the CPI informs our hypotheses that the Colorful dark trait will be related to lower scores on the Socialization and Self-Control scales and higher scores on the Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance, Independence, Empathy, and Communality scales (Mumford et al., 2001; Wink & Gough, 1990; Worling, 2001). Theoretical work also suggests

that the Colorful dark trait is related to rash decision-making, and we hypothesize that this dark trait is also related to high scores on the Flexibility scale and low scores on the Self-Control scale (McCrae et al., 1993; Widiger & Costa, 2012).

The Imaginative dark trait reflects an individual who acts and thinks in unusual and creative ways (Hogan & Hogan, 1997, 2001). Two studies have examined a similar schizophrenia spectrum personality cluster related to being unusual but also interpersonally detached or suspicious of others, finding that it was characterized by high scores on the Flexibility, Achievement via Independence, and Tolerance scales as well as low scores on the Communal and Femininity/Masculinity scales (Butler & Bieliauskas, 1972; Worling, 2001). These two studies form the basis for our hypotheses and we expect that similar findings will emerge in Study 1.

In terms of the moving-toward dark traits, these reflect two maladaptive interpersonal tendencies related to a lack of independence as well as a preference for stability (Hogan & Hogan, 2001; Horney, 1950).

The Diligent dark trait describes a detail-oriented individual who is precise and critical of others' performance (Hogan & Hogan, 1997, 2001). Only one study has examined the relationship between the CPI and similar obsessive-compulsive personality tendencies (Worling, 2001). The latter study shapes our hypotheses that the Diligent dark trait will be related to high scores on the Responsibility, Self-Control, Good Impression, Achievement via Conformance, and Intellectual Efficiency scales as well as low scores on the Tolerance and Flexibility scales (Worling, 2001). The latter two relationships are also suggested by theoretical work that posits this dark trait is related to being inflexible and intolerant of others (Hogan & Hogan, 2001; McCrae et al., 1993; Widiger & Costa, 2012).

The Dutiful dark trait is reflective of a personality tendency that is reliant on others for support and is reluctant to act independently (Hogan & Hogan, 1997, 2001). One past study found that a similar submissive interpersonal style was related to lower scores on measures related to intellectual efficiency and achievement striving, social dominance, self-confidence, psychological flexibility, and being trusting of others (Tuddenham, 1959). Theoretical work on this overly submissive interpersonal style also suggests it may be related to low levels of independence and a tendency to be overly dependent on others and that this dark trait may be related to lower scores on measures of adjustment (McCrae et al., 1993; Widiger & Costa, 2012). These studies form the basis of our hypotheses and we expect similar findings to emerge in Study 1.

Study 1 also examined the nonlinear relationships between bright and dark traits. As previously discussed in the Introduction, previous research has found significant nonlinear relationships between bright traits and a variety of outcome variables, such as job performance (e.g., Ames & Flynn, 2007; Carter et al., 2014; Le et al., 2011). Therefore, in a similar vein to this line of research, it was hypothesized that bright traits would share significant nonlinear relationships with dark personality trait tendencies.

Study 1: Method

Participants

Study 1 involved a sample of managers who underwent employment testing as part of a selection or development assessment conducted at an industrial/organizational psychology consulting firm between 2007 and 2009. This assessment involved a battery of various cognitive ability and personality measures, including the CPI, the HDS, and the Watson-Glaser Test of Critical Thinking. These data are a subset of a larger dataset that was collected as a part of a study at the industrial/organizational psychology consulting firm; the data were received directly

from the consulting firm. The data have been previously used for research in a doctoral dissertation by Chris Bedford (Bedford, 2011) for a different purpose: to examine the construct of learning agility. The Study 1 data in the current investigation differ from Bedford's (2011) study in two ways: (a) they only include managerial-level employees from the overall sample (which originally also included nonmanagerial employees) and (b) they only include two measures of personality and one measure of critical thinking ability. The Study 1 sample consists of 262 managerial-level employees including frontline supervisors, middle managers, and executives, spanning several job functions. The demographic characteristics of the Study 1 sample are provided in Table 6.

Table 6

Summary Demographics of Study 1 Sample Managers (N = 262)

Variable	n	%
Gender		
Male	199	76%
Female	63	24%
Highest Level of Education		
High school	8	3%
Diploma (2-year)	7	3%
Degree (4-year)	48	18%
Graduate/Professional Degree	77	29%
Unknown	122	47%
Level of Management		
Frontline Supervisor	132	50%
Middle Manager	83	32%
Executive	47	18%
Job Function		
Sales	136	52%
Marketing	26	10%
Human Resources	24	9%
Finance	20	8%
Manufacturing	16	6%
Corporate	13	5%
Operations	8	3%
Research and Development	8	3%
Information Technology	4	2%
Supply Chain	5	2%
Legal	2	1%

Note: Percentages have been rounded to the nearest whole number.

Measures

The California Psychological Inventory. The California Psychological Inventory (CPI) is a self-report inventory that consists of 434 true/false items that assess a variety of important social behaviors and outcomes (Gough & Bradley, 1996, 2002). It consists of 20 core scales that assess various aspects of personality associated with intrapersonal (e.g., self-control) and

interpersonal (e.g., sociability) functioning. Its core scales are considered to encompass five dimensions: Ascendance (Dominance, Empathy), Dependability (Self-Control, Good Impression), Conventionality (Sociability, Communality), Originality (Flexibility), and Femininity/Masculinity (Groth-Marnat, 2009). Research has suggested that the CPI scales resemble the five-factor model (Deniston & Ramanaiah, 1993; Johnson, 2000; McCrae et al., 1993; Soto & John, 2009), but some have found differing factor solutions ranging from two to five factors (for a review see Boer et al., 2008; Groth-Marnat, 2009). Although supplementary scales have been developed for the CPI, the industrial/organizational assessment only included the 20 core scales, and therefore the supplementary scales are not examined in the current study.

The CPI's psychometric properties are as follows. Its 1-year test-retest reliability ranged from a low of .51 (Communality scale) to a high of .84 (Femininity/Masculinity scale), with an average of .68 (Gough & Bradley, 1996). Internal consistency ranged from a low of .62 (Psychological Mindedness) to a high of .84 (Well Being), with an average of .75 (Gough & Bradley, 1996). It has also been found to correlate highly with four out of the dominant five factors of personality, with only minimal correlations between CPI scales and agreeableness (Groth-Marnat, 2009; McCrae et al., 1993). The focus of the CPI has been to predict important social behaviors. Therefore, its development has emphasized predictive validity rather than internal consistency (Groth-Marnat, 2009). A wealth of literature attests to the CPI's usefulness in predicting a variety of important social outcomes related to intrapersonal and interpersonal functioning, as well as vocational-related behavior and outcomes (for a review, see Groth-Marnat, 2009). Internal consistency data for Study 1 could not be calculated as only total scores, and not individual item responses, were able to be obtained from the industrial/organizational psychology firm.

Dark personality traits. The Hogan Development Survey (HDS) is a 168-item

inventory that was designed to measure maladaptive styles of personality functioning and predict important social and work-related outcomes. It is considered to be one of the most well-researched and influential measures of dark personality used in personnel selection and development contexts (Hogan & Hogan, 2001). It assesses 11 dark personalities (described previously in Table 3) that can be categorized into three broad domains of maladaptive interpersonal styles originally described by Horney (1950): the tendency to (a) move toward people (i.e., building alliances, seeking approval from others, and being overly involved in their work or micro-managing), (b) move away from others (i.e., avoiding contact with others), or (c) move against others (i.e., dominating or intimidating others; Benson & Campbell, 2007; Hogan & Hogan, 1997, 2001, 2009).

For instance, Excitable (i.e., moody and erratic), Skeptical (i.e., cynical and distrustful), Cautious (i.e., fear of rejection), Reserved (i.e., aloof), and Leisurely (i.e., ignoring responsibility) dark traits are characterized by moving away from people in order to manage feelings of inadequacy by avoiding others. The dark traits Bold (i.e., grandiose and entitled), Mischievous (i.e., risk-taking and manipulative), Colorful (i.e., dramatic and needy), and Imaginative (i.e., odd and unusual) can be characterized by moving against other people, in which people manage feelings of self-doubt by acting in overly dominant or intimidating ways. The dark traits Diligent (i.e., inflexible and perfectionistic) and Dutiful (i.e., obsequious and dependent) can be characterized by moving toward others such that individuals manage their insecurity by developing alliances and being overly dependent on others. The HDS dark personality traits are all related to maladaptive patterns of interpersonal and intrapersonal functioning, which typically disrupt managerial effectiveness and are theoretically linked to DSM personality disorders (Hogan & Hogan, 2001, 2009).

The HDS was designed with the express purpose of predicting important social and

work-related outcomes rather than providing a descriptive measure of personality traits (Hogan & Hogan, 1997, 2009). This emphasis on practical utility is evidenced in the HDS' psychometric properties, which focus on maximizing predictive validity rather than internal reliability (Hogan & Hogan, 1997, 2009). It has a median 1-month test-retest reliability correlation of .75, with a range from correlations of .58 (Leisurely) to .87 (Excitable; Hogan & Hogan, 1997), and its 9-12-month test-retest reliability range from correlations of .52 (Cautious) to .68 (Mischievous), with an average of .64 (Hogan & Hogan, 2009). The scale's internal consistency reliabilities range from .50 (Dutiful) to .78 (Excitable), with an average of .67 across all of the scales (Hogan & Hogan, 1997). In terms of its validity, the HDS has demonstrated solid concurrent and predictive validity in its ability to predict a variety of job competencies and occupational criteria, as well as observer-ratings of various interpersonal and work-related behaviors (Hogan & Hogan, 2009). In general, the HDS represents one of the most commonly used measures of dark personality in the workplace and has demonstrated its relationship to various measures of job performance and managerial effectiveness (e.g., Furnham et al., 2014; Gaddis & Foster, 2015; Kaiser et al., 2015). Internal consistency data for Study 1 could not be calculated as only total scores, and not individual item responses, could be obtained from the industrial/organizational psychology firm.

Critical thinking ability. Critical thinking ability was assessed using the Watson-Glaser Critical Thinking Appraisal, which represents one of the most commonly used tests of critical thinking in organizational settings (Watson & Glaser, 1994, 2008, 2010). The test is composed of 80 items, with scores ranging from 0-80. The Watson-Glaser tests critical thinking skills involving scenarios and problems that people often encounter on a daily basis. It assesses five elements of critical thinking including: (a) making inferences, (b) recognizing assumptions, (c) reasoning deductively, (d) making valid interpretations, and (e) evaluating the strength of

arguments. More recently, these elements have been shown to factor analyze to three overarching scales: recognizing assumptions, evaluating arguments, and drawing conclusions (including making appropriate inferences, reasoning deductively, and making valid interpretations of the data; Watson & Glaser, 2010). The test has been found to have sufficient psychometric properties, with test-retest reliability of .73 and split-half reliability ranging from .69 to .85 across various worker samples. The Watson-Glaser has been shown to be related to other measures involving critical thinking skills, such as measures of problem-solving and decision-making (Watson & Glaser, 1994, 2008). Internal consistency data for Study 1 could not be calculated as only total scores, and not individual item responses, could be obtained from the industrial/organizational psychology firm.

Power Analysis

The number of participants required to conduct multiple regression analyses in Study 1 was assessed based on Green's (1991) recommendations. Relying on his advice, it is recommended that power analyses consider the anticipated effect sizes, based on previous research, as well the number of predictors involved in the regression analyses. To facilitate this process, Green (1991) categorizes effect sizes, according to R^2 based on Cohen's (1988) cutoffs for small ($R^2 = .02$), medium ($R^2 = .13$), and large ($R^2 = .26$) effect sizes. A description of some of the effect sizes from past research will now be discussed.

Previous research using the five-factor model of bright-side traits (at the broad domain level) to predict maladaptive personality tendencies has found that almost all R^2 effect sizes have at least a moderate effect size (i.e., $R^2 \geq .13$) and about half of the traits have a large effect size (i.e., $R^2 \geq .26$), with some of the effects ranging as high as .42 (Furnham & Crump, 2005). Other work has found that using all 30 facets of the five-factor model as predictors of clinical personality disorders generally produces consistently large R^2 effect sizes ($R^2 \geq .26$), with some

as high as .71 (social anxiety; Quirk et al., 2003). Based on this previous research, when using bright traits to predict dark personality tendencies, the current study can expect to find R^2 effect sizes mostly in the large range (with some well above the recommended threshold), but some may also fall within the moderate size range.

The regression analyses of the current study will involve 25 predictors (i.e., demographic variables, CPI scales, and critical thinking ability). According to Green's (1991) recommendations, the sample size required to test the hypothesis that the population multiple correlation equals 0 with a power of .80 (and α of .05) is about 172 participants when using 25 predictors to detect a medium effect and 86 participants to detect a large effect. Therefore, the Study 1 sample of 262 participants provides more than sufficient power to detect significant multiple correlations. According to Green (1991), this sample size also provides sufficient power to detect medium-sized ($r \sim .20$) partial correlations between the dependent variable with each of the independent predictor variables. Based on these analyses, the Study 1 sample has a sufficient level of power to detect R^2 regression effects as well as partial correlations between independent and dependent variables. In terms of assessing nonlinear effects, power is increased when nonlinear terms that account for a meaningful level of variance are included in the model (Cohen, Cohen, West, & Aiken, 2003); therefore, the current sample also is of sufficient size to detect potential nonlinear trends.

Study 1: Results

Analytic Plan

Study 1 examined the relationship between bright and dark personality traits. This was first accomplished by examining the zero-order correlations between personality variables. Multivariate regression analyses were then used to examine whether the overall set of bright personality traits was significantly related to the overall set of dark personality traits, and also

provided an indication of the extent of overlapping variance shared by both sets of personality variables. A significant multivariate regression was followed up with several multiple regression analyses, which provide an indication of the predictive ability of the combination of CPI scales and critical thinking ability (hereafter referred to as bright traits, for ease of communication) to predict each dark trait. This also assesses the relationship between the set of bright personality traits (predictors) with each individual dark personality trait and provides an indication of the particular bright personality traits that are most strongly related to each dark trait. A principal component analysis was used to derive the underlying factors of the CPI scales with the goal of reducing the bright traits in order to test for nonlinear relationships between bright and dark traits.

The intercorrelations between Study 1 demographic variables, bright personality traits, and self-reported dark personality traits are listed in Table 7. Almost all of the dark traits shared at least a few medium- to large-sized correlations (Cohen, 1988) with the CPI scales.

Table 7

Study 1 Correlations Between All Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	–											
2.												
Education	.20	–										
3. Job level	.05	.06	–									
Bright traits												
4. Do	-.03	-.01	.06	–								
5. Cs	.18	.21	.03	.42	–							
6. Sy	.06	.16	-.10	.48	.62	–						
7. Sp	.16	.16	.10	.35	.49	.63	–					
8. Sa	.03	.12	.05	.49	.48	.53	.53	–				
9. In	-.10	-.06	.13	.41	.26	.26	.30	.33	–			
10. Em	.14	.23	-.02	.36	.53	.50	.44	.39	.17	–		
11. Re	.08	.04	.09	.37	.41	.23	.07	.11	.22	.28	–	
12. So	.20	.19	.03	.04	.15	.12	-.07	-.08	-.08	.14	.34	–
13. Sc	-.02	-.03	-.03	-.10	.00	-.21	-.46	-.38	-.03	-.08	.47	.38
14. Gi	-.12	-.04	-.09	.20	.16	.14	-.19	-.20	.11	.07	.48	.33
15. Cm	.07	.13	-.05	.05	.10	.19	.24	.20	-.08	.06	.04	.00
16. Wb	-.04	.02	-.04	.28	.32	.33	.15	.08	.32	.28	.42	.32
17. To	.17	.23	.17	.08	.31	.09	.10	-.02	.21	.29	.51	.17
18. Ac	.10	.16	.03	.32	.36	.29	.04	.10	.07	.25	.58	.41
19. Ai	.22	.33	.13	.12	.47	.27	.35	.25	.20	.50	.32	.14
20. Ie	.19	.28	.15	.23	.48	.29	.38	.22	.31	.43	.44	.18
21. Py	.06	.21	.24	.08	.41	.13	.23	.14	.17	.25	.33	.05
22. Fx	.20	.13	.19	-.06	.27	.19	.38	.17	.28	.28	.00	-.09
23. Fm	.59	.08	.08	-.25	-.02	-.19	-.11	-.20	-.24	-.02	.08	.19
24. WG	.17	.34	.24	.02	.14	.04	.17	.18	.14	.22	.16	.05
Dark traits												
25. Ex	.02	-.12	.05	-.23	-.24	-.26	-.09	-.05	-.18	-.30	-.27	-.26
26. Sk	-.04	-.17	-.12	-.10	-.18	-.13	-.09	.01	-.21	-.22	-.34	-.13
27. Ca	.08	-.04	-.08	-.50	-.29	-.38	-.27	-.26	-.39	-.23	-.29	-.10
28. Rs	.04	-.05	.12	-.36	-.27	-.44	-.25	-.15	-.16	-.29	-.23	-.16
29. Le	-.07	.04	.00	-.20	-.22	-.18	-.18	-.10	-.27	-.17	-.22	-.18
30. Bo	.05	.12	-.11	.26	.13	.26	.14	.20	-.06	.10	-.08	-.03
31. Ms	-.25	.01	-.10	.24	.13	.26	.26	.35	.14	.18	-.21	-.15
32. Co	-.03	.12	.00	.51	.30	.50	.38	.45	.18	.36	.07	-.01
33. Im	-.02	.12	-.10	.16	.15	.26	.24	.28	.04	.28	-.12	-.18
34. Di	-.17	-.17	-.26	.08	-.14	-.01	-.21	-.11	-.21	-.17	.04	.01
35. Dt	-.07	-.01	-.19	-.06	-.07	.04	-.05	-.07	-.34	.02	-.07	.01

Variable	13	14	15	16	17	18	19	20	21	22	23	24
14. Gi	.74	–										
15. Cm	-.16	-.19	–									
16. Wb	.42	.62	.06	–								
17. To	.37	.28	-.07	.41	–							
18. Ac	.46	.49	.10	.36	.30	–						
19. Ai	.15	.15	-.03	.24	.50	.26	–					
20. Ie	.14	.11	.05	.34	.52	.31	.62	–				
21. Py	.15	.16	.00	.21	.38	.24	.51	.41	–			
22. Fx	-.10	-.12	-.08	.12	.33	-.13	.52	.35	.34	–		
23. Fm	.17	-.09	-.01	-.22	.18	.05	.17	.06	.00	.10	–	
24. WG	-.06	-.19	.08	-.02	.30	.01	.32	.42	.26	.32	.07	–
Dark traits												
25. Ex	-.31	-.46	.02	-.49	-.21	-.29	-.19	-.21	-.15	-.02	.09	.06
26. Sk	-.31	-.33	.10	-.40	-.52	-.30	-.36	-.39	-.23	-.29	-.08	-.13
27. Ca	-.14	-.37	.04	-.39	-.15	-.25	-.11	-.18	-.08	-.04	.23	.08
28. Rs	-.11	-.32	-.05	-.29	-.09	-.24	-.15	-.11	-.03	-.07	.07	.13
29. Le	-.18	-.27	.06	-.37	-.30	-.17	-.26	-.34	-.10	-.13	.06	.01
30. Bo	-.21	-.04	.17	-.11	-.22	.11	-.15	-.11	-.19	-.34	-.07	-.11
31. Ms	-.39	-.14	.02	-.05	-.36	-.20	-.14	-.08	-.09	-.11	-.40	-.10
32. Co	-.32	-.04	.10	.06	-.10	.12	.05	.05	-.10	-.03	-.17	-.02
33. Im	-.36	-.19	.05	-.05	-.07	-.11	.04	.04	.04	.02	-.11	.04
34. Di	.08	.13	.07	-.06	-.19	.08	-.26	-.26	-.15	-.54	-.06	-.25
35. Dt	-.01	.00	.17	-.10	-.08	.04	-.03	-.10	-.08	-.18	.08	-.09

Variable	25	26	27	28	29	30	31	32	33	34
26. Sk	.23	–								
27. Ca	.35	.19	–							
28. Rs	.37	.24	.49	–						
29. Le	.23	.32	.33	.29	–					
30. Bo	-.16	.30	-.14	-.14	.12	–				
31. Ms	-.12	.32	-.18	-.05	.01	.38	–			
32. Co	-.14	.10	-.37	-.31	-.12	.46	.39	–		
33. Im	-.10	.14	-.05	-.05	.14	.34	.38	.36	–	
34. Di	-.02	.19	.04	.02	.15	.26	.03	.02	.03	–
35. Dt	-.03	-.01	.22	-.02	.17	.02	-.09	-.08	.10	.29

Note. For significance testing of specific relationships with the Study 1 sample of $N = 262$, an $|r| \geq .13$ would be significant at $p < .05$. However, if a researcher were rather concerned with an exploratory examination of the entire matrix of 595 correlations, then it would be necessary to control the family-wise error rate and use a Bonferroni-adjusted alpha level of approximately .0001, in which case an $|r| \geq .24$ would be statistically significant.

Gender coded: Female = 1, Male = 2. Education coded: 1 = High School, 2 = Diploma, 3 = Degree, 4 = Graduate Degree/Professional. Job level coded: 1 = Frontline Supervisor, 2 = Middle Manager, 3 = Executive.

Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking, Ex = Excitable, Sk = Skeptical, Ca = Cautious, Rs = Reserved, Le = Leisurely, Bo = Bold, Ms = Mischievous, Co = Colorful, Im = Imaginative, Di = Diligent, Dt = Dutiful.

Critical thinking ability was not found to be significantly related to most dark traits. The exceptions to this were a significant negative relationship to the Diligent and Skeptical dark traits, as well as a significant positive relationship with the Reserved dark trait.

The CPI scales shared numerous meaningful correlations with the dark traits and a summary is provided of the broad patterns of relationships as they relate to the three types of maladaptive dark trait interpersonal tendencies (i.e., moving away, moving against, and moving toward; Hogan & Hogan, 1997, 2009).

In terms of the moving-away dark traits (Excitable, Skeptical, Cautious, Reserved, and Leisurely), these dark traits were, in general, most strongly characterized by relationships with CPI scales related to extraversion, social dominance, assertiveness, self-confidence, conscientiousness, and wellbeing (interpretations of CPI scales are based on Gough & Bradley, 1996, 2002; Groth-Marnat, 2009).

In terms of moving-against dark traits (Bold, Mischievous, Colorful, Imaginative), these dark traits tended to be, in general, most strongly positively related to CPI scales related to extraversion and social dominance as well as negatively related to self-control. Aside from these broad patterns of relationships, each of the moving against dark traits also had unique patterns of relationships with the CPI scales. For example, the Mischievous dark trait was most strongly

characterized by higher levels of hostility and lower levels of sensitivity toward others.

In terms of the two moving-toward dark traits (Diligent and Dutiful), the strongest relationships, in general, were correlations with CPI scales related to being dependent on others and being conservative and disliking of change.

Using Bright Traits to Predict Self-Reported Dark Traits

Multiple regression analyses were employed to examine the ability of bright traits to predict self-reported dark traits and to ascertain the specific patterns of bright personality traits that are related to dark traits. In order to accomplish this, multivariate regression analysis was first used to examine the relationship between the 21 bright trait predictor variables (i.e., 20 CPI scales and critical thinking ability) and the 11 self-reported dark trait criterion variables. A multivariate multiple regression analysis was used because (a) it can fit multiple predictor and criterion variables in one analysis, which (b) minimizes Type I error rates, it also (c) allows for follow-up tests to examine the relationship between each predictor and criterion variable (Lutz & Eckert, 1994), and (d) provides a more integrated assessment of the relationship between personality variables by not isolating the role of each dark personality trait (Zaccaro, 2007).

Multivariate analyses demonstrated that the set of bright trait predictors accounted for a highly significant overall proportion of variance in dark personality traits: Pillai's Trace = 2.46, $F(11, 230) = 3.28, p < .001, \eta^2 = .93$. These significant multivariate analyses were then followed up with multiple regression analyses to interpret the relationships between bright trait and dark trait variables.

Eleven separate multiple regression analyses were conducted to examine the relationship between the 21 bright trait predictors with each of the 11 dark traits (criterion variable). The overall regression models were found to be highly significant ($p < .001$) for all 11 regressions.

The bright traits predicted between 18% (Dutiful) and 45% (Colorful) of the variance of each dark trait, with an average R^2 of .34 across the 11 regressions.

The standardized beta coefficients were then examined to gain an understanding of the direction and strength of the relationship between each bright and dark trait. These were examined because they provide a measure of the strength of correlation between each bright trait and the associated dark trait, while holding constant all of the other bright trait predictor variables. Each dark trait had between 1 (Leisurely) and 6 (Mischievous) significant predictors based on the standardized beta coefficients. These bright–dark trait relationships are reported along with brief descriptions of the CPI scales characterizing each of the dark traits according to the three broad groups of dark traits.

The regressions for bright traits predicting dark traits related to moving-away interpersonal tendencies are reported in Table 8. In general, these moving-away dark traits tended to be predicted by CPI scales related to being introverted or socially reticent. Some of them were also related to being distrustful or hostile toward others, nonconforming, not very intellectually efficient, as well as lacking in confidence and psychological adjustment.

The Excitable dark trait was significantly negatively associated with Empathy, Good Impression, and Wellbeing scales. This suggests that the Excitable dark trait is related to being unconcerned with others' impressions or trying to please them, being distrustful of others' feelings, and a general lack of wellbeing.

The Skeptical dark trait was significantly negatively related to the Tolerance and Achievement via Conformance scales, suggesting a distrust or hostility toward others and difficulties adhering to strict rules. This dark trait is also related to the Intellectual Efficiency and Flexibility scales, suggesting a lack of motivation or ability for intellectual pursuits and a preference for consistency and maintaining the status quo.

The Cautious dark trait is negatively related to the Dominance, Social Presence, and Independence scales, suggesting a personality that is cautious, quiet, and dependent on assistance from others.

The Reserved dark trait is significantly negatively related to the Dominance and Sociability scales, which are also related to being cautious, quiet, and shy.

The Leisurely dark trait was only significantly related to the Intellectual Efficiency scale, reflecting a lack of motivation or ability for intellectual pursuits.

Table 8

Study 1 Regression Results for Bright Traits Predicting Moving-Away Dark Traits

Bright Traits	Moving-Away Dark Traits														
	Excitable			Skeptical			Cautious			Reserved			Leisurely		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Do	-.04	.29	-0.49	.00	.30	0.02	-.29	.29	-4.01	-.22	.32	-2.89	-.06	.33	-0.68
Cs	.01	.35	0.16	.15	.35	1.93	.05	.34	0.58	.07	.37	0.86	-.03	.39	-0.32
Sy	-.04	.35	-0.43	-.02	.36	-0.25	-.09	.35	-1.05	-.31	.37	-3.37	.08	.39	0.83
Sp	-.04	.31	-0.49	.01	.32	0.10	-.20	.31	-2.45	-.13	.34	-1.49	-.13	.36	-1.41
Sa	.01	.35	0.11	.01	.36	0.07	-.07	.35	-0.95	.09	.37	1.08	-.04	.39	-0.45
In	-.07	.33	-0.97	-.02	.33	-0.35	-.15	.33	-2.32	-.00	.35	-0.06	-.11	.37	-1.50
Em	-.22	.24	-3.06	-.03	.24	-0.40	-.01	.24	-0.19	-.11	.25	-1.51	.05	.27	0.72
Re	.10	.32	1.25	.02	.33	0.18	.00	.32	0.03	-.04	.35	-0.43	.07	.37	0.84
So	-.09	.30	-1.33	.07	.31	1.15	-.02	.30	-0.28	-.05	.33	-0.70	-.11	.35	-1.66
Sc	-.10	.40	-0.87	.02	.41	0.17	-.17	.40	-1.58	-.13	.43	-1.15	-.02	.45	-0.17
Gi	-.26	.32	-2.36	-.13	.32	-1.22	-.20	.31	-1.86	-.19	.34	-1.64	-.13	.36	-1.07
Cm	-.02	.30	-0.27	.06	.30	1.01	.05	.30	0.80	-.05	.32	-0.75	.04	.34	0.62
Wb	-.20	.51	-2.39	-.15	.52	-1.87	-.02	.51	-0.22	.04	.55	0.42	-.13	.58	-1.44
To	.02	.34	0.23	-.30	.35	-4.03	-.04	.34	-0.59	.03	.37	0.42	-.15	.39	-1.81
Ac	.03	.36	0.33	-.17	.37	-2.28	.04	.36	0.54	.06	.39	0.74	.06	.41	0.76

Bright Traits	Moving-Away Dark Traits														
	Excitable			Skeptical			Cautious			Reserved			Leisurely		
	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t
Ai	.03	.37	0.39	-.01	.38	-0.11	.10	.37	1.16	-.03	.40	-0.29	-.09	.42	-0.98
Ie	-.03	.39	-0.40	-.16	.40	-2.02	-.01	.39	-0.16	.08	.42	0.95	-.22	.45	-2.55
Py	-.04	.28	-0.66	.04	.29	0.68	.04	.28	0.58	.05	.30	0.79	.12	.32	1.72
Fx	.04	.20	0.55	-.19	.20	-2.64	-.03	.20	-0.44	-.09	.21	-1.23	.02	.22	0.21
Fm	-.01	.21	-0.20	-.06	.21	-0.97	.07	.21	1.10	-.03	.22	-0.53	.03	.23	0.50
WG	.04	.17	.068	.03	.18	0.49	.09	.17	1.42	.12	.19	1.82	.13	.20	1.89
$R^2 = .34$			$R^2 = .39$			$R^2 = .41$			$R^2 = .33$			$R^2 = .26$			
$F(21, 240) = 5.87$			$F(21, 240) = 7.36$			$F(21, 240) = 8.03$			$F(21, 240) = 5.51$			$F(21, 240) = 4.04$			
$p < .001$			$p < .001$			$p < .001$			$p < .001$			$p < .001$			

Note. N = 262. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 240$). Bolded coefficients are significant ($p < .05$).

Bright traits: Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

The regressions for bright traits predicting dark traits related to moving-against interpersonal tendencies are reported in Table 9. In general, dark traits from this group were related to various groups of CPI scales, including those related to being self-centered and having a disregard for rules or others, lacking self-control in managing impulses, being self-confident and socially dominant, having a lower level of adjustment and wellbeing, or being inflexible and not very open-minded. Some of these dark traits were also, unexpectedly, positively related to the Empathy scale.

Specifically, the Bold dark trait was significantly negatively related to the Responsibility, Wellbeing, and Flexibility scales, suggesting a careless and self-centered personality that is lacking in adjustment and is not very flexible or open-minded.

The Mischievous dark trait was positively related to the Self-acceptance and Empathy scales, suggesting an ability to understand the feelings of others as well as having a high level of confidence and regard for oneself. This dark trait was also significantly negatively related to the Tolerance, Achievement via Conformance, Flexibility, and Femininity/Masculinity scales, which are reflective of an individual who is hostile toward others, decisive and unsentimental, conservative and reluctant to change, as well as has difficulties adhering to strict rules.

The Colorful dark trait was positively related to the Dominance, Sociability, and Empathy scales, reflective of a personality that is confident, assertive, extroverted, and understanding of others' feelings. This dark trait was also significantly negatively related to the Self-Control and Psychological Mindedness scales, reflecting a lack of control over emotions and impulses as well as not being very perceptive of others' motives.

Table 9

Study 1 Regression Results for Bright Traits Predicting Moving-Against Dark Traits

Bright Traits	Moving-Against Dark Traits											
	Bold			Mischievous			Colorful			Imaginative		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Do	.13	.34	1.67	.00	.31	0.01	.28	.28	3.95	.00	.34	-0.03
Cs	.14	.40	1.63	.12	.36	1.50	.00	.33	0.06	-.03	.40	-0.28
Sy	.15	.41	1.64	-.02	.37	-0.19	.18	.33	2.18	.17	.40	1.77
Sp	.07	.37	0.76	.10	.33	1.23	.03	.30	0.40	-.12	.36	-1.23
Sa	.02	.41	0.24	.17	.37	2.36	.12	.33	1.63	.09	.40	1.04
In	-.01	.38	-0.21	.07	.34	1.11	.01	.31	0.18	-.02	.38	-0.33
Em	.06	.28	0.84	.22	.25	3.24	.16	.22	2.48	.26	.27	3.35
Re	-.21	.38	-2.52	-.10	.34	-1.29	-.02	.31	-.21	-.09	.37	-0.99
So	-.03	.36	-0.44	.04	.32	0.65	.01	.29	0.17	-.12	.35	-1.76
Sc	-.14	.47	-1.19	-.12	.42	-1.14	-.24	.38	-2.29	-.33	.46	-2.69
Gi	.18	.37	1.63	.16	.33	1.49	.13	.30	1.24	.07	.36	0.60
Cm	.09	.35	1.57	-.05	.31	-0.93	.00	.28	-0.05	-.03	.34	-0.46
Wb	-.18	.60	-2.09	-.08	.54	-0.99	-.07	.48	-0.91	.02	.59	0.20
To	.02	.40	0.24	-.22	.36	-3.12	-.02	.32	-0.27	.04	.40	0.44
Ac	.10	.42	1.35	-.21	.38	-2.91	.06	.34	0.80	-.06	.42	-0.72

Moving-Against Dark Traits												
Bright Traits	Bold			Mischievous			Colorful			Imaginative		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Ai	-.01	.43	-0.07	-.09	.39	-1.17	.03	.35	0.36	-.04	.42	-0.46
Ie	-.04	.46	-0.52	.07	.41	0.93	-.07	.37	-0.98	.04	.45	0.46
Py	-.11	.33	-1.63	.01	.30	0.17	-.16	.27	-2.51	.11	.32	1.49
Fx	-.36	.23	-4.76	-.17	.21	-2.44	-.05	.19	-0.69	-.13	.23	-1.67
Fm	.06	.24	0.89	-.24	.22	-4.05	.01	.20	0.18	.04	.24	0.58
WG	.04	.20	0.55	-.04	.18	-0.65	.00	.17	-0.06	.00	.20	0.00
$R^2 = .33$			$R^2 = .43$			$R^2 = .45$			$R^2 = .24$			
$F(21, 240) = 5.64$			$F(21, 240) = 8.74$			$F(21, 240) = 9.19$			$F(21, 240) = 3.69$			
$p < .001$			$p < .001$			$p < .001$			$p < .001$			

Note. $N = 262$. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 240$). Bolded coefficients are significant ($p < .05$).

Bright traits: Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

The Imaginative dark trait was positively related to the Empathy scale and negatively related to the Self-Control scale, suggesting an ability to understand others' feelings while having difficulty controlling one's own emotions and impulses.

The regressions for bright traits predicting dark traits related to moving-toward interpersonal tendencies are reported in Table 10. Each of these two traits showed unique patterns of relationships with bright traits.

The Diligent dark trait was significantly positively related to the Sociability scale and strongly negatively related to the Flexibility scale. This suggests an individual who is extroverted and outgoing, but also quite conservative and resistant toward change. It is noted that the Sociability scale had a significant standardized beta-coefficient but not a significant zero-order correlation with this dark trait (see Table 7), which reflects a suppressor effect that can be meaningfully interpreted (Paulhus et al., 2004).

Table 10

Study 1 Regression Results for Bright Traits Predicting Moving-Toward Dark Traits

Bright Traits	Moving-Toward Dark Traits					
	Diligent			Dutiful		
	β	SE	<i>t</i>	β	SE	<i>t</i>
Do	.10	.33	1.36	.06	.36	0.65
Cs	-.07	.39	-0.90	-.11	.42	-1.19
Sy	.25	.39	2.76	.19	.43	1.85
Sp	-.07	.35	-0.77	-.03	.38	-0.34
Sa	-.08	.39	-1.06	-.05	.43	-0.61
In	-.09	.37	-1.28	-.31	.40	-4.16
Em	-.08	.27	-1.05	.07	.29	0.83

Bright Traits	Moving-Toward Dark Traits					
	Diligent			Dutiful		
	β	SE	<i>t</i>	β	SE	<i>t</i>
Re	.09	.36	1.09	-.07	.40	-0.77
So	-.07	.34	-1.07	-.06	.37	-0.84
Sc	.05	.45	0.48	.00	.49	0.02
Gi	-.01	.35	-0.05	.06	.39	0.50
Cm	.05	.33	0.80	.15	.36	2.24
Wb	-.04	.58	-0.48	-.06	.63	-0.62
To	-.01	.39	-0.11	.03	.42	0.36
Ac	-.07	.41	-0.96	.00	.44	0.04
Ai	.13	.41	1.51	.13	.45	1.32
Ie	-.12	.44	-1.51	-.02	.48	-0.25
Py	.07	.32	0.98	.00	.34	-0.05
Fx	-.51	.22	-6.89	-.13	.24	-1.60
Fm	.00	.23	0.03	.04	.25	0.61
WG	-.05	.20	-0.85	-.02	.21	-0.34
$R^2 = .35$			$R^2 = .18$			
R^2	$F(21, 240) = 6.18$		$F(21, 240) = 2.59$		$p < .001$	

Note. $N = 262$. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 240$). Bolded coefficients are significant ($p < .05$).

Bright traits: Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

The Dutiful dark trait was significantly negatively related to the Independence scale and positively related to Communalism, reflecting a conforming individual who frequently seeks assistance and has a tendency to be dependent on others.

The Principal Components of CPI Scales

A principal component analysis was conducted on the set of CPI scales in order to reduce the number of bright-trait predictor variables for the purpose of examining nonlinear trends. Reducing the amount of predictor variables from the 20 CPI scales to their principal component factors was important to avoid an excessive number of regression analyses, which risks inflating Type I error rates (Field, 2013). The critical thinking variable was excluded from the analyses because it only shared minimal relationships with dark traits and in order to maintain the CPI factor structure of past work that resembles the five-factor model (Deniston & Ramanaiah, 1993; Johnson, 2000; McCrae et al., 1993; Soto & John, 2009), although some have found its factor structure to range from two to five factors (for a review see Boer et al., 2008; Groth-Marnat, 2009). The principal component analysis was run and it was found that the Communalism scale lacked adequate sampling adequacy (its individual KMO value of .496 was below the bare minimum threshold of .5) and was therefore excluded from the analysis according to the guidelines of Field (2013).

The principal component analysis on the remaining 19 CPI scales was run using an oblique rotation (direct oblimin). The sampling adequacy for the analysis was verified using the Kaiser-Meyer-Olkin measure, KMO = .84, and all KMO values for individual scales were greater than .62, which is above the acceptable threshold of .50 (Field, 2013). Four factors had eigenvalues over Kaiser's recommended criterion of 1 and together explained 64.7% of the variance (Field, 2013). An examination of the scree plot also evidenced four clear factors.

The results of the principal component analysis are reported in Table 11. The scales that cluster on Factor 1 are related to sociability, self-confidence, social confidence, and this factor appears to correspond to the five-factor model extraversion trait (hereafter referred to as CPI extraversion).

Factor 2 is represented by scales related to being responsible, rule-following, wanting to make a good impression, self-control, and being driven to succeed with a preference for structure and rules. This factor appears to correspond to the five-factor model conscientiousness trait (hereafter referred to as CPI conscientiousness).

Factor 3 is related to scales associated with a drive to succeed in more open-ended contexts and intellectual pursuits, a preference for change and open-mindedness, a nonjudgmental attitude toward others, and being perceptive about others' feelings and motives. This factor appears to correspond to the five-factor model openness to experience trait (hereafter referred to as CPI openness to experience).

Factor 4 is characterized most strongly by being sensitive and high-strung as well as lacking in independence and being dependent on others for assistance, but it is also associated, to a lesser extent, with being rule-following and lacking in wellbeing and psychological adjustment. This factor appears to correspond to the five-factor model neuroticism trait (hereafter referred to as CPI neuroticism).

It is also noted that Factors 2, 3, and 4 also involve elements that resemble aspects of the five-factor agreeableness trait, although this trait was not clearly delineated by any one of the factors. In general these factors align with much, but not all, of the past research demonstrating that the CPI scales consist of four factors that roughly resemble the five-factor model of

Table 11

Summary of Principal Components Analysis for the CPI Scales (N = 262)

CPI Scale	Rotated Component Loadings			
	CPI Extraversion	CPI Conscientiousness	CPI Openness to Experience	CPI Neuroticism
Sociability	.82	.09	-.03	-.07
Self-Acceptance	.78	-.20	-.02	-.12
Social Presence	.70	-.31	.26	-.06
Dominance	.66	.27	-.20	-.30
Capacity Status	.66	.17	.29	.07
Empathy	.61	.07	.28	.14
Good Impression	-.16	.86	.00	-.24
Self-Control	-.47	.81	.16	.01
Ach via Conformance	.30	.72	-.05	.18
Responsibility	.19	.68	.21	.03
Wellbeing	.07	.62	.20	-.40
Socialization	.14	.58	-.08	.40
Flexibility	-.01	-.35	.80	-.09
Ach via Independence	.19	.06	.77	.16
Tolerance	-.12	.33	.69	.00
Psych'l Mindedness	.02	.10	.64	-.04
Intellectual Efficiency	.25	.16	.64	.03
Femininity/Masculinity	-.13	-.02	.25	.74
Independence	.15	.04	.29	-.65
Eigenvalues	5.59	3.34	2.05	1.13
% of variance	29.4%	17.6%	10.8%	6.9%

Note. Scales are ordered by their primary loadings. Component loadings over .40 appear in bold. Psych'l Mindedness = Psychological Mindedness; Ach via Independence = Achievement via Independence; Ach via Conformance = Achievement via Conformance

personality but with a lack of comprehensive representation of the agreeableness trait (Deniston & Ramanaiah, 1993; Johnson, 2000; McCrae et al., 1993; Soto & John, 2009).

The correlations between the dark traits and the CPI principal components are listed in Table 12. Each of the three broad groups of dark traits show distinct patterns of correlations with the CPI factors that align with the theory related to their particular interpersonal styles (Hogan & Hogan, 1997, 2001). The moving-away dark traits are negatively related to CPI extraversion, CPI conscientiousness and CPI openness to experience as well as positively related to CPI neuroticism. The moving-against dark traits tend to be positively related to CPI extraversion and negatively related to CPI conscientiousness, CPI openness to experience, and CPI neuroticism. The moving-toward dark traits were not significantly related to CPI extraversion and were negatively related to CPI openness to experience; the Diligent trait was also positively related to CPI conscientiousness whereas the Dutiful dark trait was positively related to CPI neuroticism.

Table 12

Correlations Between Bright-Trait Principal Components and Dark Traits

Dark Traits	CPI Bright-Trait Principal Components			
	CPI Extraversion	CPI Conscientiousness	CPI Openness to Experience	CPI Neuroticism
Excitable	-.21	-.45	-.18	.15
Skeptical	-.09	-.37	-.47	.07
Cautious	-.38	-.34	-.11	.38
Reserved	-.36	-.29	-.09	.13
Leisurely	-.19	-.29	-.28	.17
Bold	.29	-.03	-.31	.03
Mischiefous	.34	-.25	-.22	-.31
Colorful	.58	-.02	-.08	-.16
Imaginative	.31	-.22	.01	-.08

Dark Traits	CPI Bright-Trait Principal Components			
	CPI Extraversion	CPI Conscientiousness	CPI Openness to Experience	CPI Neuroticism
Diligent	-.08	.15	-.41	.06
Dutiful	-.02	.00	-.15	.24
Overall dark-trait composite	.04	-.44	-.48	.14

Note. $N = 262$. All correlations $> .12$ significant at $p < .05$, $> .15$ at $p < .01$.

Nonlinear Relationships Between Bright Personality and Dark Traits

The relationships between bright and dark traits were examined for nonlinear effects. In order to accomplish this in a feasible manner, the number of bright and dark trait variables entered into the regression analysis was reduced with the goal of avoiding an excessive number of regression analyses and increased Type I error rates (Field, 2013). For the bright-trait predictor variables, this was accomplished by using the four factors derived from the principal component analysis on the set of CPI scales. For dark traits, this was accomplished by summing the 11 standardized dark-trait variables in order to combine them into a single overall composite of general dark personality. Therefore, these analyses examine the relationship between broad (viz., higher-order) bright traits and general dark personality.

The overall dark-trait composite was significantly negatively correlated with the CPI conscientiousness and CPI openness to experience factors, positively related to the CPI neuroticism factor, and not significantly related to the CPI extraversion factor (see Table 12, above). The lack of significant relationship between the CPI extraversion factor and the overall dark personality variable is a function of combining all of the dark traits which had correlations with CPI extraversion in opposing directions (i.e., moving-away dark traits were negatively

related to CPI extraversion and moving-against dark traits were positively related to CPI extraversion).

Multiple regression analyses were used to examine the nonlinear relationships between CPI factors and overall dark personality traits. In order to accomplish this four regression analyses were conducted. In each regression, one of the CPI factors was entered in Step 1 (representing the linear trend) and the same CPI factor squared (the quadratic term) representing the nonlinear quadratic trend was entered in Step 2. The overall multiple regression models were significant ($p < .01$) for all four regressions, predicting between 4% (CPI neuroticism) and 24% (CPI openness to experience) of the variance of the overall dark-trait composite, with an average R^2 of .14 across the four regressions. The regression results are listed in Table 13.

Significant nonlinear relationships were found for three of the four CPI factors (CPI extraversion, CPI conscientiousness, and CPI neuroticism). These nonlinear relationships accounted for between 2% to 6% of the variance of the overall dark-trait composite above and beyond the linear relationships. The standardized beta coefficients for each of these three significant quadratic terms were positive. The linear and quadratic regression curves for the dark-trait composite regressed on each of the four CPI factors are displayed in Figure 2.

The CPI extraversion factor did not have a significant linear trend but did have a significant nonlinear trend. Both very low and very high levels of the CPI extraversion factor were associated with higher levels of dark traits, and moderate levels of CPI extraversion were associated with lower levels of dark traits. An examination of the intercorrelations between the CPI extraversion factor and the various individual dark traits (see above, Table 12) suggests that very low levels extraversion are related to high levels of moving-away dark traits, whereas very high levels of extraversion are related to moving-against dark traits.

Table 13

Regression Results for Nonlinear Relationships Between Bright and Dark Traits

Predictor	Dark-Traits Composite		
	β	SE	t
Extraversion			
Extraversion	.04	.30	.65
Step 1 Model R^2	$R^2 = .00, F(1, 260) = 0.42, p = .52$		
Extraversion Squared	.26	.15	3.88
Step 2 Model ΔR^2	$R^2 = .06, F(1, 259) = 15.04, p < .001$		
Full Model R^2	$R^2 = .06, F(2, 259) = 7.74, p < .001$		
Conscientiousness			
Conscientiousness	-.44	.27	-7.97
Step 1 Model R^2	$R^2 = .20, F(1, 260) = 63.55, p < .001$		
Conscientiousness Squared	.16	.20	2.70
Step 2 Model ΔR^2	$R^2 = .02, F(1, 259) = 7.31, p = .007$		
Full Model R^2	$R^2 = .22, F(2, 259) = 36.20, p < .001$		
Openness to Experience			
Openness to Experience	-.48	.26	-8.93
Step 1 Model R^2	$R^2 = .24, F(1, 260) = 79.66, p < .001$		
Openness to Experience Squared	.01	.20	.16
Step 2 Model ΔR^2	$R^2 = .00, F(1, 259) = 0.03, p = .874$		
Full model R^2	$R^2 = .24, F(2, 259) = 39.69, p < .001$		
Neuroticism			
Neuroticism	.14	.29	2.30
Step 1 Model R^2	$R^2 = .02, F(1, 260) = 5.28, p = .022$		
Neuroticism Squared	.16	.19	2.50
Step 2 Model ΔR^2	$R^2 = .02, F(1, 259) = 6.24, p = .013$		
Full model R^2	$R^2 = .04, F(2, 259) = 5.82, p = .003$		

Note. N = 262. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 259$). Bolded coefficients are significant ($p \leq .05$).

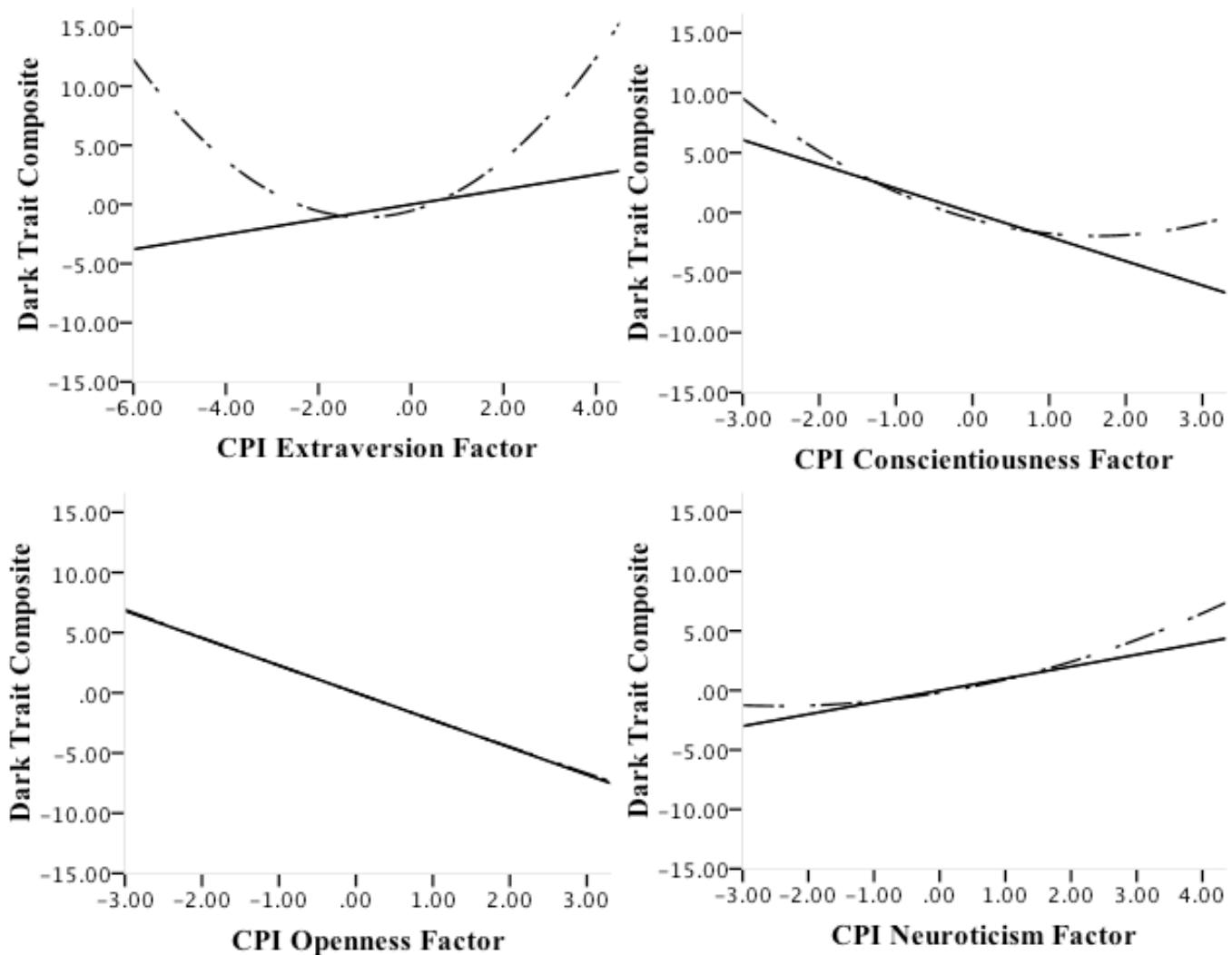


Figure 2. Linear and quadratic regression lines for the four CPI factors (Extraversion, Conscientiousness, Openness to Experience, and Neuroticism). The Openness to Experience factor was the only one that did not have a significant quadratic relationship, which is the reason that the quadratic regression line is hidden behind the linear regression line. The CPI factors all have a mean of 0 and a standard deviation of 1; the dark-trait composite has a mean of 0 and a standard deviation of 4.76.

The CPI conscientiousness factor had significant linear and nonlinear trends. Very low levels of CPI conscientiousness were associated with the highest levels of dark traits, whereas moderate levels were associated with lower levels of dark traits. Very high levels of the CPI

conscientiousness factor appeared to show a slight trend related to minimal increases in levels of dark traits.

The CPI neuroticism factor had significant linear and nonlinear trends. Low levels of CPI neuroticism were associated with low levels of dark traits, but as CPI neuroticism levels increased above average levels they appeared to become increasingly related to dark traits. In other words, it appears that low or average amounts of CPI neuroticism were not related to large increases in dark traits, but as levels of the CPI neuroticism factor increased above average levels they were increasingly related to higher levels of overall dark personality traits.

The CPI openness to experience factor had a significant linear but not a significant quadratic trend. Higher levels of CPI openness were linearly related to lower levels of the dark-trait composite.

Study 1: Discussion

Study 1 examined the relationship between bright traits (including critical thinking ability) and self-reported dark traits. Multivariate analyses demonstrated that the bright and dark sets of personality traits were very highly related and multiple regression analyses demonstrated that significant and meaningful proportions of the variance of all dark traits could be predicted from bright traits. The bright traits showed large ($R^2 \geq .26$; Cohen, 1988) effects in predicting nearly all of the dark traits, predicting between 18% (Dutiful) and 45% (Colorful) of the variance of each of the dark traits, with an average R^2 of .34.

These findings are at least as strong as past work assessing the relationship between bright and self-reported dark traits. For instance, a study on a managerial sample examined the relationship between the HDS and the five-factor model (NEO personality inventory) and found that five-factor model bright traits predicted between 8% (Leisurely) to 43% (Cautious) of the

variance of dark traits, with an average R^2 of .26 (Furnham & Crump, 2005). Other research on the general population has found similarly sized relationships between five-factor traits and subclinical personality disorders. For instance, a fairly recent study on the general population found that the five-factor model could explain between 18% (obsessive-compulsive personality disorder) and 49% (avoidant personality disorder), and an average of 33% of the variance of DSM personality disorder features (Butrus & Witenberg, 2015).

In terms of the specific predictor variables of dark traits, critical thinking ability was the only nonCPI scale variable included as a predictor in Study 1. It was included because it was hypothesized to be a potential psychological underpinning of dark traits (Furnham, 2006; Hogan & Hogan, 1997, 2009) but Study 1 found minimal support of a significant relationship between critical thinking ability and dark traits. The only hypotheses that were supported concerning critical thinking ability were the significant negative relationships with the Skeptical and Diligent dark traits. The regression results suggested that critical thinking does not contribute meaningful information, above and beyond bright personality traits, to the understanding or the prediction of dark traits. This suggests that critical thinking ability is not an important psychological underpinning of dark traits.

The CPI and Self-Reported Moving-Away-From-Others Dark Traits

Study 1 demonstrated that meaningful patterns of bright traits significantly predicted each of the 11 dark traits. In terms of moving-away-from-others dark traits, in line with our hypotheses, these traits tended to be negatively correlated with CPI scales related to extraversion, as well as related to being emotionally withdrawn or not understanding of others and not being very concerned about being liked by others. These relationships align with the theory of this group of traits as interpersonal tendencies related to withdrawing from others (Hogan & Hogan,

2001; Horney, 1950). The relationships between each of the moving-away dark traits with the CPI, and how they relate to other research, will now be discussed.

The Excitable dark trait is characterized by emotional volatility (Hogan & Hogan, 1997, 2001) and was hypothesized to be related to the impulsive and risky behavior as well as the hostile interpersonal behavior characteristics associated with both antisocial and borderline personality disorder traits (Paris, 1997; Paris et al., 2013). Study 1 findings demonstrated support for both of these patterns of behavior, with the Excitable dark trait being significantly correlated with scales related to impulsive and risk-taking behavior as well as interpersonal hostility or being unconcerned with pleasing others (i.e., negatively correlated with Responsibility, Socialization, Self-Control, Tolerance, Good Impression, and Achievement via Conformance scales). Study 1 also supported the hypothesis regarding this dark trait's significant negative relationship with independence (i.e., lower scores on the Independence and Achievement via Independence scales) and wellbeing, although it did not find a significant correlation with the Self-Acceptance scale.

In addition to the hypothesized relationships, the Excitable trait was also found to be meaningfully correlated with lower levels of extraversion and social dominance (Dominance, Capacity for Status, Sociability), and measures of intellectual sophistication and psychological mindedness (Intellectual Efficiency and Psychological Mindedness). Although all of the aforementioned scales were meaningfully correlated with the Excitable dark trait, the regression analyses showed it was primarily defined by bright-trait characteristics related to lower levels of the Empathy, Good Impression, and Wellbeing scales. This suggests that the Excitable dark trait is primarily characterized by a lack of concern for and understanding of others' feelings,

indifference about making a good impression on others, as well as a lack of wellbeing and tendency to complain.

The Skeptical dark trait represents a paranoid personality style that is characterized by being distrustful of others (Hogan & Hogan, 1997, 2001). This dark trait was hypothesized to be related to a variety of scales that have been observed in two studies on a similar cluster of personality types (schizophrenia spectrum personality pathology; Stein et al., 1971; Worling, 2001) or that have been suggested by theoretical work (McCrae et al., 1993; Widiger & Costa, 2012). Study 1 correlational analyses supported all of the hypothesized relationships (i.e., the Skeptical dark trait was significantly negatively correlated to the Flexibility, Achievement via Independence, Tolerance, and Socialization scales) with the exception of failing to find significant correlations with the Communal or Femininity/Masculinity scales. In addition to the hypothesized relationships, the current study also found that this dark trait was meaningfully negatively correlated to various other CPI scales related to independence, conscientiousness, intellectual sophistication, and psychological mindedness. Regression analyses demonstrated that the Skeptical dark trait was primarily characterized by being less trusting and more skeptical of others, a lack of conformity and difficulties adhering to others' rules, a lack of flexibility and openness to change, as well as a lack of intellectual sophistication.

The Cautious dark trait is characterized by a fear of being evaluated negatively by others and a reluctance to take chances for fear of being judged (Hogan & Hogan, 1997, 2001). It was hypothesized that this dark trait would be significantly negatively related to most of the CPI scales and, in particular, that it would be negatively correlated with Independence. The current study's correlational results found negative relationships between this dark trait and most CPI variables (including a correlation of $r = -.39$ with Independence), with the exception of failing to

find significant relationships with Flexibility, Psychological Mindedness, Communalism, Socialization and Achievement via Independence. The regression analyses showed that this dark trait was primarily characterized by being more quiet, unassertive, as well as not self-sufficient but rather dependent on assistance from others.

The Reserved dark trait is characterized by being socially withdrawn and lacking interest in or awareness of others (Hogan & Hogan, 1997, 2001). Most of the hypotheses regarding this dark trait were based on two past studies examining a cluster of individuals with a personality style (schizophrenia spectrum personality pathology) that shares some similarities (being interpersonally detached) but also has some differences (being unusual or suspicious of others) with the Reserved dark trait. Study 1 correlational analyses failed to support these hypotheses (i.e., failed to find significant positive correlations with Flexibility, Achievement via Independence, and Tolerance scales or significant negative correlations with the Communalism and Femininity/Masculinity scales). This is likely because the cluster of personality tendencies in these past studies (Butler & Bieliauskas, 1972; Worling, 2001) was more related to the Skeptical rather than Reserved dark trait tendencies. However, the Study 1 correlational findings do support the hypotheses based on theoretical work (Widiger & Costa, 2012), finding that the Reserved dark trait is significantly negatively related to the Empathy and Sociability scales. In addition to the hypothesized relationships, the Reserved dark trait was also found to be meaningfully negatively related to scales related to self-confidence, social dominance, being responsible, being rule-following, and wellbeing. Overall, the regression analyses showed that the Reserved dark trait is primarily characterized by bright traits related to being cautious, quiet, and withdrawn from others.

The Leisurely dark trait is characterized by indifference toward others and passive-

aggressive behavior (Hogan & Hogan, 1997, 2001). Only one study has examined the correlations between this dark trait and the CPI (Holliman & Guthrie, 1989). Study 1 replicated most of these findings, indicating that the Leisurely dark trait was significantly negatively correlated to scales related to extraversion, conscientiousness, conformity and following rules, intellectual sophistication; although it was not significantly correlated to psychological mindedness. In addition to the hypothesized relationships, the Leisurely dark trait was found to be meaningfully negatively related to scales related to wellbeing as well as being trusting and tolerant of others. However, the regression analyses found that only one bright trait significantly predicted the Leisurely dark trait, indicating that the latter is primarily characterized by lower scores on the Intellectual Efficiency scale. This suggests that those scoring high on the Leisurely dark trait tend to have low levels of motivation or ability for intellectual pursuits. It is this lack of motivation that is likely implicated in this dark trait's tendency to be indifferent toward others' expectations or passive-aggressive in resisting to meet their expectations (Hogan & Hogan, 1997, 2001).

The CPI and Self-Reported Moving-Against-Others Dark Traits

The moving-against-others dark traits in Study 1 all tended to be meaningfully positively correlated to CPI scales relating to extraversion, social dominance, and self-confidence. This aligns with the theoretical understanding of the overly assertive and aggressive nature of this group of personality tendencies (Hogan & Hogan, 1997, 2001). Several of these dark traits also had unexpected positive relationships with Empathy and we discuss possible reasons for this where relevant.

The Bold dark trait is reflective of an individual who is overly self-confident and unwilling to admit mistakes or take advice (Hogan & Hogan, 1997, 2001). The correlations in

Study 1 supported the hypotheses of this dark trait's significant negative correlation with Self-Control scale and significant positive correlation with measures related to social dominance, self-confidence, and extraversion (i.e., Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance), as well as the Communalism scale. On the other hand, Study 1 failed to find support for the hypothesized relationships between the Bold dark trait and the Independence, Socialization, or Empathy scales. In addition, it was found that the Bold dark trait was significantly related to being distrustful of others (i.e., Low Tolerance scores) but not significantly related to higher levels of achievement (i.e., Achievement via Conformance and Achievement via Independence). In addition to the hypothesized relationships, this dark trait shared meaningful negative correlations with Flexibility and Psychological Mindedness. The regression analyses demonstrated that the Bold dark trait is primarily characterized by carelessness and a lack of conscientious personality (low Responsibility) that is not very flexible or open-minded (low Flexibility) and is lacking in adjustment (low Wellbeing). The latter suggests that such individuals' excessive need for admiration and praise (Hogan & Hogan, 2001) may be related to a lack of psychological adjustment.

The Mischievous dark trait is reflective of a personality style that enjoys taking risks and testing the limits (Hogan & Hogan, 1997, 2001). Study 1 found a significant moderately sized ($r = -.15$) negative relationship between the Socialization scale and the Mischievous dark trait, which aligns with the hypothesis and large body of past research on antisocial personality traits (Gough & Bradley, 1996; Groth-Marnat, 2009). However, the size of this correlation in the current study is smaller than is typically found with delinquents or the general population (Gough & Bradley, 1996; Groth-Marnat, 2009), suggesting that the Socialization scale may be stronger at predicting antisocial personality tendencies in these populations than in managers.

Study 1 supported the hypotheses that the Mischievous dark traits are significantly negatively related to the Socialization, Responsibility, and Self-Control scales, which has been found in past research in workplace contexts (Collins & Bagozzi, 1999; Mumford et al., 2001; Sarchione et al., 1998). Study 1 also supported the hypotheses that the Mischievous dark trait shared significant positive correlations with scales related to social dominance, sociability, and confidence, as well as negative correlations with scales related to trusting others, being concerned about others' opinions or approval, and being achievement-oriented in an independent-minded way. On the other hand, significant negative relationships between this dark trait and Intellectual Efficiency and Wellbeing were not observed and these hypotheses were not supported. Past research also showed mixed findings between antisocial personality traits and the Flexibility scale (Alterman et al., 2003; Hooley & Hiller, 2000), which was not found to be significantly correlated to the Mischievous dark trait in Study 1.

An unexpected finding that was contrary to our hypotheses concerned the significant positive relationship between the Mischievous dark trait and the Empathy scale, a finding that merits further discussion. The Empathy scale was designed to assess an individual's ability to take the perspective of another (Gough & Bradley, 1996; Hogan, 1969). Antisocial individuals typically have low scores reflecting a cold interpersonal style that is insensitive to the feelings of others (Gough & Bradley, 1996; Hogan, 1969). The Study 1 significant positive correlation between the Mischievous dark trait and Empathy is contrary to past research and theory. It may reflect a difference between antisocial individuals in a managerial population and those in a delinquent or general population who have typically made up the samples of research on the CPI (Gough & Bradley, 1996; Groth-Marnat, 2009); indeed, college-educated individuals score

higher on the scale than delinquents or high school students (Gough & Bradley, 1996; Hogan, 1969).

It is also insightful to examine more deeply the structure of the Empathy scale. Factor analyses of the scale have called into question what exactly the scale is measuring. These studies have found three (Greif & Hogan, 1973) and four factors (Johnson, Cheek, & Smither, 1983) that underlie the scale and are quite similar, with the latter four-factor structure consisting of (a) social self-confidence, (b) even-temperedness/tolerance, (c) sensitivity, and (d) nonconformity (i.e., someone who is unconventional, innovative, politically liberal, and has a preference for unstructured and novel situations). Indeed, this is similar to the CPI intercorrelations in the current study, in which the Empathy scale was most highly correlated ($rs > .35$) with the CPI scales related to being socially dominant and assertive (Dominance), ambitious (Capacity for Status), extraverted (Sociability), socially confident (Social Presence), having a high self-regard (Self-Acceptance), independent-mindedness and a preference for less structure (Achievement via Independence), and intellectual sophistication (Intellectual Efficiency). Therefore, it seems likely that the Mischievous trait's moderate positive relationship with Empathy ($r = .18$) is driven by the social self-confidence and nonconformity factors of the scale, rather than the sensitivity and tolerant/even-tempered factors. This interpretation is supported by an examination of the overall profile of the correlations and regression beta coefficients of the Mischievous dark trait.

The regression analyses demonstrate that the Mischievous dark trait is primarily characterized by positive relationships with the Self-acceptance and Empathy scales and negative relationships with the Tolerance, Achievement via Conformance, Flexibility, and Femininity/Masculinity scales. The latter negative relationships reflect an individual who is hostile and untrusting toward others, tough-minded and not sensitive toward others, conservative

and reluctant to change, as well as is resistant toward strict rules or unconforming (Gough & Bradley, 1996; Groth-Marnat, 2009). This pattern of results, along with the strong sense of self-confidence that characterizes Mischievous individuals, provides further indication that the positive relationship with the Empathy scale is likely more reflective of an individual who is socially confident and nonconforming than potentially even-tempered/tolerant and sensitive toward others' needs. On the other hand, it could also be possible that Mischievous individuals with the social skills to get hired or promoted into management positions are able to be sensitive to others' needs but not necessarily caring and empathic toward others.

The Colorful dark trait is descriptive of an individual who is excessively dramatic and attention-seeking (Hogan & Hogan, 1997, 2001). Study 1 found evidence to support our hypotheses that the Colorful dark trait is significantly correlated to lower scores on the Self-Control scale and higher scores on the Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance, Independence, and Empathy scales; although it did not find significant relationships with the Socialization, Flexibility, and Communality scales. The significant positive relationship between the Colorful dark trait and the Empathy scale likely reflects the social and confident aspects of the Empathy scale in a similar manner to that which was observed with the Mischievous dark trait (see the previous paragraphs on the discussion of the Mischievous dark trait and the Empathy scale for further elaboration on this relationship; Johnson et al., 1983). The Study 1 regression analyses show that the Colorful dark trait was primarily characterized by positive relationships with Dominance, Sociability, and Empathy scales, and negative relationships with the Self-Control and Psychological Mindedness scales. This is reflective of a personality that is confident, assertive, extroverted, and understanding of

others' feelings, but at the same time not very perceptive of others' motives and also lacking in control over one's own emotions and impulses.

The Imaginative dark trait consists of an individual who acts and thinks in unusual and creative ways (Hogan & Hogan, 1997, 2001). The Study 1 correlational analyses on the Imaginative dark trait failed to support our hypotheses and to replicate any of the findings of two past studies involving a similar schizophrenia spectrum personality cluster related to being unusual, interpersonally detached, or suspicious of others (Butler & Bieliauskas, 1972; Worling, 2001). The findings of this past research were more in line with the Study 1 results concerning the Skeptical dark trait, suggesting that this cluster of subclinical schizophrenic spectrum personality traits is more reflective of a paranoid (Skeptical) rather than odd and unusual (Imaginative) personality.

In addition to our hypotheses, the Imaginative dark trait was meaningfully related to being unconcerned with making a good impression on others as well as not being very responsible, rule-following, or self-controlled. It was also meaningfully related to being interpersonally dominant, sociable, self-confident, and empathic. It was not expected that this dark trait would be positively related to the Empathy scale, but this aligns with similar Study 1 findings for two of the other moving-against dark traits (Mischievous and Colorful). This likely reflects the social self-confidence and nonconformity factors of the scale, rather than the sensitivity and tolerant/even-tempered factors (see the above paragraphs on the discussion of the Mischievous dark trait and the Empathy scale for further elaboration on this relationship; Johnson et al., 1983). The Study 1 regression analyses indicate that the Imaginative dark trait is primarily characterized by a positive relationship with the Empathy scale and a negative

relationship with the Self-Control scale, the latter which reflects a lack of control over one's own emotions and being impulsive.

The CPI and Self-Reported Moving-Toward-Others Dark Traits

The two moving-toward dark traits were related to a lack of independence as well as a preference for stability, which aligns with the theory of these maladaptive interpersonal styles (Hogan & Hogan, 2001; Horney, 1950). The Diligent dark trait describes a detail-oriented individual who is precise and critical of others' performance (Hogan & Hogan, 1997, 2001). Study 1 supports some of the hypothesized relationships in regards to this trait, including the significant positive relationship between the Diligent dark trait and Good Impression, as well as the Diligent dark trait's significant negative correlations with the Tolerance and Flexibility scales; on the other hand, Study 1 failed to support the hypothesized relationships between this dark trait and the Achievement via Conformance, Responsibility, and Self-Control scales. The Diligent dark trait was also found to be significantly correlated to Intellectual Efficiency, but in the opposite direction than hypothesized (i.e., negatively correlated); this suggests that such overly detail-oriented individuals may lack the motivation or ability for intellectual pursuits. In addition, Study 1 found that the Diligent dark trait shared meaningful negative correlations with Achievement via Independence and Social Presence. Overall, the regression analyses showed that the Diligent dark trait was primarily characterized by a strong negative relationship with the Flexibility scale, suggesting that the dark trait is characterized most strongly by an individual who is quite conservative and resistant to change. The regression analyses also showed a positive relationship with the Sociability scale, suggesting that the Diligent dark trait is also reflective of someone who is social.

The Dutiful dark trait is reflective of a personality tendency that is reliant on others for support and reluctant to act independently (Hogan & Hogan, 1997, 2001). Study 1 found support that this dark trait was significantly negatively correlated with psychological flexibility and independence. However, none of the other hypothesized relationships with scales related to intellectual efficiency and achievement striving, social dominance, self-confidence, adjustment, and trust toward others were found to be significantly correlated with the Dutiful dark trait. In addition to the hypothesized relationships, the Communal scale (reflecting an individual who seeks to fit in and conform) was meaningfully positively related to the Dutiful dark trait. The regression analyses in Study 1 show that the Dutiful dark trait is primarily characterized by the tendency to be dependent on others (low Independence) as well as to be conforming (high Communal).

CPI Principal Components and Nonlinear Relationships with Self-Reported Dark Traits

A principal component analysis demonstrated that the CPI scales were characterized by four factors resembling the five-factor model traits of extraversion, conscientiousness, openness to experience, and neuroticism. This is in line with past research on the CPI's factor structure, which has tended to find four factors with a lack of comprehensive coverage of the fifth factor of agreeableness (Deniston & Ramanaiah, 1993; Johnson, 2000; McCrae et al., 1993; Soto & John, 2009). The main goal of reducing the CPI scale to four factors was to examine nonlinear relationships between bright and dark traits without conducting an excessive amount of regressions and running the risk of inflating Type I error rates (Field, 2013). With the same goal in mind, the 11 dark traits were combined into one overall dark-trait composite. Therefore, nonlinear analyses were examined by assessing the relationship between the four broad CPI factors (viz., higher-order traits) and an overall measure of general dark personality.

These analyses found evidence to support our hypotheses regarding significant nonlinear relationships between bright and dark traits. The quadratic relationships in Study 1 accounted for between 2% to 6% of the shared variance between bright and dark traits, above and beyond their linear relationships. This quadratic effect size is comparable or larger to similar studies examining the relationship between bright traits and job performance, which have found that nonlinear relationships account for 1-5% of the variance of the criterion variable (Ames & Flynn, 2007; Carter et al., 2014; Le et al., 2011). Whereas nonlinear effects may not account for a large part of the overall variance shared between predictor and criterion variables, some authors have demonstrated how even this relatively small incremental predictive power relates to important and meaningful improvements in predicting job performance using personality traits (Carter et al., 2014).

The significant nonlinear relationships between bright and dark traits in Study 1 is in line with other research suggesting that bright traits are not always linearly predictive of positive outcomes. For instance, some studies have found nonlinear trends in the relationship between bright traits and job performance, suggesting that bright traits are adaptive up until a certain cutoff point after which they become unassociated, or even detrimental, to effective functioning (Ames & Flynn, 2007; Carter et al., 2014; Le et al., 2011).

Study 1 found that both very low and very high levels of the CPI extraversion factor were associated with elevations in dark traits. The pattern of correlations between the CPI extraversion factor in Study 1 and the various dark traits indicates that moving-away dark traits are related to maladaptively low levels of extraversion, whereas moving-against dark traits are related to maladaptively high levels of extraversion. This aligns with the theory of these two groups of dark traits, suggesting that very low levels of extraversion are related to a lack of

assertiveness and avoiding others, whereas very high levels of extraversion are related to being overly assertive and confrontational (Hogan & Hogan, 1997, 2001). These findings also parallel other work demonstrating a nonlinear relationship between assertiveness and managerial effectiveness, such that overly high levels of assertiveness are related to being viewed as aggressive or domineering, whereas too low levels of assertiveness lack the necessary level of drive toward goal achievement (Ames & Flynn, 2007).

Similar trends were observed for two of the other CPI factors. Some evidence was found that at very high levels of the typically adaptive trait of conscientiousness (CPI conscientiousness), the trait no longer continues to be related to lower levels of dark traits and may even be related to slightly increased levels of dark traits. These findings align with other studies on conscientiousness and job performance that have shown there is a cutoff point after which higher levels of conscientiousness no longer confer increasing levels of adaptive functioning (Carter et al., 2014; Le et al., 2011). In a similar vein, low neuroticism scores (CPI neuroticism) were only protective against dark traits up until a certain cutoff point after which even lower levels did not appear to be related to further reductions in dark traits. On the other hand, no significant nonlinear relationships were found between openness to experience (CPI openness to experience) and dark traits.

Study 1 Contributions and Limitations

In summary, Study 1 contributes to the literature on the relationship between bright and dark personality traits by extending this line of research to the CPI. This is important given the (a) challenges associated with assessing dark traits in high-stakes employment contexts and the (b) need for more effective means to assess for such traits (Schyns, 2015), as well as the (c) fact that the CPI represents a personality inventory with a longstanding history in employment

contexts that shows promise in screening for dark traits (Boer et al., 2008; Groth-Marnat, 2009). Extending the research on the bright–dark trait relationship to the CPI makes both practical and conceptual contributions to the research literature that has focused largely on the NEO-PI-R five-factor inventory of personality (Costa & McCrae, 1992).

In terms of conceptual contributions, Study 1 furthers the understanding of the relationship between bright and dark traits by extending this beyond the five-factors of personality to the variety of socially important traits measured by the CPI (Boer et al., 2008; Groth-Marnat, 2009). Extending this literature to the CPI provides one means to examine how various adjectives that are relevant to dark traits, but less well-tapped by five-factor measures (e.g. ethicalness, conservatism, masculinity and femininity; Harms & Spain, 2015; Paunonen & Jackson, 2000), are conceptually related to dark traits. For instance, Study 1 demonstrated that the Mischievous dark trait was negatively related to the CPI Femininity/Masculinity scale, suggesting that individuals with high levels of this dark trait are characterized as tough-minded, self-sufficient, and insensitive. Another example concerns the Diligent trait, which is reflective of an individual who is inflexible and rigid (Hogan & Hogan, 2001). This dark trait was highly related to the CPI Flexibility scale, suggesting that individuals with high levels of the Diligent dark trait are characterized as conservative and as having a dislike for change.

Similarly, Study 1 found some support to suggest that the CPI has the ability to assess some of the motives, abilities, and perceptions considered to be psychological underpinnings of dark traits, representing a functional approach to understanding dark traits (Harms et al., 2014). For example, Study 1 found that the Dutiful dark trait related to being overly dependent on others (Hogan & Hogan, 2001) is characterized primarily by the CPI Independence scale, suggesting a lack of ability and/or motivation to act autonomously and be self-reliant. In a

similar vein, the Skeptical dark trait associated with being suspicious of others (Hogan & Hogan, 2001) was most strongly characterized by lower scores on the CPI Tolerance scale, suggesting that such individuals' perceptions of the world (i.e., schemas) involve being less trusting and more intolerant, and even potentially hostile toward others (Boer et al., 2008; Groth-Marnat, 2009). Another example concerns the Leisurely dark trait which was only significantly related to lower levels of Intellectual Efficiency in Study 1. This suggests that such individuals are primarily characterized by a decreased ability or motivation for intellectual pursuits and it is this lack of ability or motivation that may play a key role in such individuals' indifference or passive-aggressive behavior toward others (Hogan & Hogan, 1997, 2001). In general, Study 1 suggests that the CPI has the ability to take a functional approach to assessing dark traits, which some have lauded as advantageous over structuralist trait approaches in understanding dark traits and screening for them in selection assessments (Harms et al., 2014).

Study 1 also provides some evidence to suggest that bright and dark traits are not characterized by a linear relationship. For instance, Study 1 analyses examining nonlinear bright-dark trait relationships found that after a certain cut-off point, both very low and high levels of certain typically adaptive bright traits became either unrelated to dark traits or even related to elevated levels of dark traits. For example, Study 1 provided evidence to suggest that both low and high levels of extraversion were related to higher levels of dark traits. Similarly, after a certain cut-off point both higher levels of conscientiousness, as well as lower levels of neuroticism, became largely unrelated to dark traits; in other words, beyond a certain point increasingly high levels of conscientiousness, and decreasingly low levels of neuroticism, no longer conferred a protective effect against dark traits. This aligns with other research highlighting the spectrum of personality and demonstrating that even typically adaptive

personality traits can become unrelated or even maladaptive at too high levels (Ames & Flynn, 2007; Burch & Anderson, 2008; Kaiser & Hogan, 2011). Study 1 reinforces these findings and suggests that this spectrum of personality can be tapped, to some extent, through the CPI.

In terms of practical contributions, Study 1 provides initial evidence to suggest that the CPI is an instrument that is able to predict each of the dark traits, often with large effect sizes, and that it represents promise to screen for dark traits in employment testing contexts. Study 1 showed that patterns of CPI scales were significantly able to predict each of the 11 dark traits and these combinations of bright traits were identified using multiple regression analyses. This is practically helpful for industrial/organizational practitioners given that the CPI is a personality inventory that has been designed to be appropriate for employment contexts and is commonly used in personnel selection (Boer et al., 2008; Groth-Marnat, 2009). Study 1 suggests that the CPI shows promise as one means to screen for dark traits by considering the linear combinations of scales that predict each dark trait.

One of the methodological strengths of Study 1 is that it involves a sample of managers who underwent assessments in a high-stakes employment context. Such contexts are unique in the sense that managerial candidates are highly motivated to present themselves in a positive light. As a result, such assessments are often influenced by social desirability biases (O'Boyle et al., 2012; Viswesvaran et al., 2007), something that is likely much less common in other low-stakes settings in which research is carried out. Therefore, the Study 1 findings are able to speak to the ability of the CPI to predict dark traits among managerial candidates in employment testing contexts.

Study 1 also has one key limitation that is worth focusing on. This concerns its reliance on a self-report measure of dark traits. This is also a key limitation of past research on dark

personality traits and others have noted the importance of extending the research on dark traits to include observer ratings (Gaddis & Foster, 2015). This represents a limitation because self-reported dark traits are associated with response biases related to responding in a socially desirable manner or having a lack of awareness of one's dark personality traits (O'Boyle et al., 2012, 2014; Viswesvaran et al., 2007). As mentioned above, social desirability biases are a particular concern in high-stakes employment contexts. Moreover, extending the research to observer ratings of dark traits is also important because research shows that observer ratings of bright personality traits are more accurate than self-reported bright traits in predicting important job outcomes, such as job performance (Oh et al., 2011). As a result, research encompassing observer ratings of dark traits is needed to move the literature forward (Gaddis & Foster, 2015).

In order to address this limitation of Study 1, concerning its reliance on a self-report measure of dark traits, a second study was conducted. Study 2 addresses this gap by examining the relationship between the CPI and supervisor ratings of dark traits. The goal of this is to examine the extent to which the CPI can predict other-rated dark traits. Similarly, Study 2 will also examine the extent to which self-reported dark traits and other-rated dark traits are (or are not) related. In addition, Study 2 extends the findings of Study 1 by also examining the relationship that dark traits have with job performance, as well as the ways in which they are related to imbalanced leadership behavior.

Chapter 3: Study 2

Study 2: Overview and Hypotheses

The primary aim of Study 2 is to extend Study 1 findings concerning the meaningful relationships between the CPI and self-reported dark traits in two broad ways. First, Study 2 examines the relationship between bright personality traits (CPI) and dark personality traits as rated by an observer, namely one's direct supervisor at work. Research on dark traits has focused almost exclusively on using self-report measures, which involves considerable shortcomings (O'Boyle et al., 2012; Oh et al., 2011; Viswesvaran et al., 2007), and has left a gap in the literature involving observer-ratings of dark traits (Gaddis & Foster, 2015). Therefore, Study 2 seeks to provide initial and exploratory empirical investigation into the relationship between bright traits and observer-ratings of dark traits. Study 2 also provides empirical insight into the extent to which self-report biases influence differences in self- and other-ratings of dark traits; this is accomplished by examining whether or not self-report and observer-ratings of dark traits are correlated.

Study 2 also builds on the first study by investigating the relationship that supervisor-rated dark personality traits have with supervisor ratings of managerial job performance, as well as the specific ways in which dark traits are related to supervisor ratings of ineffective and imbalanced leadership behavior. In terms of the former, managerial job performance is examined according to three broad domains that include task performance (i.e., performance on specific in-role tasks), contextual performance or citizenship behavior (i.e., positive workplace behaviors, such as altruism, courtesy, and civic virtue), and counterproductive workplace behavior (i.e., deviant and destructive workplace behavior; Viswesvaran & Ones, 2000). In terms of ineffective and imbalanced leadership behavior, this provides an indication of the ways in

which dark traits negatively affect leadership behavior. Ineffective and imbalanced leadership behavior refers to the extent to which managers neglect or overfocus on core leadership behaviors related to leading others (i.e., the interpersonal aspects of leadership) and what tasks they focus their time on (i.e., the task-related aspects of leadership; Kaiser et al., 2010).

In terms of the hypothesized relationships for Study 2, these were based on previous empirical and theoretical research as well as Study 1 findings (for bright–dark trait relationships only). As noted in Study 1, these hypotheses are largely based on the CPI literature that has tended to employ clinical measures of maladaptive personality functioning and personality disorders that are similar but also differ in significant ways from the more modern taxonomy of dark traits employed in the current study. Moreover, given that previous research has focused on the relationships between bright and self-reported dark traits, it is unclear the extent to which the latter will be related to other-ratings of dark traits. Therefore, the following hypotheses are used to guide our discussion of the findings of the current study but should be considered relatively tentative and exploratory.

In terms of critical thinking ability, Study 1 found that it was minimally related to dark traits and only was significantly related to a few dark traits and we hypothesize it will also be minimally related to most dark traits in Study 2.

In terms of the moving-away dark traits, these reflect maladaptive interpersonal tendencies related to withdrawing from others (Hogan & Hogan, 2001; Horney, 1950), and are hypothesized to be negatively related to CPI scales related to extraversion. The more specific hypotheses for each of the moving-away dark traits are now discussed.

The Excitable dark trait is characterized by emotional volatility (Hogan & Hogan, 1997, 2001) and both previous research and Study 1 suggest it primarily relates to CPI scales related to

a lack of concern for and understanding of others' feelings, indifference to making a good impression on others, impulsivity, as well as a lack of psychological adjustment (McCrae et al., 1993; Paris, 1997; Paris et al., 2013; Widiger & Costa, 2012).

The Skeptical dark trait is characterized by being distrustful of others (Hogan & Hogan, 1997, 2001) and both previous research and Study 1 suggest it primarily relates to CPI scales related to being conservative and disliking change, distrustful or hostile toward others, nonconforming and having difficulties adhering to others' rules, as well as a lack of intellectual sophistication (McCrae et al., 1993; Stein et al., 1971; Widiger & Costa, 2012; Worling, 2001).

The Cautious dark trait is characterized by a fear of being evaluated negatively by others (Hogan & Hogan, 1997, 2001) and both previous research and Study 1 suggest it primarily relates to CPI scales related to being quiet and cautious as well as not very independent but rather dependent on others (Bryant et al., 1976; Kish & Timmons, 1971; Schuerger et al., 1987; Stein et al., 1971; Widiger & Costa, 2012).

The Reserved dark trait is characterized by being socially withdrawn (Hogan & Hogan, 1997, 2001) and Study 1 as well as theoretical work (Widiger & Costa, 2012) suggest it primarily relates to CPI scales related to being cautious and quiet as well as withdrawn from others. No hypotheses are made based on the two related previous studies (Butler & Bieliauskas, 1972; Worling, 2001), given that these appeared to focus on a similar but different personality style that was not observed to be significantly related to the Reserved dark trait in Study 1.

The Leisurely dark trait is characterized by passive-aggressive behavior (Hogan & Hogan, 1997, 2001) and Study 1 as well as one past study (Holliman & Guthrie, 1989) suggest it is primarily related to a lack of motivation or ability for intellectual pursuits but may also be

negatively correlated to CPI scales related to extraversion, conscientiousness, conformity and following rules.

In terms of the moving-against-others dark traits, these reflect maladaptive interpersonal tendencies related to being overly assertive and aggressive (Hogan & Hogan, 1997, 2001) that are generally hypothesized to be positively related to CPI scales related to extraversion, social dominance, and self-confidence. Hypotheses for the specific moving-against-others dark traits are now discussed.

The Bold dark trait is characterized by being overly self-confident and unwilling to admit mistakes (Hogan & Hogan, 1997, 2001) and both past research and Study 1 suggest it primarily relates to CPI scales related to social dominance, achievement striving, and extraversion, as well as a lack of conscientiousness, being conservative and disliking of change, being distrustful of others, as well as lacking in psychological adjustment (McCrae et al., 1993; Mumford et al., 2001; Wink & Gough, 1990; Widiger & Costa, 2012; Worling, 2001).

The Mischievous dark trait is characterized by taking risks and testing the limits (Hogan & Hogan, 1997, 2001) and both past research and Study 1 suggest it primarily relates to CPI scales related to not following rules or nonconformity, being irresponsible, being distrustful of others, and lacking self-control, as well as being self-confident, socially dominant, tough-minded, and conservative and disliking of change (Collins & Bagozzi, 1999; Mumford et al., 2001; Sarchione et al., 1998).

The Colorful dark trait is characterized by being excessively dramatic and attention-seeking (Hogan & Hogan, 1997, 2001) and both past research and Study 1 suggest it primarily relates to CPI scales related to social dominance, extraversion, self-confidence, a preference for change, as well as both poorer self-control and perceptiveness of others' motives.

The Imaginative dark trait is characterized by acting and thinking in unusual and creative ways (Hogan & Hogan, 1997, 2001) and Study 1 suggests it primarily relates to CPI scales related to being unconcerned about others' impressions, self-confident, socially dominant, extroverted, and empathic, as well as not being very responsible, rule-following, or self-controlled.

In terms of the moving-toward dark traits, these reflect two maladaptive interpersonal tendencies related to a lack of independence as well as a preference for stability (Hogan & Hogan, 2001; Horney, 1950). Hypotheses for the specific moving-toward-others dark traits are now discussed.

The Diligent dark trait is characterized by being precise and critical of others' performance (Hogan & Hogan, 1997, 2001) and both past research and Study 1 suggest it primarily relates CPI scales related to being responsible, self-controlled, rule-following, concerned about making a good impression, intolerant or not trusting of others, as well as conservative and resistant to change (Worling, 2001).

The Dutiful dark trait is characterized by being overly reliant on others for support and lacking independence (Hogan & Hogan, 1997, 2001) and both past research and Study 1 suggest it primarily relates to lower scores on CPI scales related to independence, social dominance, self-confidence, intellectual efficiency, achievement striving, psychological flexibility, and being trusting of others as well as higher levels of conformity (Tuddenham, 1959).

It was also hypothesized that bright traits would have significant nonlinear relationships with dark traits. Such nonlinear relationships were observed in Study 1 and have been suggested by previous research on the nonlinear relationships between bright traits and relevant outcome variables (e.g., Ames & Flynn, 2007; Carter et al., 2014; Le et al., 2011).

It was also hypothesized that the relationship between bright and dark personality traits would be moderated by job stress. Dark traits are considered to represent maladaptive personality tendencies that individuals engage in when they are under stress, whereas bright traits are considered to reflect an individuals' functioning under more optimal conditions (Hogan & Kaiser, 2005). Moreover, dark traits have been found to manifest with greater intensity when individuals experience elevated levels of job stress (Wille et al., 2013). From a theoretical perspective, job stress is a factor that is considered to influence the extent to which adaptive bright traits manifest as maladaptive dark-trait tendencies (Hogan & Hogan, 1997, 2001). Therefore, we hypothesized that individuals' stress levels at work (i.e., job stress) may moderate the relationship between their bright and dark traits, although we did not make any specific predictions regarding the direction of such relationships.

Study 2 also examined the relationship between dark personality traits and job performance. It was hypothesized that dark traits would generally be related to poorer job performance based on each of the three indices. Specifically, it was hypothesized that most of the dark traits would be negatively related to task, contextual, and overall job performance, as well as positively related to counterproductive workplace behavior. Past research has found that most dark traits are related to poorer job performance (Christiansen & Tett, 2013; Gaddis & Foster, 2015; Moscoso & Salgado, 2004; Spain et al., 2014).

In terms of nonlinear relationships between dark traits and job performance, we did not specify hypotheses because past research has shown mixed findings in this regard. Some work has pointed to linear relationships between dark traits and job performance (Kaiser et al., 2015; Moscoso & Salgado, 2004; O'Boyle et al., 2012), whereas others have found nonlinear

relationships between dark traits and leadership performance (Benson & Campbell, 2007; Grijalva et al., 2015).

It was also hypothesized that job stress would moderate the relationship between dark traits and job performance. In a similar manner to the hypothesized role of job stress in moderating the bright–dark trait relationship, we hypothesized that job stress would moderate the dark trait–job performance relationship because it relates to the intensity of expression of one’s dark-trait tendencies (Wille et al., 2013). As a result, job stress likely influences the extent to which maladaptive dark trait tendencies negatively affect job performance. Specifically, we hypothesize that dark traits would have a more pernicious effect on job performance when individuals are experiencing higher levels of job stress, whereas dark traits would be less detrimental to job performance at lower levels of job stress.

It was also hypothesized that self-awareness would be related to superior levels of each of the three indices of job performance. Previous research suggests that higher levels of self-awareness regarding one’s managerial behavior are related to improved performance (Atwater & Yammarino, 1992; Church, 1997; Tiuraniemi, 2008; Van Velsor et al., 1993). We also hypothesized that self-awareness would moderate the relationship between dark traits and job performance, such that higher levels of self-awareness would buffer the negative effects of dark traits. In other words, individuals’ dark traits are hypothesized to most strongly hinder job performance when they lack self-awareness of their dark traits, whereas high levels of self-awareness may buffer the extent to which dark traits harm job performance. We also hypothesized that there would be noticeable discrepancies between self-reported and supervisor-rated measures of dark traits (i.e., they would not be strongly correlated). This hypothesis is based on the theory of dark traits as dysfunctional behaviors that often operate, at least to some

extent, beyond the awareness of the individual (Harms et al., 2014; Hogan & Hogan, 2001; O'Boyle et al., 2012).

Study 2 also examined the relationship between dark traits and imbalanced leadership behavior. One past study has found that most of the dark traits are related to at least one of four imbalanced leadership behaviors (Kaiser et al., 2015). In a similar manner, we hypothesized that most dark traits will be related to imbalances in at least one of these four leadership behaviors, which can be imbalanced by either overdoing or neglecting the particular leadership behavior (Kaiser et al., 2010; Kaplan & Kaiser, 2006). Given that only one study has examined these relationships, we do not make predictions regarding the specific patterns of relationships between dark traits and imbalanced leadership behaviors. We also hypothesized that both very low and high levels of dark traits would be related to imbalanced leadership behavior and that moderate levels of dark traits would be most related to balanced leadership, which has been observed in a past study (Kaiser et al., 2015).

Study 2: Method

Participants and Procedure

Study 2 involves a sample of individuals who underwent employment testing as part of a selection or development assessment conducted at an industrial/organizational psychology consulting firm (a different but similar firm than in Study 1). This assessment involved a battery of various cognitive ability and personality measures, including the CPI and Watson-Glaser Test of Critical Thinking. The assessments were conducted between 2003 and 2015, with the exception of one individual who was assessed in 2016. From the individuals who were assessed, the managers who were currently working in a management-level position were identified in the industrial/organizational psychology firm's database, as well as by contacting the human

resources departments of each of the companies where they had been hired following the assessment. The companies also identified each of the managers' supervisors (hereafter referred to as supervisor) and provided both groups of participants' email addresses so that both managers and their supervisors could be contacted directly regarding Study 2.

The manager and supervisor participants were contacted via email regarding the opportunity to participate in Study 2. This email provided a brief description about the study, which was described as a study that "aims to explore the role of personality in workplace behavior" that would take 30 minutes or less. Participants were provided with an ID number, to ensure confidentiality, as well as a link to the online survey. Upon clicking the link to the online survey, participants were directed to the start of the questionnaire. After providing consent, both managers and their supervisors filled out a short measure assessing demographics and then several measures regarding dark personality traits, job performance, and imbalanced leadership behavior. Managers and supervisors filled out similar measures, with the only difference being managers completed self-report versions of the measures whereas supervisors provided observer-ratings of the managers on each of the measures. Participants were offered the opportunity to receive some brief feedback regarding their results as well as general findings from the study. No other remuneration for participation was provided.

The Study 2 sample consists of 113 managers who each have completed the employment testing battery (i.e., CPI and critical thinking test) as well as have been rated by their supervisor on the measures of dark traits, job performance, and imbalanced leadership behavior. All managers were hired following the assessment by companies in the manufacturing industry. Managers' demographics are provided in Table 14 (under the "Study 2 Sample of Hired Managers" heading).

Table 14

Summary of Demographics of Study 2 Sample Managers and Nonhired Comparison Group

Variable	Study 2 Sample of Hired Managers (N = 113)		Nonhired Comparison Managers (N = 98)		Test of group differences
	M	SD	M	SD	
Age	49.71	9.34	53.11	8.18	$t(206) = 2.78$ $p < .05$
<hr/>					
Variable	n	%	n	%	Test of group differences
Gender					
Male	97	86%	83	85%	$\chi^2(1) = 0.06$
Female	16	14%	15	15%	
Highest Level of Education					
Some high school	11	10%	8	8%	$\chi^2(3) = 0.33$
High school	65	58%	55	56%	
Some college/university	23	20%	21	21%	
Bachelor Degree	14	12%	14	14%	
Graduate/Professional Degree	0	0%	0	0%	
Level of Management					
Frontline Supervisor	30	27%	20	20%	$\chi^2(2) = 2.55$
Middle Manager	76	67%	75	77%	
Executive	7	6%	3	3%	

Note: Percentages have been rounded to the nearest whole number. The Study 2 hired managers are the sample used in all of the analyses in Study 2; the nonhired comparison managers group is solely to compare demographic differences between managers who were or were not hired following employment testing and assessment.

In addition, a subset of the Study 2 managers ($n = 60$) completed self-report measures of dark personality traits, job performance, and imbalanced leadership behavior. This subset of the

sample had both self-report and other-report data on the outcome measures. Although this subset of managers completed all of the outcome measures, in order to ensure consistency with the measures completed by supervisors, only the two sets of data on the dark-trait measure was used in Study 2. Specifically, the self-reported and supervisor-reported dark traits data were used for the purpose of calculating managers' level of self-awareness regarding their dark trait tendencies (the difference between self-perception and supervisory perception regarding one's dark traits, which is discussed in more detail in the Measures section below). The self-report outcome measures were the same measures used by supervisors to rate their subordinate managers with slight adjustments in wording to reflect a self-report scale.

The total group of Study 2 manager participants ($N = 113$) were also compared with a group of managerial candidates who were not hired following similar employment testing. The latter consisted of another sample of candidates ($N = 98$) who underwent similar employment testing with the same firm for a management role in the same industry but were not hired following the assessment (demographic information listed in Table 14, under the "Nonhired Comparison Managers" heading). This latter sample was only used to assess for differences between managers who were hired (the sample used in Study 2) and those who were not (nonhired comparison group). Differences between the groups' demographics are listed in Table 14 and differences between their CPI and critical thinking ability scores are listed in Table 15.

Table 15

CPI Scale Mean Differences Between Study 2 Sample Managers and Nonhired Comparison Group

CPI Scale	Study 2 Sample of Hired Managers (<i>N</i> = 113)		Nonhired Comparison Managers (<i>N</i> = 98)		<i>t</i> (209)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Do	27.91	3.29	28.47	3.09	1.26
Cs	18.24	2.42	18.45	2.77	0.59
Sy	23.53	3.72	24.61	2.78	2.36*
Sp	26.04	3.45	26.63	3.31	1.28
Sa	19.86	2.38	20.19	2.48	1.00
In	20.21	2.30	20.47	2.35	0.80
Em	22.59	4.11	23.31	3.54	1.34
Re	28.26	3.76	27.83	3.76	-0.83
So	32.88	4.20	32.28	4.30	-1.02
Sc	27.12	4.57	26.10	5.54	-1.46
Gi	27.62	5.15	26.86	6.52	-0.95
Cm	36.11	1.62	36.44	1.48	1.55
Wb	35.23	2.31	34.56	2.29	-2.10*
To	23.43	2.98	22.38	3.63	-2.32*
Ac	31.40	3.59	31.31	3.61	-0.19
Ai	25.64	3.77	24.95	3.89	-1.30
Ie	32.07	3.17	30.89	2.92	-2.80**
Py	18.28	2.41	17.98	2.43	-0.91
Fx	12.47	3.40	12.59	3.26	0.27
Fm	12.12	3.38	12.10	3.41	-0.03
WG	61.24	7.87	57.42	8.63	-3.36**

Note. Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

* significant at $p < .05$, ** at $p < .01$.

In terms of demographic information, the only significant difference between the hired and nonhired groups was that the nonhired group was older, and there were no group differences related to gender, education, or their level of management. There were a few differences between groups on the CPA and critical thinking ability measures, although the groups did not have significant differences on most of these variables. The largest difference was that the Study 2 managers who were hired had stronger critical thinking ability ($d = .46$). The hired managers also had higher scores on the Intellectual Efficiency, Wellbeing, Tolerance scales and lower scores on the Sociability scale, although all of the differences in CPI scales were of reasonably modest effect sizes ($.29 \leq d \leq .39$). Overall, this suggests that the managers who were hired had stronger cognitive ability as well as slightly better adjustment, greater tolerance toward others, ability or motivation for intellectual pursuits, and slightly lower levels of extraversion.

It is not surprising that there were some differences between both groups given that the employment testing is intended to select for cognitive ability and certain personality traits that are needed for success in management roles in the manufacturing industry. However, there are not many differences and the differences in personality in particular do not tend to be very large. This is likely the case because hiring decisions involve a multitude of factors in addition to simply critical thinking ability and personality traits; moreover, there is likely a restriction of range on these variables given that job candidates for management roles have already been screened and selected through various other processes.

Measures

The manager and supervisor questionnaires used in Study 2 are provided in Appendix B, with the exception of two copyrighted measures (i.e., Leadership Versatility Index and Dark Personality Adjective Checklist). Likewise, the measures from the original assessment battery

(i.e., CPI and Watson-Glaser Critical Thinking Appraisal) are copyrighted and cannot be reproduced.

The California Psychological Inventory. The CPI psychometric properties are discussed in the Measures section of Study 1 (above). Internal consistency data for the CPI for Study 2 could not be calculated as only total scores, and not individual item responses, were able to be obtained from the industrial/organizational psychology firm.

Dark-trait self-awareness. Studies on self-awareness have often measured this construct by assessing the similarity (or discrepancy) of self-ratings to observer ratings (Atwater & Yammarino, 1992; Church, 2000; Tiuraniemi, 2008; Van Velsor et al., 1993). In Study 2, self-awareness regarding manager's dark traits was calculated in two ways based on past research. These calculations are based on the 60 self–observer pairs of ratings between the managers and their supervisors.

The first measure of self-awareness was calculated, as has been done in other lines of research, by saving the standardized residuals from the regression equations that predicted supervisor-rated dark traits from self-reported dark traits (Cohen et al., 2003; Paulhus et al., 2004; Tangney & Dearing, 2002). These standardized residuals indicate the discrepancy between self-ratings and supervisor ratings of dark traits, which reflects the difference between the rater's (i.e., supervisor) and the ratee's (i.e., manager) perceptions of the ratee's dark-trait behavior. In order to calculate this variable, the standardized residuals were calculated from 11 dark trait regression analyses where the self-report ratings of a given dark trait was entered as the predictor and the supervisor rating of the same dark trait was entered as the criterion variable. Then the 11 standardized residuals were averaged to compute the scores of dark-trait self-awareness. Negative residuals indicate higher levels of self-awareness (i.e., overestimating one's dark traits

relative to supervisor ratings) whereas positive residuals indicate lower levels of self-awareness (i.e., underestimating one's dark traits relative to supervisor ratings). (No participants had a residual score of "0".) The residual scores were then reversed for ease of interpretation so that higher scores are indicative of higher levels of self-awareness and lower scores are indicative of lower levels of self-awareness. In other words, higher scores are associated with having stronger awareness about one's dark traits (i.e., overestimating one's dark traits relative to supervisor ratings), and lower scores are associated with having a weaker awareness of one's dark traits (i.e., underestimating one's dark traits relative to supervisor ratings).

The second measure of dark-trait self-awareness calculated this discrepancy based on a difference score approach that is based on the average differences on the set of ratings (Church, 1997). This measure has been suggested by some because of its sensitivity to score differences at the item level (Church, 1997). Computing this difference score simply involves subtracting managers' self-ratings from supervisors' observer ratings for each of the survey items (which are rated on a 5-point scale) and then dividing it by the total number of survey items (Church, 1997; Wohlers & London, 1989). Positive difference scores indicate lower levels of awareness (i.e., underestimation) of their dark trait tendencies (in comparison to their supervisors' point of view). Conversely negative difference scores indicate higher levels of awareness (i.e., overestimation) of their dark traits (in comparison to their supervisors' point of view). (No participants had a difference score of "0".) The difference scores were then reversed for ease of interpretation so that higher scores are indicative of higher levels of self-awareness (i.e., overestimating one's dark traits relative to supervisor ratings) and lower scores are indicative of lower levels of self-awareness (i.e., underestimating one's dark traits relative to supervisor ratings).

Critical thinking ability. Critical thinking ability was assessed using the Watson-Glaser

Critical Thinking Appraisal, which is described in detail in the Study 1 Measures section. Internal consistency data for this measure in Study 2 were not able to be calculated as only total scores, and not individual item responses, were obtained from the industrial/organizational psychology firm.

Dark personality traits. Dark personality traits were assessed using a dark personality adjective checklist that was recently developed by Jeff Foster at Hogan Assessments Inc., but which has not yet been published in the academic literature (J. Foster, personal communication, June 1, 2015). As a result, the psychometric properties of the scale are not available. A recent review of the literature found that no observer-rating scale of dark personality traits suitable for use in organizational settings has yet been reported in the research literature (Furnham et al., 2014). The dark personality adjective checklist can be used to assess self- and observer-ratings of dark trait tendencies as outlined by the HDS, which is one of the most well-researched and commonly used measures of dark personality in personnel selection contexts (the HDS psychometric properties are described in the Measures section of Study 1; Hogan & Hogan, 1997, 2001).

The dark personality adjective checklist assesses the same 11 dark traits as the HDS. It consists of 7 items per scale for a total of 77 items. Each item consists of a bipolar pair of dark-trait adjectives that are rated on a 5-point scale that consists of *always, sometimes, neutral, sometimes, always*. For example, one item on the Excitable scale presents the bipolar descriptions of “stays calm under pressure” and “overreacts under pressure.” The items focus on behavioral tendencies that are observable and thus can be evaluated, which is an important consideration for using observer-rated measures (Connelly & Ones, 2010).

In the current study, internal consistency and descriptive statistics for supervisor- and

self-ratings (the latter of which are used to calculate self-awareness scores) of dark traits are listed in Table 16. In terms of supervisor ratings, most scales show reasonably good internal consistency, with an average α of .76 and a range from .53 (Mischievous) to .88 (Excitable). This level of reliability is stronger than the commonly used HDS inventory (psychometrics listed in the Measures section of Study 1; Hogan & Hogan, 1997). The internal consistency for self-reported dark traits was lower, on average, than for supervisor ratings, and had an average α of .64, ranging from a low of .44 (Mischievous) to .82 (Reserved); although these levels of internal consistency are suboptimal they are comparable to those of the HDS inventory, which represents the gold standard for this line of research.

Imbalances in leadership behavior. Ineffective leadership behavior was measured with the Leadership Versatility Index version 3.0 (LVI), which is an observer-rater measure of imbalances in leadership behavior that consists of four primary scales assessing four types of leadership behavior: forceful, enabling, strategic, and operational (Kaiser et al., 2010; Kaplan & Kaiser, 2006).

Forceful leadership involves taking the lead and pushing for performance and includes behaviors such as taking charge, giving direction, being decisive, and being direct. Enabling leadership involves creating conditions for others to lead and contribute and involves behaviors such as empowering others, allowing them to participate in making decisions, giving them freedom in decision making, and showing appreciation to others. The forceful and enabling managerial scales are social in nature and describe how one leads (i.e., interpersonal dimension of leadership).

Strategic leadership involves positioning the organization for the future and includes behaviors such as planning for the future, focusing on growth, considering the big picture, and

questioning the status quo. Operational leadership involves focusing the organization on the short-term and involves behaviors such as focusing on tasks necessary for the short term, paying attention to detail, making changes in small increments, and avoiding change. The strategic and operational managerial scales are functional in nature and reflect what one leads (i.e., the task-related dimensions of leadership).

Each of the four scales is typically composed of 12 items. However, due to the time restrictions imposed by conducting this research in an organizational setting, an abbreviated 6-item version was obtained from the first author (Robert B. Kaiser), who reported that the items capture the greatest amount of variance of each of the 12-item scales and maintain the reliable factor structure (personal communication, June 8, 2015). The LVI is unique in that it assesses both “too little” and “too much” of these core leadership behaviors; “too little” leadership behavior is represented by responses from -4 to -1, “too much” is represented by responses from +1 to +4, and “the right amount” is represented by responses of 0 (Kaiser et al., 2010). Research has demonstrated that raters are able to reliably make these distinctions and that such a response format is a valid method to assess an overuse of positive personality tendencies (Kaiser & Kaplan, 2005; Kaiser & Overfield, 2011).

This is conceptually important because recent research has demonstrated that imbalanced and ineffective leadership behavior can be a result of over- or under-performing these various leadership behaviors, something that has traditionally been neglected in organizational research (Kaiser et al., 2015). Example items cannot be provided due to the copyrighted nature of the proprietary scale.

The LVI has been found to have good reliability (Kaiser et al., 2015), with internal reliability coefficients of .96 (forceful), .92 (enabling), .92 (strategic), and .81 (operational). It

has shown good validity, with ratings near “0, the right amount” being related to the best outcome scores for a range of leadership effectiveness criteria (Kaiser & Kaplan, 2009; Kaiser et al., 2010). The LVI has also shown to have good discriminant and convergent validity in the expected directions with other tests of leadership behavior (Kaiser et al., 2010; Staal, 2008; Vassar, 2008). In the current study, internal consistency and descriptive statistics of supervisor ratings are listed in Table 16. The scales generally show good internal consistency, although this is not the case for the operational scale.

Job performance. Job performance is generally considered to include three broad domains that include task performance, contextual performance or citizenship behavior, and counterproductive workplace behavior (Viswesvaran & Ones, 2000). In terms of supervisor ratings, it is important to note that the accuracy of observer ratings depends on the extent of closeness between the rater and the target (Connelly & Ones, 2010). Because supervisors are generally considered to have less close relationships with target participants than other close individuals (e.g., friends, family), supervisor evaluations will be most accurate when they entail ratings of behaviors that are highly observable and high in evaluativeness (Connelly & Ones, 2010). Therefore, all three measures of job performance were considered because their scales tend to include items that are observable and evaluative in nature, relative to other measures of performance.

Counterproductive workplace behavior was assessed using Bennett and Robinson’s (2000) measure of workplace deviance, which is a frequently cited measure of counterproductive workplace behavior (Berry, Carpenter, & Barratt, 2012). It measures two types of deviant behavior: interpersonal deviance, which are inappropriate behaviors directed toward other individuals (e.g., violent behavior, stealing from coworkers), and organizational deviance, which

are inappropriate behaviors committed against the organization (e.g., deliberately working slowly, abusing company property; Berry, Ones, & Sackett, 2007). These two forms of workplace deviance are highly related ($r = .62$; Bennett & Robinson, 2000). This scale includes 19 items that assess deviant behaviors and are rated on a scale from 1 (*never*) to 7 (*daily*). The scale measures two dimensions of counterproductive workplace behavior: organizational forms of deviant behavior as well as interpersonal forms of deviance at work (Bennett & Robinson, 2000). Sample items include “made fun of someone at work” and “said something hurtful to someone at work.” This scale has demonstrated good reliability, with internal consistency coefficients of .81 (organizational deviance) and .78 (interpersonal deviance) and has been previously used to assess self-reported and other-reported counterproductive workplace behavior (Judge, LePine, & Rich, 2006). The counterproductive workplace behavior measure had a positively skewed distribution and was therefore transformed using a reciprocal transformation, according to the guidelines of Field (2013), which resulted in a measure that was closer to the normal distribution.

Contextual performance was assessed using the Organizational Citizenship Behavior Scale (Podsakoff, MacKenzie, Moorman, & Fetter, 1990). This scale assesses five dimensions of organizational citizenship behavior including altruism, conscientiousness, sportsmanship, courtesy, and civic virtue (Organ, 1988). It consists of 24 items that assess various positive citizenship behaviors in the workplace that are rated on a scale from 1 (*not at all*) to 5 (*frequently, if not always*). Sample items include “helps others who have been absent” and “goes out of way to help new employees.” This scale has demonstrated good reliability, with internal consistency coefficients for the altruism (.85), conscientiousness (.82), sportsmanship (.85), courtesy (.85), and civic virtue (.70) subscales (Podsakoff et al., 1990). It has also been

previously used to assess self-reported and other-reported citizenship behavior (Judge et al., 2006).

Task performance was assessed using the Task Performance Questionnaire (Williams & Anderson, 1991). This scale consists of seven items that measure in-role performance independent from occupational groups. The items assess the extent to which individuals meet formal job requirements and are rated on a scale from 1 (*not at all*) to 7 (*frequently, if not always*). Sample items include “adequately completes assigned duties” and “meets formal performance requirements of the job.” This scale has good internal consistency (.91) and has been previously used to assess self-reported and other-reported task performance (Judge et al., 2006). The task performance measure had a negatively skewed distribution and was therefore transformed using a reciprocal transformation, according to the guidelines of Field (2013), which resulted in a measure that was closer to the normal distribution.

For the current study, internal consistency and descriptive statistics of supervisor ratings for all three job performance scales are listed in Table 16.

Overall job performance was calculated as the sum of the standardized task performance, contextual performance and counterproductive workplace behavior variables. In order to compute this, counterproductive workplace behavior was reversed scored, such that higher scores on overall job performance are related to superior performance in all domains, including less counterproductive workplace behavior.

Table 16

Descriptive Statistics and Reliability for Study 2 Job Performance, Job Stress, Dark Traits, and Imbalanced Leadership Behavior

Variable		<i>M</i>	<i>SD</i>	Min.	Max.	Cronbach α
Job Performance and Stress (Supervisor Ratings)						
Counterproductive Workplace Behavior		1.62	.59	1.00	3.38	.89
Contextual Performance		3.88	.63	1.92	5.00	.89
Task Performance		5.82	1.14	2.00	7.00	.92
Job Stress		2.16	.67	1.00	4.57	.80
Dark Traits (Supervisor Ratings)						
Excitable		2.56	.89	1.00	4.43	.88
Skeptical		2.72	.78	1.00	4.29	.83
Cautious		2.37	.70	1.00	4.00	.82
Reserved		2.15	.72	1.00	4.71	.84
Leisurely		1.92	.71	1.00	4.14	.84
Bold		2.67	.69	1.43	4.71	.82
Mischiefous		2.22	.49	1.29	3.57	.53
Colorful		2.57	.60	1.14	4.29	.74
Imaginative		2.37	.59	1.29	4.00	.77
Diligent		2.72	.58	1.43	4.29	.66
Dutiful		2.86	.56	1.43	4.86	.68
Dark Traits (Self-Ratings; <i>N</i> = 60)						
Excitable		2.22	.44	1.14	3.29	.50
Skeptical		2.56	.49	1.57	3.86	.64
Cautious		1.89	.42	1.14	2.86	.66
Reserved		2.05	.58	1.00	3.71	.82
Leisurely		1.69	.42	1.00	3.29	.77
Bold		2.42	.42	1.57	3.14	.63
Mischiefous		2.20	.36	1.43	3.00	.44
Colorful		2.55	.55	1.29	3.86	.74
Imaginative		2.57	.48	1.43	3.57	.65

Variable	<i>M</i>	<i>SD</i>	Min.	Max.	Cronbach α
Diligent	2.41	.43	1.29	3.14	.53
Dutiful	2.55	.52	1.43	4.00	.68
Imbalanced Leadership Behavior (Supervisor Ratings)					
LVI – Forceful	-.15	1.13	-3.17	3.33	.90
LVI – Enabling	-.19	.94	-3.83	2.83	.81
LVI – Strategic	-.64	.97	-4.00	2.17	.87
LVI – Operational	.04	.68	-2.17	2.83	.66

Note. Analyses based on $N = 113$ except for self-reported dark traits which are based on $N = 60$. Dark traits, job stress, and contextual performance scores range from 1 to 5; task performance and counterproductive workplace behavior scores range from 1 to 7; and Leadership Versatility Index (LVI) scores range from -4 to +4.

Job stress. Job stress was measured using De Fruyt's (2002) job stress scale. This consists of seven items that measure perceived job stress. They are presented as declarative statements to which respondents respond on a 5-point Likert scale ranging from 1 (*totally false*) to 5 (*totally agree*). This scale has been used in other studies on dark personality and job outcomes, which have found it to have an internal consistency of .87 (Wille et al., 2013). In the current study, supervisor ratings of this scale's internal consistency and descriptive statistics are listed in Table 16.

Power Analysis

The power analysis for Study 2 relies on the recommendations of Green (1991), which were discussed in more detail in the Power Analysis section of Study 1. These guidelines recommend that power analyses consider the anticipated effect sizes, based on previous research, as well the number of predictors involved in the regression analyses (Green, 1991). As discussed for Study 1, research on the five-factor model of bright-side traits (at the broad domain level) and maladaptive personality traits has found that the sets of personality variables often share

moderate R^2 effect sizes (i.e., $R^2 \geq .13$), and that about half of the traits have relationships characterized by large effect sizes (i.e., $R^2 \geq .26$), with some of the R^2 effects ranging as high as .42 (Furnham & Crump, 2005). Other work has found that using all 30 facets of the five-factor model as predictors of clinical personality disorders generally produces consistently large R^2 effect sizes ($R^2 \geq .26$), with some as high as .71 (social anxiety; Quirk et al., 2003).

In terms of research on personality and imbalanced leadership behavior, research using bright personality traits to predict leadership behavior (according to the LVI) has found effect sizes ranging from $R^2 = .22$ to $.34$ (Kaiser & Hogan, 2011). Similar research, except using dark traits as predictors, has found effect sizes ranging from $R^2 = .07$ to $.17$ (Kaiser et al., 2015). However, this study only used five or six dark traits as predictors and also analyzed their data by transforming their outcome variable to a categorical (as opposed to continuous) variable, which likely reduced the size of their effects.

In terms of research on job performance, previous research using the five-factor model dark traits (viz., bright personality trait compounds) to predict job performance outcomes has often found effect sizes of R^2 ranging from $.30$ (management level attained) to $.42$ (income; Wille et al., 2013). Others have found that the set of HDS dark traits can predict occupational potential with adjusted R^2 effect sizes ranging from $.39$ (service potential) to as high as $.60$ (sales potential; Furnham et al., 2012). These effect sizes are comparable to the relationship that the five-factor model of bright personality (at the broad domain-level) have with measures of leadership effectiveness, with R^2 effect sizes of $.53$ (leadership emergence) and $.39$ (leadership effectiveness; Judge et al., 2002).

Based on this previous research, when using bright or dark traits to predict dark personality tendencies, Study 2 can expect to find R^2 effect sizes in the large range (with some

well above the recommended threshold), but some may also fall within the moderate size range. Analyses using bright traits to predict imbalanced leadership behavior can expect to have effects in the medium to large range, whereas similar analyses using dark traits as predictors will likely have effects in the medium, but also in the upper end of the small, range. Analyses using dark traits to predict job performance can expect R^2 effect sizes consistently in the large range.

Most of the analyses of the current study will involve between 11 (i.e., dark trait predictors) and 26 (i.e., demographic variables, CPI scales, and critical thinking ability) predictors. According to Green's (1991) recommendations, the sample size required to test the hypothesis that the population multiple correlation equals 0 with power of .80 (and α of .05) is about 121 participants when using 11 predictors to detect a medium effect size and 58 participants to detect a large effect size. Likewise, analyses using all 27 predictors (and the same probability) require 178 participants to detect a medium effect and 89 participants to detect a large effect. The analyses involving the largest amount of predictors concern those using the entire CPI scale to predict dark traits and imbalanced leadership behavior, which past research suggests will likely have effect sizes ranging from the upper end of medium to quite high effect sizes (Kaiser & Hogan, 2011; Quirk et al., 2003). Therefore, the current Study 2 sample of 113 participants provides a reasonable, but slightly underpowered, sample size to detect significant multiple correlations. According to Green (1991), this sample size also provides a roughly comparable ability to detect medium-sized ($r = .26$) partial correlations between the dependent variable with each of the independent predictor variables, although it is very underpowered to detect partial correlations below this magnitude. Based on these analyses, the Study 2 sample has reasonable power to detect R^2 regression effects but is underpowered to detect smaller but, potentially meaningful, partial correlations between independent and dependent variables. It also

has a reasonable sample size to detect nonlinear trends, which increase power if they exist in the data (Cohen et al., 2003).

On the other hand, Study 2 is underpowered in regards to detecting interaction effects for the analyses involving the job stress and self-awareness moderator variables. Whereas the sample would have a reasonable amount of power to detect a medium-sized interaction effect, it is very underpowered to detect small interaction effects which are much more likely to occur in psychological research (Aiken & West, 1991; Cohen et al., 2003). The latter is a common problem in psychological research given that interactions typically only account for a small amount of variance over and above first-order effects and that power is also reduced by higher levels of scale unreliability (Aiken & West, 1991; Cohen et al., 2003). For instance, having power of .80 (and α of .05) to detect a moderate effect size would require a sample of roughly 110-160 participants (depending on individual scale reliabilities), whereas a sample of anywhere from 800 to well over 1,000 would be needed to detect a small interaction effect (depending on individual scale reliabilities; Aiken & West, 1991; Cohen et al., 2003).

Study 2: Results

Analytic Plan

Study 2 examined the relationship between bright personality traits and dark personality traits as rated by supervisors. This was first accomplished by examining the zero-order correlations between personality variables. Multivariate regression analyses were then used to examine whether the overall set of bright personality traits was significantly predictive of the overall set of dark personality traits, as well as the extent of overlap between both sets of personality variables. A significant multivariate regression was followed up with a series of multiple regression analyses, which examined the relationships between the set of bright traits

(predictors) with each dark personality trait. Hierarchical multiple regression analyses were also used to examine whether job stress moderated the relationship between bright personality traits and dark personality. The nonlinear relationships between bright personality traits and dark personality traits were also assessed. A principal component analysis on the CPI scales was used in order to reduce the number of predictor variables to make it feasible to examine the interaction and nonlinear effects.

Another set of multiple regression analyses were conducted to examine the relationship that dark personality traits (predictor variables) have with job performance as well as with imbalanced leadership behavior (criterion variables). This set of analyses examined whether dark traits predicted job performance and how they related to imbalanced leadership behaviors. In regards to job performance, the relationship between dark traits and three measures of performance, including task performance, contextual performance, and counterproductive workplace behaviors, as well as an overall measure of job performance, were assessed. Multiple regression analyses were also used to examine whether job stress and self-awareness moderated the relationships between dark traits and job performance. The nonlinear relationships between dark personality traits and job performance were also assessed. The analyses on imbalanced leadership behavior examined the ways in which dark personality traits were related to “too little” or “too much” of four key areas of leadership.

Intercorrelations between demographic, bright traits, and supervisor-rated dark traits are provided in Table 17. Many of the bright–dark trait correlations were of small effect size and about half of the dark traits had at least some medium-sized correlations with the CPI scales (Cohen, 1988); none of the bright–dark trait correlations were of large effect size.

Table 17

Study 2 Correlations Between All Assessment Measures and Supervisor Ratings Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	—											
2. Gender	-.14	—										
3.												
Education	-.31	-.10	—									
4. Job Level	.09	-.06	.33	—								
Bright traits												
5. Do	-.06	.01	.19	.17	—							
6. Cs	.03	-.10	.12	.09	.30	—						
7. Sy	-.26	-.25	.16	.02	.41	.52	—					
8. Sp	-.25	-.13	.19	-.02	.23	.48	.70	—				
9. Sa	-.12	-.09	.14	.09	.51	.47	.54	.53	—			
10. In	-.02	.10	.33	.25	.34	.29	.10	.22	.37	—		
11. Em	-.12	-.26	.14	.08	.31	.56	.64	.57	.49	.04	—	
12. Re	.13	-.09	.20	.17	.38	.30	.28	-.03	.16	.03	.28	—
13. So	.13	-.10	.18	.16	.13	.24	.28	.00	.10	-.02	.20	.45
14. Sc	.20	.02	.06	.09	-.21	-.12	-.27	-.44	-.44	-.15	-.29	.38
15. Gi	.04	.09	.12	.04	.18	.14	.12	-.12	-.11	-.03	.07	.56
16. Cm	.10	.14	-.09	.08	.05	-.07	.17	.06	.09	.01	.05	.02
17. Wb	.03	.07	.16	.17	.19	.28	.28	.22	.09	.16	.20	.36
18. To	.08	-.15	.17	.02	.10	.32	.13	.10	-.02	.04	.33	.48
19. Ac	-.08	-.15	.22	.24	.26	.26	.42	-.02	.08	-.03	.24	.61
20. Ai	.00	-.09	.32	.10	.01	.41	.17	.28	.06	.16	.42	.37
21. Ie	.01	-.04	.13	.02	.11	.34	.23	.20	.17	.18	.22	.31
22. Py	.01	-.04	.07	.01	.09	.38	.21	.22	.17	.14	.27	.23
23. Fx	-.09	-.08	.25	-.01	-.08	.19	.05	.39	.14	.15	.37	-.03
24. Fm	-.02	-.63	.18	.02	-.10	-.02	.04	.02	-.05	-.19	.11	.16
25. WG	.14	.02	.24	.23	.15	.07	-.02	.03	.06	.24	.05	.11
Dark traits												
26. Ex	.03	-.19	-.02	.03	.00	-.09	.09	-.08	.00	-.12	-.04	.10
27. Sk	.12	-.06	-.10	.02	-.07	-.16	-.06	-.16	.01	-.07	-.20	-.06
28. Ca	.20	-.10	.00	-.05	-.25	-.25	-.07	-.14	-.17	-.29	-.05	.01
29. Rs	.03	.08	-.14	-.01	-.17	-.27	-.14	-.15	-.16	-.12	-.26	-.14
30. Le	.11	.04	-.02	-.02	-.15	-.29	-.05	-.14	-.10	-.18	-.10	-.02
31. Bo	-.05	.08	-.14	.04	-.09	-.18	-.11	-.08	-.07	-.02	-.28	-.19
32. Ms	-.01	.09	-.12	-.08	-.05	-.13	-.03	-.04	-.04	-.22	-.08	-.03
33. Co	.04	-.14	-.11	.06	.11	.16	.11	.00	.08	-.12	.11	.16
34. Im	.06	-.02	-.11	.05	.12	-.17	.00	-.01	.05	.01	-.03	.02
35. Di	.02	-.09	.04	.03	-.31	-.32	-.16	-.31	-.23	-.04	-.28	-.09
36. Dt	-.04	-.24	.05	.07	-.02	-.05	-.02	-.07	-.05	-.10	.04	.17

Variable	13	14	15	16	17	18	19	20	21	22	23	24
14. Sc	.37	–										
15. Gi	.42	.68	–									
16. Cm	.15	-.12	-.11	–								
17. Wb	.47	.37	.57	.00	–							
18. To	.13	.20	.23	-.14	.26	–						
19. Ac	.63	.31	.51	.11	.35	.18	–					
20. Ai	.15	.23	.30	-.16	.36	.61	.22	–				
21. Ie	.23	.16	.19	-.02	.35	.49	.31	.48	–			
22. Py	.16	.11	.20	-.08	.27	.50	.22	.41	.39	–		
23. Fx	-.16	-.18	-.03	-.25	.02	.30	-.22	.42	.14	.16	–	
24. Fm	.17	.13	.03	-.09	-.09	.21	.03	.17	.04	-.03	.17	–
25. WG	-.02	.00	-.14	.12	.07	.24	.05	.31	.26	.14	.06	-.08
Dark traits												
26. Ex	.03	.11	.19	.09	-.10	.00	.16	.06	-.13	.09	-.14	.17
27. Sk	-.08	-.01	-.01	.16	-.16	-.19	.01	-.04	-.18	-.02	-.20	.05
28. Ca	.04	.14	.05	.05	-.18	.06	-.01	.07	-.08	-.11	.03	.22
29. Rs	-.01	.06	.06	.09	-.11	-.15	-.05	-.08	-.17	-.01	-.14	-.02
30. Le	.06	.09	.04	.13	-.12	-.11	-.05	-.06	-.23	-.15	-.11	.10
31. Bo	-.18	-.03	-.08	.08	-.17	-.27	-.16	-.09	-.28	-.06	-.19	-.03
32. Ms	.05	.09	.11	-.17	-.06	-.02	-.03	.01	-.08	-.12	-.02	.02
33. Co	.12	.12	.19	-.03	.01	-.01	.12	.07	-.02	-.05	-.05	.20
34. Im	-.05	.02	.04	.04	-.02	-.03	-.09	-.04	-.09	-.08	-.08	.09
35. Di	-.05	.19	.06	.10	-.14	-.11	.03	-.08	-.03	-.08	-.14	.09
36. Dt	.03	.10	.10	-.18	-.12	.05	.04	.01	-.17	-.10	.17	.21

Variable	25	26	27	28	29	30	31	32	33	34	35
Dark traits											
26. Ex	-.02	–									
27. Sk	.04	.77	–								
28. Ca	-.28	.40	.22	–							
29. Rs	-.22	.50	.61	.51	–						
30. Le	-.22	.53	.50	.73	.75	–					
31. Bo	-.05	.47	.69	.12	.58	.39	–				
32. Ms	-.12	.38	.33	.35	.40	.48	.33	–			
33. Co	.00	.46	.31	.11	.04	.16	.28	.52	–		
34. Im	.02	.47	.35	.18	.36	.37	.40	.59	.44	–	
35. Di	-.09	.46	.50	.36	.43	.42	.34	.17	.00	.21	–
36. Dt	-.16	.02	-.25	.40	-.01	.11	-.24	.02	.06	-.09	.03

Note. For significance testing of specific relationships with the Study 2 sample of $N = 113$, an $|r| \geq .19$ would be significant at $p < .05$. However, if a researcher were rather concerned with an exploratory examination of the entire matrix of 630 correlations, then it would be necessary to control the family-wise error rate and use a Bonferroni-adjusted alpha level of approximately .0001, in which case an $|r| \geq .36$ would be statistically significant.

Gender coded: Female = 1, Male = 2. Education coded: 1 = Some High School, 2 = High School, 3 = Some College/University, 4 = Bachelor Degree, 5 = Graduate Degree/Professional. Job level coded: 1 = Frontline Supervisor, 2 = Middle Manager, 3 = Executive.

Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking, Ex = Excitable, Sk = Skeptical, Ca = Cautious, Rs = Reserved, Le = Leisurely, Bo = Bold, Ms = Mischievous, Co = Colorful, Im = Imaginative, Di = Diligent, Dt = Dutiful.

Critical thinking ability was found to have significant negative correlations to only three moving-away dark traits (Cautious, Reserved, and Leisurely) and was not significantly related to any of the others. On the other hand, some of the CPI scales showed meaningful correlations with most of the dark traits, usually in the negative direction, and the broad patterns of correlations are discussed by the three groups of dark traits.

The moving-away dark traits (Excitable, Skeptical, Cautious, Reserved, and Leisurely), in general, had the strongest relationships (which were in a negative direction) with CPI scales related to social dominance, assertiveness, and being empathic.

In terms of the moving-against dark traits (Bold, Mischievous, Colorful, Imaginative), most of the meaningful relationships were confined to the Bold dark trait and only a few were found with the other dark traits. The Bold dark trait had the strongest relationships with CPI scales related to a lack of empathy, being distrustful of and hostile toward others, being careless and self-centered, lacking in motivation or ability for intellectual pursuits, and being conservative and disliking change.

In terms of the two moving-toward dark traits (Diligent and Dutiful), almost all of the meaningful relationships concerned the Diligent trait. The Diligent trait had the strongest relationships, in a negative direction, with CPI scales related to social dominance, self-confidence, extraversion, and being empathic toward others, as well as a positive relationship with self-control.

Using Bright Traits to Predict Supervisor-Rated Dark Traits

In terms of predicting supervisor-rated dark personality traits from bright traits, data analysis was conducted in two stages. A multivariate multiple regression analysis was first conducted with the set of bright-trait variables as the predictors and the 11 supervisor-rated dark-side traits as the criterion variables, followed by multiple regression analyses predicting each dark trait. Multivariate analyses demonstrated that the set of bright traits accounted for a significant and very large overall proportion of variance of dark personality traits: Pillai's Trace = 2.46, $F(11, 81) = 1.25$, $p = .013$, $\eta^2 = .90$. These analyses were then followed up with multiple regression analyses to interpret the relationships between bright- and dark-trait variables.

For the multiple regression analyses, the 21 bright-trait variables were entered as the predictor variables in Step 1 of the regression and the dark trait was entered as the criterion variable for each of the regressions. The overall regression models were significant ($p < .05$) for most of the moving-away dark traits, including Excitable, Skeptical, Cautious, and (marginally significant for) Leisurely ($p = .07$) dark traits, but not for the Reserved dark trait ($p = .14$). The Bold moving-against dark trait was marginally significant ($p = .06$) and the moving-toward Diligent dark trait was significant ($p < .05$). The bright traits predicted between 27% (Leisurely) and 34% (Cautious) of the variance of these six dark traits, with an average R^2 of .30 across the six regressions. The standardized beta coefficients for the six significant and marginally

significant regression models were then examined to gain an understanding of the direction and strength of the relationship between each bright and dark trait. Each of the six dark traits examined had between two (Skeptical) and five (Excitable) significant predictors based on the standardized beta coefficients.

The regressions for predicting the dark traits related to moving-away interpersonal tendencies are reported in Table 18. The overall model for four of the five moving-away darks traits was significant. Each of these dark traits was predicted by a positive relationship with the Achievement via Independence scale, which is related to taking independent initiative and being achievement-oriented in an independent-minded way, but also being questioning of conventional advice or resisting rules or authority (Groth-Marnat, 2009). In addition to this CPI scale, each of the moving-away dark traits was predicted by at least one or more of the bright traits. The Excitable dark trait was significantly negatively associated with the Intellectual Efficiency and Wellbeing scales, as well as positively related to the Good Impression and Femininity/Masculinity scales. This suggests that the Excitable dark trait is related to a lack of motivation or ability for intellectual pursuits and a general lack of adjustment and/or tendency to complain, as well as being sensitive and high-strung and concerned about trying to please others. The Skeptical dark trait was significantly negatively related to Empathy, suggesting being distrustful or withdrawn from others' feelings. The Cautious dark trait was negatively related to the Capacity for Status and Wellbeing scales as well as critical thinking ability. This suggests that such individuals are less ambitious and less psychologically adjusted, as well as less able to think critically and intelligently problem-solve. The Leisurely dark trait was significantly predicted by a negative relationship with the Capacity for Status scale, reflecting a lack of being socially ascendant and ambitious.

Table 18

Study 2 Regression Results for Bright Traits Predicting Supervisor Ratings of Moving-Away Dark Traits

Bright Traits	Moving-Away Dark Traits														
	Excitable			Skeptical			Cautious			Reserved			Leisurely		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Do	-.08	.04	-0.64	-.13	.03	-0.97	-.10	.03	-0.79	-.07	.03	-0.52	-.09	.03	-0.71
Cs	-.16	.05	-1.22	-.08	.04	-0.60	-.31	.04	-2.48	-.24	.04	-1.77	-.37	.04	-2.83
Sy	.36	.05	1.90	.28	.04	1.51	.23	.03	1.30	.15	.04	0.79	.33	.04	1.76
Sp	-.20	.05	-1.10	-.32	.04	-1.81	-.14	.04	-0.78	-.09	.04	-0.49	-.20	.04	-1.11
Sa	.21	.05	1.47	.26	.05	1.85	.12	.04	0.91	.07	.04	0.47	.14	.04	0.98
In	-.06	.04	-0.54	-.09	.04	-0.81	-.12	.03	-1.06	-.04	.04	-0.37	-.03	.04	-0.25
Em	-.22	.03	-1.43	-.36	.03	-2.37	-.07	.03	-0.49	-.32	.03	-2.01	-.09	.03	-0.55
Re	-.11	.04	-0.76	-.06	.03	-0.37	-.06	.03	-0.39	-.12	.03	-0.77	.03	.03	0.17
So	-.07	.03	-0.55	-.10	.03	-0.71	.14	.02	1.05	.14	.02	1.04	.21	.02	1.52
Sc	-.13	.04	-0.71	-.28	.03	-1.55	.09	.03	0.51	-.23	.03	-1.24	-.02	.03	-0.12
Gi	.44	.03	2.52	.30	.03	1.67	.04	.02	0.22	.28	.03	1.53	.10	.03	0.58
Cm	.10	.05	1.02	.15	.05	1.54	.12	.04	1.27	.12	.05	1.17	.11	.04	1.12
Wb	-.27	.05	-2.06	-.12	.04	-0.91	-.27	.04	-2.13	-.16	.04	-1.19	-.17	.04	-1.24
To	.00	.04	-0.02	-.20	.04	-1.36	.18	.03	1.26	-.04	.04	-0.25	.02	.04	0.13
Ac	.04	.04	0.27	-.02	.03	-0.13	-.07	.03	-0.44	-.10	.03	-0.60	-.24	.03	-1.50

Bright Traits	Moving-Away Dark Traits														
	Excitable			Skeptical			Cautious			Reserved			Leisurely		
	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t
Ai	.30	.04	2.03	.42	.03	2.77	.36	.03	2.51	.36	.03	2.32	.37	.03	2.44
Ie	-.24	.03	-2.06	-.19	.03	-1.62	-.05	.03	-0.42	-.11	.03	-0.95	-.18	.03	-1.55
Py	.18	.04	1.58	.16	.04	1.41	-.09	.03	-0.86	.16	.03	1.39	-.03	.03	-0.23
Fx	-.13	.03	-1.06	-.14	.03	-1.07	.04	.03	0.31	-.09	.03	-0.72	-.07	.03	-0.55
Fm	.18	.03	1.71	.14	.02	1.35	.02	.02	0.16	-.04	.02	-0.37	-.02	.02	-0.16
WG	.07	.01	0.67	.11	.01	0.97	-.32	.01	-3.05	-.20	.01	-1.81	-.21	.01	-1.93
$R^2 = .29$			$R^2 = .28$			$R^2 = .34$			$R^2 = .25$			$R^2 = .27$			
$F(21, 91) = 1.78$			$F(21, 91) = 1.71$			$F(21, 91) = 2.19$			$F(21, 91) = 1.41$			$F(21, 91) = 1.60$			
$p < .05$			$p < .05$			$p < .01$			$p = .14$			$p = .07$			

Note. N = 113. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 91$). Bolded coefficients are significant ($p < .05$).

Bright traits: Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

The regressions for predicting dark traits related to moving-against interpersonal tendencies are reported in Table 19. The only overall regression model that was at least marginally significant was the Bold dark trait and therefore this is the only moving-against dark trait for which the standardized betas are interpreted. The Bold dark trait was significantly positively related to the Achievement via Independence scale, suggesting an individual who is achievement-oriented in an independent-minded way and may be resistant toward authority or rules. This dark trait was also significantly negatively related to the Intellectual Efficiency and Empathy scales, suggesting a lack of understanding for others' feelings as well as lack of motivation or ability for intellectual pursuits.

The regressions for predicting dark traits related to moving-toward interpersonal tendencies are reported in Table 20. Of these two traits, only the overall regression model for predicting the Diligent trait was significant. The Diligent dark trait was significantly positively related to the Sociability scale, suggesting an individual who is social and involved with others. However, this trait was also negatively related to the Dominance, Capacity for Status, and Social Presence scales, suggesting a personality that is cautious, risk-averse, and not socially confident or ascendant.

Table 19

Study 2 Regression Results for Bright Traits Predicting Moving-Against Dark Traits

Bright Traits	Moving-Against Dark Traits											
	Bold			Mischievous			Colorful			Imaginative		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Do	.00	.03	-0.01	.01	.02	0.09	.09	.03	0.66	.12	.03	0.81
Cs	-.05	.04	-0.37	-.17	.03	-1.21	.24	.03	1.76	-.29	.04	-2.04
Sy	.20	.04	1.08	.14	.03	0.68	.08	.03	0.40	.06	.03	0.27
Sp	-.05	.04	-0.29	.05	.03	0.28	-.09	.03	-0.47	.08	.03	0.38
Sa	.09	.04	0.59	.21	.03	1.43	.09	.04	0.60	.13	.04	0.80
In	-.03	.03	-0.28	-.25	.03	-2.08	-.18	.03	-1.51	.03	.03	0.23
Em	-.40	.03	-2.57	-.20	.02	-1.24	-.02	.02	-0.11	.05	.02	0.27
Re	-.02	.03	-0.16	-.15	.02	-0.93	-.03	.03	-0.17	.02	.03	0.10
So	-.07	.02	-0.51	.26	.02	1.82	.02	.02	0.13	-.02	.02	-0.15
Sc	-.12	.03	-0.65	-.05	.02	-0.28	.04	.03	0.21	.07	.03	0.33
Gi	.13	.02	0.71	.30	.02	1.61	.27	.02	1.42	.15	.02	0.74
Cm	.08	.04	0.84	-.19	.03	-1.77	-.01	.04	-0.06	.01	.04	0.06
Wb	-.10	.04	-0.77	-.24	.03	-1.70	-.14	.04	-0.99	-.05	.04	-0.31
To	-.24	.03	-1.61	.14	.03	0.90	-.13	.03	-0.84	.03	.03	0.18
Ac	-.15	.03	-0.93	-.17	.02	-1.01	-.10	.03	-0.59	-.20	.03	-1.17

Moving-Against Dark Traits												
Bright Traits	Bold			Mischievous			Colorful			Imaginative		
	β	SE	t	β	SE	t	β	SE	t	β	SE	t
Ai	.44	.03	2.92	.24	.02	1.50	.10	.03	0.62	.08	.03	0.48
Ie	-.26	.03	-2.20	-.04	.02	-0.35	-.05	.02	-0.40	-.06	.02	-0.49
Py	.16	.03	1.43	-.16	.02	-1.35	-.08	.03	-0.68	-.02	.03	-0.18
Fx	-.18	.03	-1.45	-.06	.02	-0.47	-.06	.02	-0.43	-.17	.02	-1.19
Fm	.05	.02	0.50	-.12	.02	-1.12	.20	.02	1.79	.10	.02	0.90
WG	-.02	.01	-0.15	-.02	.01	-0.20	.11	.01	0.93	.04	.01	0.30
$R^2 = .28$			$R^2 = .20$			$R^2 = .18$			$R^2 = .12$			
$F(21, 91) = 1.65$			$F(21, 91) = 1.08$			$F(21, 91) = 0.96$			$F(21, 91) = 0.61$			
$p = .06$			$p = .39$			$p = .52$			$p = .90$			

Note. N = 113. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 91$). Bolded coefficients are significant ($p < .05$).

Bright traits: Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

Table 20

Study 2 Regression Results for Bright Traits Predicting Supervisor Ratings of Moving-Toward Dark Traits

Bright Traits	Moving-Toward Dark Traits					
	Diligent			Dutiful		
	β	SE	<i>t</i>	β	SE	<i>t</i>
Do	-.36	.02	-2.82	.00	.02	0.02
Cs	-.27	.03	-2.18	-.06	.03	-0.44
Sy	.40	.03	2.17	.11	.03	0.57
Sp	-.42	.03	-2.42	-.04	.03	-0.22
Sa	.07	.03	0.52	.02	.04	0.14
In	.21	.03	1.90	.01	.03	0.11
Em	-.11	.02	-0.74	.01	.02	0.04
Re	-.08	.02	-0.57	.21	.02	1.35
So	-.11	.02	-0.81	.03	.02	0.24
Sc	-.05	.02	-0.29	.17	.02	0.90
Gi	.21	.02	1.20	-.04	.02	-0.22
Cm	.11	.04	1.17	-.13	.04	-1.21
Wb	-.13	.03	-1.00	-.18	.03	-1.28
To	-.06	.03	-0.39	.05	.03	0.30
Ac	.06	.03	0.37	.03	.03	0.17
Ai	.12	.02	0.84	-.02	.02	-0.14
Ie	.08	.02	0.70	-.21	.02	-1.70
Py	.05	.03	0.48	-.08	.03	-0.70
Fx	-.02	.02	-0.13	.24	.02	1.79

Moving-Toward Dark Traits						
Bright Traits	Diligent			Dutiful		
	β	SE	<i>t</i>	β	SE	<i>t</i>
Fm	.11	.02	1.11	.07	.02	0.63
WG	-.06	.01	-0.53	-.11	.01	-1.00
$R^2 = .32$			$R^2 = .21$			
R^2	$F(21, 91) = 2.08$		$F(21, 91) = 1.18$		$p = .29$	
	$p < .01$					

Note. $N = 113$. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 91$). Bolded coefficients are significant ($p < .05$).

Bright traits: Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

The Principal Components of CPI Scales

A principal component analysis was conducted on the set of bright traits in order to reduce the amount of predictor variables for moderation and quadratic regression analyses. In a similar manner to Study 1, the Communalism scale was excluded because of its lack of optimal sampling adequacy (Field, 2013) and critical thinking ability was excluded because of its lack of relevance to dark traits and to maintain the same factor structure as in Study 1 and past research. The principal component analysis on the 19 CPI scales was run using an oblique rotation (direct oblimin). The sampling adequacy for the analysis was verified using the Kaiser-Meyer-Olkin measure, $KMO = .77$, and all KMO values for individual scales were greater than .52, which is above the acceptable threshold of .50 (Field, 2013). An examination of the scree plot and the eigenvalues found four factors over Kaiser's recommended criterion of 1 (the fifth factor had an

eigenvalue of 1.02 and was not included; Field, 2013). The four factors explained 63.4% of the variance of the set of bright traits.

The results of the principal component analysis are reported in Table 21. The general factor structure is similar to that found in Study 1 and past research (Deniston & Ramanaiah, 1993; Johnson, 2000; McCrae et al., 1993; Soto & John, 2009). The scales that cluster on Factor 1 are related to sociability, self-confidence, social confidence, and empathy, and this factor appears to correspond to extraversion (i.e., CPI extraversion). Factor 2 is represented by scales related to being responsible, following rules, wanting to please others, self-control, and being driven to succeed with a preference for structure and rules, and this factor appears to correspond to conscientiousness (i.e., CPI conscientiousness). Factor 3 is related to scales associated with being achievement-oriented in an independent-minded manner, a preference for change, an open and nonjudgmental attitude toward others, being intellectual and perceptive about others' feelings and motives; this factor appears to correspond to openness to experience (i.e., CPI openness to experience). Factor 4 is related to being sensitive, high-strung, dependent on others, and lacking in wellbeing; this factor appears to correspond to neuroticism (i.e., CPI neuroticism).

Table 21

Summary of Principal Components Analysis for the CPI Scales (N = 113)

CPI Scale	Rotated Component Loadings			
	CPI Extraversion	CPI Conscientiousness	CPI Openness to Experience	CPI Neuroticism
Social Presence	.88	-.10	.12	-.12
Sociability	.85	.30	-.11	.06
Empathy	.74	.05	.23	.23
Self-Acceptance	.59	-.13	-.03	-.11

CPI Scale	Rotated Component Loadings			
	CPI Extraversion	CPI Conscientiousness	CPI Openness to Experience	CPI Neuroticism
Capacity Status	.52	.13	.33	-.11
Socialization	.19	.77	-.09	.12
Good Impression	-.15	.76	.20	-.06
Ach via Conformance	.14	.76	-.05	.14
Wellbeing	.19	.67	.23	-.38
Self-Control	-.53	.65	.23	.01
Responsibility	-.09	.50	.31	.30
Tolerance	-.12	.01	.83	.26
Ach via Independence	.09	.10	.81	.07
Intellectual Efficiency	.03	.17	.60	-.11
Psych'l Mindedness	.08	.10	.60	-.16
Flexibility	.26	-.39	.59	.11
Femininity/Masculinity	.03	-.04	.18	.78
Independence	-.04	-.23	.30	-.54
Dominance	.17	.07	-.05	-.07
Eigenvalues	5.23	3.37	2.05	1.40
% of variance	27.5%	17.7%	10.8%	7.3%

Note. Scales are ordered by their primary loadings. Component loadings over .35 appear in bold. Psych'l Mindedness = Psychological Mindedness; Ach via Independence = Achievement via Independence; Ach via Conformance = Achievement via Conformance

The correlations between dark traits and the CPI principal components are listed in Table 22. The three broad groups of dark traits show meaningful patterns of correlations with the bright traits factors that align with the theory related to their particular interpersonal styles (Hogan & Hogan, 1997, 2001), although many of these correlations do not reach statistical significance. The moving-away dark traits as a group tend to be negatively related to CPI extraversion and CPI openness to experience, as well as positively related to CPI neuroticism and unrelated to CPI

conscientiousness. In terms of the moving-against dark traits, only a couple of dark traits show significant relationships: the Bold dark trait was negatively related to CPI openness to experience and the Colorful dark trait was positively related to CPI neuroticism. In terms of the moving-toward dark traits, Diligent was negatively related to CPI extraversion and Dutiful was positively related to CPI neuroticism.

Table 22

Correlations Between Bright-Trait Principal Components and Dark Traits

Dark Traits	CPI Bright-Trait Principal Components			
	CPI Extraversion	CPI Conscientiousness	CPI Openness to Experience	CPI Neuroticism
Excitable	-.06	.13	-.04	.20
Skeptical	-.14	-.04	-.18	.06
Cautious	-.15	.02	-.03	.35
Reserved	-.20	.00	-.17	.00
Leisurely	-.14	.03	-.19	.19
Bold	-.15	-.14	-.23	-.07
Mischiefous	-.06	.05	-.08	.12
Colorful	.07	.16	.00	.21
Imaginative	-.05	-.03	-.08	.06
Diligent	-.32	.03	-.12	.08
Dutiful	-.05	.02	.01	.29
Overall dark-trait composite	-.18	.03	-.16	.22

Note. N = 113. All correlations > .18 significant at p < .05, > .24 at p < .01.

Nonlinear Relationships Between Bright and Dark Personality Traits

The nonlinear relationships between bright and dark traits were examined. To accomplish this the four CPI factors as well as an overall dark-trait composite (consisting of the

sum of the 11 standardized dark trait variables) were used (the same as in Study 1) in order to avoid inflating Type I error rates (Field, 2013). Four hierarchical multiple regressions were conducted, each one with one of the four CPI factors entered in Step 1 (linear term) and the same CPI factor squared entered in Step 2 (nonlinear term). The overall dark-trait composite was entered as the criterion variable. The overall regression models were not significant for any of the four regressions and the R^2 effect sizes were small, ranging from .00 (CPI conscientiousness) to .05 (CPI neuroticism). Likewise, none of the (Step 2) nonlinear effects were significant and only the CPI extraversion and CPI neuroticism factors had significant or marginally significant linear relationships (Step 1). The regression coefficients are reported in Table 23.

Table 23

Regression Results for Nonlinear Relationships Between Bright and Dark Traits

Predictor	Dark-Traits Composite		
	β	SE	<i>t</i>
Extraversion			
Extraversion	-.18	.64	-1.92
Step 1 Model R^2	$R^2 = .03, F(1, 111) = 3.70, p = .06$		
Extraversion Squared	-.06	.50	-0.63
Step 2 Model ΔR^2	$R^2 = .00, F(1, 110) = 0.40, p = .53$		
Full Model R^2	$R^2 = .04, F(2, 110) = 2.04, p = .14$		
Conscientiousness			
Conscientiousness	.03	.65	0.36
Step 1 Model R^2	$R^2 = .00, F(1, 111) = 0.13, p = .72$		
Conscientiousness Squared	.09	.52	0.95
Step 2 Model ΔR^2	$R^2 = .00, F(1, 110) = 0.90, p = .35$		
Full Model R^2	$R^2 = .00, F(2, 110) = 0.52, p = .60$		

Predictor	Dark-Traits Composite		
	β	SE	<i>t</i>
Openness to Experience			
Openness to Experience	-.16	.64	-1.75
Step 1 Model R^2	$R^2 = .03, F(1, 111) = 3.05, p = .08$		
Openness to Experience Squared	-.05	.39	-0.53
Step 2 Model ΔR^2	$R^2 = .00, F(1, 110) = 0.28, p = .60$		
Full model R^2	$R^2 = .03, F(2, 110) = 1.66, p = .20$		
Neuroticism			
Neuroticism	.22	.64	2.33
Step 1 Model R^2	$R^2 = .05, F(1, 111) = 5.42, p = .02$		
Neuroticism Squared	-.02	.37	-.16
Step 2 Model ΔR^2	$R^2 = .00, F(1, 110) = 0.03, p = .87$		
Full model R^2	$R^2 = .05, F(2, 110) = 2.70, p = .07$		

Note. $N = 113$. β = standardized regression coefficient; SE = Standard Error; *t* = t-value from tests of significance (with $df = 110$). Bolded coefficients are significant ($p < .05$).

Job Stress as a Moderator

It was hypothesized that job stress may moderate the bright–dark trait relationship.

Although bright traits are considered to represent an individual's behavior when they are performing under optimal conditions, dark traits are theorized to manifest when an individual is experiencing stress and the latter is considered to influence the extent to which adaptive bright traits manifest as maladaptive dark-trait tendencies (Hogan & Hogan, 2001, 2007; Wille et al., 2013).

The zero-order correlations between job stress, bright, and dark traits are listed in Table 24. Job stress was found to be significantly correlated with all of the dark traits with the exception of the Dutiful dark trait. However, job stress was not found to be significantly related to most CPI scales. The only exceptions to this were a significant positive relationship with the Good Impression scale, marginally significant negative relationships with the Capacity for Status

and Sociability scales, and a marginally significant positive relationship with the Femininity/Masculinity scale.

Table 24

Correlations Between Job Stress and Bright and Dark Personality Traits

Dark Traits	Job Stress	Bright Traits	Job Stress	Bright Traits	Job Stress
Excitable	.54	Do	-.06	Cm	.00
Skeptical	.42	Cs	-.17	Wb	-.05
Cautious	.39	Sy	-.12	To	.03
Reserved	.44	Sp	-.17	Ac	-.04
Leisurely	.49	Sa	.01	Ai	.07
Bold	.23	In	.01	Ie	-.06
Mischiefous	.40	Em	-.12	Py	.07
Colorful	.23	Re	.13	Fx	.06
Imaginative	.43	So	-.06	Fm	.16
Diligent	.46	Sc	.15	WG	-.10
Dutiful	.14	Gi	.19		

Note. N = 113. All correlations > .18 significant at $p < .05$, > .24 at $p < .01$.

Do = Dominance, Cs = Capacity for Status, Sy = Sociability, Sp = Social Presence, Sa = Self-Acceptance, In = Independence, Em = Empathy, Re = Responsibility, So = Socialization, Sc = Self-Control, Gi = Good Impression, Cm = Communalism, Wb = Wellbeing, To = Tolerance, Ac = Achievement via Conformance, Ai = Achievement via Independence, Ie = Intellectual Efficiency, Py = Psychological Mindedness, Fx = Flexibility, Fm = Femininity/Masculinity, WG = Watson-Glaser Test of Critical Thinking.

The hypothesis that stress moderates the bright–dark trait relationship was examined using a series of hierarchical regression analyses. These analyses used the CPI factors and the overall dark traits composite, as opposed to all of the individual scales, in order to avoid conducting an excessive number of regressions (Field, 2013). Four regressions were conducted and the predictors were mean-centered for the analyses (Field, 2013). For each regression, the CPI factor was entered in Step 1, job stress was entered in Step 2, and their cross-product term entered in Step 3. This was done to examine both whether job stress influences dark traits above

and beyond bright traits, and whether job stress moderates the bright–dark trait relationship. The regression results are listed in Table 25.

The four overall regression models were all significant, with R^2 's ranging from .37 (CPI extraversion, CPI conscientiousness) to .42 (CPI openness to experience). However, the interaction term was not significant for any of the four regressions and the moderation analyses failed to support job stress as a moderator. Although job stress was not found to moderate the bright–dark trait relationship, job stress was found to be significantly negatively predictive of overall dark personality traits above and beyond all four bright trait factors.

Table 25

Regression Results for Bright Traits, Job Stress, and their Interaction Predicting Dark Traits

Predictor	Dark-Traits Composite		
	β	SE	<i>t</i>
Extraversion			
Extraversion	-.18	.64	-1.92
Step 1 Model R^2	$R^2 = .03, F(1, 111) = 3.70, p = .06$		
Job Stress	.59	.79	7.73
Step 2 Model ΔR^2	$R^2 = .34, F(1, 110) = 59.68, p < .001$		
Extraversion \times Job Stress	-.01	.70	-0.15
Step 3 Model ΔR^2	$R^2 = .00, F(1, 109) = 0.02, p = .88$		
Full Model R^2	$R^2 = .37, F(1, 109) = 21.59, p < .001$		
Conscientiousness			
Conscientiousness	.03	.65	0.36
Step 1 Model R^2	$R^2 = .00, F(1, 111) = 0.13, p = .72$		
Job Stress	.61	.78	7.99
Step 2 Model ΔR^2	$R^2 = .37, F(1, 110) = 63.85, p < .001$		

Predictor	Dark-Traits Composite		
	β	SE	<i>t</i>
Conscientiousness \times Job Stress	.04	.90	0.52
Step 3 Model ΔR^2	$R^2 = .00, F(1, 109) = 0.27, p = .61$		
Full Model R^2	$R^2 = .37, F(3, 109) = 21.30, p < .001$		
Openness to Experience			
Openness to Experience	-.16	.64	-1.75
Step 1 Model R^2	$R^2 = .03, F(1, 111) = 3.05, p = .08$		
Job Stress	.62	.75	8.50
Step 2 Model ΔR^2	$R^2 = .38, F(1, 110) = 71.56, p < .001$		
Openness \times Job Stress	-.07	.81	-0.90
Step 3 Model ΔR^2	$R^2 = .00, F(1, 109) = 0.81, p = .37$		
Full model R^2	$R^2 = .42, F(3, 109) = 25.74, p < .001$		
Neuroticism			
Neuroticism	.22	.64	2.33
Step 1 Model R^2	$R^2 = .05, F(1, 111) = 5.42, p = .02$		
Job Stress	.59	.77	7.86
Step 2 Model ΔR^2	$R^2 = .34, F(1, 110) = 61.82, p < .001$		
Neuroticism \times Job Stress	-.11	.83	-1.48
Step 3 Model ΔR^2	$R^2 = .01, F(1, 109) = 2.20, p = .14$		
Full model R^2	$R^2 = .40, F(3, 109) = 24.39, p < .001$		

Note. $N = 113$. β = standardized regression coefficient; SE = Standard Error; *t* = t-value from tests of significance (with $df = 109$). Bolded coefficients are significant ($p < .05$).

Dark Personality Traits and Job Performance

The relationship between dark personality traits and job performance was first assessed by examining the zero-order correlations between dark personality traits and three measures of job performance (i.e., task performance, contextual performance, and counterproductive

workplace behaviors), as well as overall job performance (listed in Table 26). Overall job performance was significantly negatively related to all dark personality traits with the exception of the Dutiful trait; most of these relationships are characterized by large effect sizes. In terms of the specific measures of job performance, all dark traits show significant negative relationships with task performance and contextual performance as well as significant positive relationships with counterproductive workplace behavior. The only exceptions to this were the Colorful dark trait that was not significantly related to task performance and the Dutiful dark trait that was not related to any of the measures of job performance.

Table 26

Correlations Between Dark Personality Traits and Supervisor-Rated Job Performance

Dark Personality Traits	Job Performance			
	Task	Contextual	Counter-productive	Overall
Excitable	-.36	-.51	.49	-.53
Skeptical	-.20	-.52	.43	-.45
Cautious	-.41	-.52	.49	-.56
Reserved	-.39	-.78	.62	-.70
Leisurely	-.53	-.67	.56	-.69
Bold	-.23	-.60	.41	-.49
Mischiefous	-.39	-.48	.48	-.53
Colorful	-.12	-.19	.23	-.21
Imaginative	-.24	-.42	.44	-.43
Diligent	-.31	-.43	.41	-.45
Dutiful	-.04	-.07	.02	-.05

Note: N = 113. All correlations > .18 significant at $p < .05$, > .24 at $p < .01$.

Four sets of multiple regression analyses were used to assess the ability of dark personality traits to predict the three forms of job performance as well as the overall measure of

job performance. These analyses controlled for the influence of demographic variables (i.e., age, gender, education, and job level) on job performance. The demographic variables were entered in Step 1 of the regression and the set of dark traits was entered in Step 2. These analyses examined the overall predictive power of dark traits to predict job performance, above and beyond demographic variables, and the regression coefficients indicate the direction and strength of relationship between each of the dark traits and the different types of job performance. The regression coefficients are listed in Table 27.

The overall regression model was significant for all four sets of regressions. In each of the regressions, the Step 1 regression model was not significant ($p > .20$), suggesting that demographic variables were unrelated to job performance. The Step 2 regression model, on the other hand, was found to be significant ($p < .001$) for each of the measures of job performance. The dark traits significantly predicted each of the measures of job performance. They predicted between 39% (task performance) and 71% (contextual performance) of the variance of job performance measures, and predicted 68% of the variance of overall job performance. An examination of the standardized beta coefficients reveals that the dark traits were related to poorer job performance (positively related to counterproductive workplace behavior and negatively related to the other three measures of job performance). There was one unexpected exception to this, however, in which the Skeptical dark trait was positively related to task performance and overall performance.

Table 27

Study 2 Regression Results for Dark Traits Predicting Job Performance

	Job Performance											
	Task			Contextual			Counterproductive			Overall		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Step 1												
Age	.10	.00	0.93	-.02	.01	-0.19	.02	.00	0.20	.04	.03	0.36
Gender	-.11	.07	-1.12	-.10	.18	-0.97	-.07	.06	-0.74	-.11	.71	-1.11
Education	-.05	.03	-0.47	.04	.09	0.33	-.02	.03	-0.16	-.01	.34	-0.12
Job Level	.18	.05	1.72	.07	.13	0.68	.07	.04	0.64	.12	.51	1.18
Step 1 R^2	$R^2 = .05$			$R^2 = .02$			$R^2 = .01$			$R^2 = .03$		
	$F(4, 105) = 1.48$			$F(4, 105) = 0.53$			$F(4, 105) = 0.27$			$F(4, 105) = 0.79$		
	$p = .21$			$p = .71$			$p = .89$			$p = .54$		
Step 2												
Excitable	-.45	.05	-2.86	-.13	.08	-1.21	.15	.03	1.07	-.29	.33	-2.49
Skeptical	.56	.06	3.02	.20	.10	1.56	-.12	.04	-0.72	.35	.44	2.55
Cautious	.01	.05	0.09	-.08	.09	-0.83	.26	.04	2.05	-.13	.38	-1.22
Reserved	.00	.05	0.01	-.52	.09	-5.01	.48	.04	3.70	-.39	.39	-3.60
Leisurely	-.43	.06	-2.72	.00	.10	-0.02	-.19	.04	-1.40	-.09	.41	-0.82
Bold	-.13	.05	-1.09	-.32	.08	-3.73	.01	.03	0.08	-.18	.33	-2.03

	Job Performance											
	Task			Contextual			Counterproductive			Overall		
	β	SE	t	β	SE	t	β	SE	t	β	SE	t
Step 2 (cont'd)												
Mischievous	-.18	.07	-1.50	-.12	.11	-1.37	.10	.05	0.92	-.16	.46	-1.75
Colorful	.04	.05	0.31	-.03	.08	-0.37	.11	.04	1.14	-.04	.35	-0.50
Imaginative	.10	.05	0.86	-.02	.08	-0.26	.17	.04	1.75	-.04	.35	-0.45
Diligent	-.17	.04	-1.72	-.09	.07	-1.36	.15	.03	1.80	-.16	.31	-2.27
Dutiful	.10	.05	0.99	-.08	.08	-1.20	-.05	.03	-0.52	.02	.33	0.32
Step 2 ΔR^2			$R^2 = .39$ $F(11, 94) = 5.91$ $p < .001$	$R^2 = .71$ $F(11, 94) = 22.54$ $p < .001$			$R^2 = .57$ $F(11, 94) = 11.56$ $p < .001$			$R^2 = .68$ $F(11, 94) = 19.52$ $p < .001$		
Full model R^2			$R^2 = .44$ $F(15, 94) = 4.94$ $p < .001$	$R^2 = .73$ $F(15, 94) = 16.99$ $p < .001$			$R^2 = .58$ $F(15, 94) = 8.63$ $p < .001$			$R^2 = .70$ $F(15, 94) = 14.93$ $p < .001$		

Note. N = 113. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 97$). Bolded coefficients are significant ($p < .05$).

Gender coded: Female = 1, Male = 2. Education coded: 1 = Some High School, 2 = High School, 3 = Some College/University, 4 = Bachelor Degree, 5 = Graduate Degree/Professional. Job level coded: 1 = Frontline Supervisor, 2 = Middle Manager, 3 = Executive.

The majority of the dark traits that were significantly related to job performance were moving-away dark traits. The Excitable and Leisurely dark traits were negatively related to task performance, whereas the Skeptical dark trait was positively related to this measure of job performance. Only the Reserved dark trait was significantly related to contextual performance. In terms of counterproductive workplace behavior, Cautious and Reserved dark traits were significantly positively related to these types of unhelpful and harmful workplace behaviors. The Excitable and Reserved dark traits were negatively related to overall job performance, whereas the Skeptical dark trait was positively related to this overall measure of workplace performance. In addition to the moving-away dark traits, there was one moving-against and one moving-toward dark traits that were also related to job performance. In terms of the former, the Bold dark trait was negatively related to contextual behavior. In terms of the moving-toward dark traits, only the Diligent dark trait was significantly negatively related to overall job performance.

Nonlinear Relationships Between Dark Traits and Job Performance

The nonlinear relationships between dark traits and job performance were examined using a power polynomial approach in which three hierarchical multiple regression analyses were conducted between the overall dark traits composite and the three measures of job performance (Aiken & West, 1991; Cohen et al., 2003). The overall dark-trait composite score was standardized in order to minimize multicollinearity (Aiken & West, 1991; Dalal & Zickar, 2012) and this standardized score was squared to calculate the quadratic term. For each of the analyses, the standardized dark-trait composite was entered in Step 1 and its quadratic term was entered in Step 2.

The three overall regression models for the dark-trait composite predicting the three measures of job performance were significant (regression results are listed in Table 28).

However, only the relationship between dark traits and counterproductive workplace behavior was found to have a significant nonlinear trend. This trend demonstrated that overall dark traits and counterproductive behavior were positively and linearly related up until a certain cutoff point, after which higher levels of dark traits did not appear to be related to meaningful increments of counterproductive behavior (see Figure 3). On the other hand, the relationships between overall dark traits and task performance and contextual performance were only characterized by linear relationships.

Table 28

Linear and Nonlinear Relationship Between the Dark-Trait Composite and Job Performance

	Job Performance								
	Task			Contextual			Counterproductive		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Step 1 – Dark-Trait Composite	-.47	.003	-5.61	-.76	.006	-12.28	.67	.002	9.49
Step 1 R^2	$R^2 = .22$ $F(1, 111) = 31.44$ $p < .001$			$R^2 = .58$ $F(1, 111) = 150.75$ $p < .001$			$R^2 = .45$ $F(1, 111) = 90.03$ $p < .001$		
Step 2 – Dark-Trait Composite Squared	.09	.000	1.01	-.01	.001	-0.17	-.15	.002	-2.10
Step 2 ΔR^2	$R^2 = .01$ $F(1, 110) = 1.03$ $p = .31$			$R^2 = .00$ $F(1, 110) = 0.03$ $p = .87$			$R^2 = .02$ $F(1, 110) = 4.43$ $p < .05$		
Full Model R^2	$R^2 = .23$ $F(1, 110) = 16.24$ $p < .001$			$R^2 = .58$ $F(1, 110) = 74.73$ $p < .001$			$R^2 = .47$ $F(1, 110) = 48.62$ $p < .001$		

Note. $N = 113$. β = standardized regression coefficient; SE = Standard Error; t = *t*-value from tests of significance (with $df = 110$). Bolded coefficients are significant ($p < .05$).

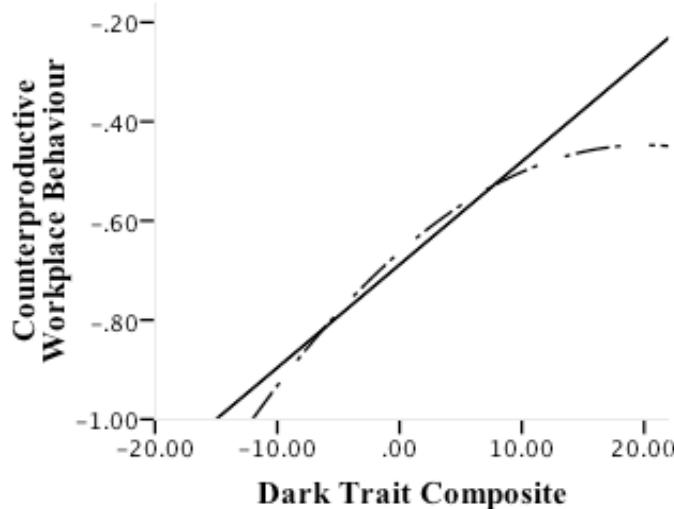


Figure 3. Linear and quadratic regression lines for the dark-trait composite predicting counterproductive workplace behavior. The counterproductive workplace variable was transformed using a reciprocal transformation and its mean is -.69 and standard deviation is .21; the dark-trait composite has a mean of 0 and a standard deviation of 4.76.

The Role of Job Stress on the Relationship Between Dark Traits and Job Performance

The role of job stress on the relationship between dark traits and job performance was examined. Individuals' dark traits are theorized to manifest when they are experiencing elevated levels of stress (Hogan & Hogan, 2001, 2007). Therefore, it was hypothesized that job stress would influence the extent to which maladaptive dark trait behavior manifests and that job stress would moderate the relationship between dark traits and job performance. This hypothesis was examined by using moderation analyses to examine whether job stress moderated the relationship between dark traits and the three measures of job performance. As was noted above, job stress was significantly correlated with all dark traits except for the Dutiful dark trait (Table 24). Job stress was also found to be highly correlated with all measures of job performance, including task performance ($r = -.40$), contextual performance ($r = -.43$), counterproductive workplace behavior ($r = .50$), and overall job performance ($r = -.52$). The moderation regression analyses employed the dark-trait composite (the sum of the 11 standardized dark traits) and job

stress, which were mean centered (Field, 2013) and entered in Step 1 and their cross-product term (i.e., the interaction term) was entered in Step 2. The hierarchical multiple regression results are listed in Table 29.

Table 29

Regression Results for Dark Traits, Job Stress, and Their Interaction Predicting Job Performance

	Job Performance								
	Task			Contextual			Counterproductive		
	β	SE	t	β	SE	t	β	SE	t
Step 1									
Dark-Trait Composite	-.36	.004	-3.43	-.79	.01	-10.14	.58	.003	6.60
Job Stress	-.18	.04	-1.77	.05	.07	0.66	.15	.03	1.65
Step 1 R^2	$R^2 = .24$ $F(2, 110) = 17.58$ $p < .001$			$R^2 = .58$ $F(2, 110) = 75.21$ $p < .001$			$R^2 = .46$ $F(2, 110) = 47.07$ $p < .001$		
Step 2									
Dark-Trait Composite \times Job Stress	.14	.004	1.62	-.02	.01	-0.24	-.16	.003	-2.13
Step 2 ΔR^2	$R^2 = .02$ $F(1, 109) = 2.63$ $p = .11$			$R^2 = .00$ $F(1, 109) = 0.06$ $p = .81$			$R^2 = .02$ $F(1, 109) = 4.55$ $p < .05$		
Full Model R^2	$R^2 = .26$ $F(3, 109) = 12.77$ $p < .001$			$R^2 = .58$ $F(3, 109) = 49.73$ $p < .001$			$R^2 = .48$ $F(3, 109) = 33.91$ $p < .001$		

Note. $N = 113$. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 109$). Bolded coefficients are significant ($p < .05$).

The overall regression models for each of the three measures of job stress were found to be significant. An examination of the interaction terms found that only the counterproductive workplace behavior regression had a significant interaction. The simple slopes of this interaction

(graphed in Figure 4), suggest that high levels of dark traits are associated with high levels of counterproductive workplace behavior, which are relatively uninfluenced by job stress. On the other hand, at moderate and low levels of dark traits, elevated levels of job stress increased the likelihood of counterproductive workplace behavior.

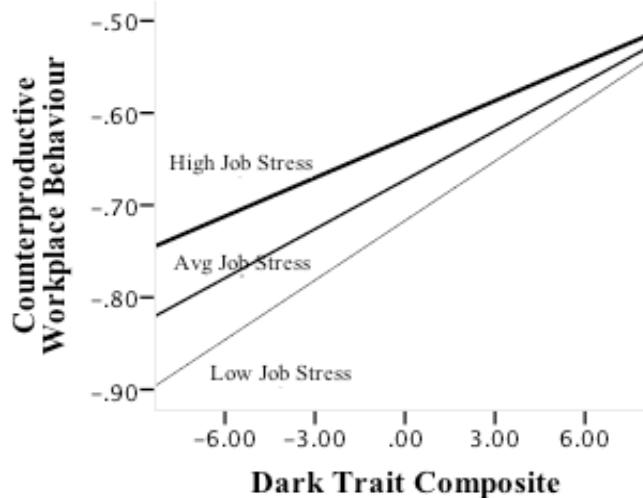


Figure 4. The simple slopes for the relationship between the dark-trait composite and counterproductive workplace behavior at high (1 SD above the mean), mean, and low (1 SD below the mean) levels of job stress. As mentioned, the counterproductive workplace variable was transformed using a reciprocal transformation and its mean is -.69 and standard deviation is .21; the dark-trait composite has a mean of 0 and a standard deviation of 4.76.

Dark Traits Self-Awareness and Job Performance

The level of self-awareness regarding managers' dark traits was defined as the discrepancy between their self-ratings of dark traits and their supervisors' ratings of dark traits. To explore this, the correlations between the corresponding self-reported and supervisor-rated dark traits were first examined (see Table 30). None of the correlations between self- and supervisor-rated dark traits were significant (albeit the relatively small sample size required an $r > .25$ to be significant at $p < .05$); the Bold and Dutiful traits approached significance. The latter suggests that individuals with these two dark traits were slightly more aware (or at least more

willing to admit) their dark-trait tendencies. In general, the managers' and supervisors' perceptions of the managers' dark traits were not significantly related, suggesting that in general they represent quite discrepant perspectives. (It is noted that these differences in scores may also be influenced by managers' unwillingness to disclose their dark traits, although they had little incentive to do so given the anonymous and very low-stakes nature of this research questionnaire).

Table 30

Correlations Between Self-Reported and Supervisor-Rated Dark Traits

Dark Trait	<i>r</i>	Dark Trait	<i>r</i>	Dark Trait	<i>r</i>
Excitable	.06	Leisurely	.08	Imaginative	-.09
Skeptical	.18	Bold	.25	Diligent	.15
Cautious	.08	Mischievous	-.06	Dutiful	.23
Reserved	.12	Colorful	.20		

Note: $N = 60$. Correlation coefficients $> .25$ are significant at $p < .05$.

The role of self-awareness regarding one's dark traits was found to be adaptive for job performance. Both measures of self-awareness (i.e., the standardized residuals and the difference scores) showed similar patterns of results and were both significantly related to superior job performance based on all three indices as well as significantly related to lower levels of job stress (these correlations are reported in Table 31). In other words, high levels of self-awareness were adaptive for job performance and stress, whereas low levels of self-awareness tended to be maladaptive in this regard. About half (53%) of the sample overestimated their dark traits relative to supervisor ratings (i.e., negative standardized residuals from the regression analysis using self-ratings to predict supervisor-ratings) and the other 47% underestimated their dark traits relative to their supervisor's perceptions (i.e., positive standardized residuals).

Table 31

Correlations Between Dark-Traits Self-Awareness, Job Stress, and Job Performance Variables

Dark-Traits Self-Awareness	Job Stress	Job Performance			
		Task	Contextual	Counter-productive	Overall
Standardized residuals	-.64**	.42**	.66**	-.69**	.70**
Difference scores	-.56**	.36*	.56**	-.54**	.58**

Note. N = 60. Two self-awareness scores were calculated based on standardized residuals as well as on a difference score calculation. For both scores, lower levels of self-awareness are related to underestimating one's dark traits, higher levels of self-awareness are related to overestimating one's dark traits relative to supervisor ratings.

* significant at $p < .05$, ** at $p < .01$.

Moderation analyses were also used to examine whether self-awareness moderated the relationship between dark traits and job performance. In order to accomplish this, hierarchical multiple regression analyses were conducted using the dark-trait composite variable (the same one used in the above moderation analyses involving job stress) and the three measures of job performance (i.e., task performance, contextual performance, and counterproductive workplace behavior). In terms of the self-awareness variable, the difference score variable (rather than the standardized residuals score) was used because the standardized residual score was too highly related to the dark-trait composite which caused issues of multicollinearity. The dark-trait composite and the self-awareness variable were entered in Step 1 and their cross-product term (i.e., the interaction term) was entered in Step 2. The regression results are listed in Table 32 and the simple slopes are graphed in Figure 5.

Table 32

Study 2 Moderation Results Between Self-Awareness and Job Performance Variables

	Job Performance								
	Task			Contextual			Counterproductive		
	β	SE	t	β	SE	t	β	SE	t
Step 1									
Dark-Trait Composite	-.49	.01	-1.97†	-.76	.02	-3.70	1.02	.01	5.37
Self-Awareness	.07	.15	0.28	.11	.27	0.53	-.36	.08	-.019
$R^2 = .19$			$R^2 = .44$			$R^2 = .53$			
Step 1 R^2	$F(2, 57) = 6.47$			$F(2, 57) = .22.78$			$F(2, 57) = 31.64$		
	$p = .003$			$p < .001$			$p < .001$		
Step 2									
Dark-Trait Composite \times Self-Awareness	.13	.01	1.04	.06	.02	0.55	.15	.01	1.68
$R^2 = .02$			$R^2 = .00$			$R^2 = .02$			
Step 2 ΔR^2	$F(1, 56) = 1.09$			$F(1, 56) = 0.31$			$F(1, 56) = 2.81$		
	$p = .30$			$p = .58$			$p = .10$		
$R^2 = .20$			$R^2 = .45$			$R^2 = .55$			
Full Model R^2	$F(3, 56) = 4.68$			$F(3, 56) = 15.10$			$F(3, 56) = 22.70$		
	$p = .005$			$p < .001$			$p < .001$		

Note. $N = 60$. β = standardized regression coefficient; SE = Standard Error; t = t-value from tests of significance (with $df = 56$). Bolded coefficients are significant ($p < .05$). †Marginally significant ($p = .05$).

Dark-Traits Composite = sum of the 11 standardized dark-trait variables. Self-Awareness = the self-awareness difference-score variable.

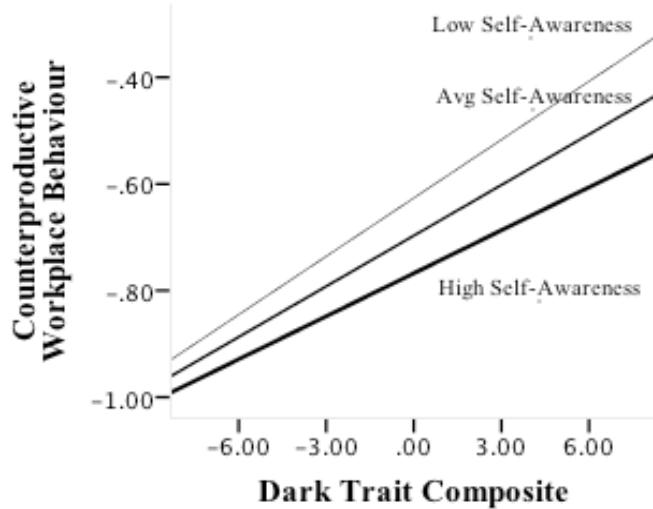


Figure 5. The simple slopes for the relationship between the dark-trait composite and counterproductive workplace behavior at high (1 SD above the mean), mean, and low (1 SD below the mean) levels of self-awareness. As mentioned, the counterproductive workplace was transformed using a reciprocal transformation and its mean is -.69 and standard deviation is .21; the dark-trait composite has a mean of 0 and a standard deviation of 4.76.

The overall regression models were found to be significant for all three regressions.

Analysis of the standardized beta coefficients demonstrated that the dark-trait composite was found to be significantly positively predictive of counterproductive workplace behavior as well as significantly negatively related to contextual performance and marginally significantly negatively related to task performance ($p = .054$). An examination of the Step 2 R^2 change coefficient demonstrated that the interaction did not contribute any incremental variance in predicting any of the three job performance measures at $p < .05$. However, the dark traits–self-awareness interaction term showed a trend toward significance ($p = .10$) in predicting counterproductive workplace behavior. This is worth noting as a tentative and exploratory finding given that its effect size ($\Delta R^2 = .02$) is in line with the size of interaction effects often observed in psychological research (Aiken & West, 1991; Cohen et al., 2003) and because this analysis was very underpowered to detect an interaction effect as it was only based on a sample of 60 managers (Aiken & West, 1991; Cohen et al., 2003; Green, 1991). In this case, self-

awareness appeared to moderate the dark traits–counterproductive workplace behavior relationship such that higher levels of self-awareness buffered counterproductive workplace behavior at moderate and high levels of dark traits. In other words, individuals with moderate or high levels of dark traits who also had higher levels of self-awareness tended to have lower levels of counterproductive workplace behavior relative to their less self-aware counterparts. Managers with low levels of dark traits tended to have equally low levels of counterproductive workplace behavior regardless of their level of self-awareness.

Dark Personality and Imbalanced Leadership Behavior

The ways in which dark personality traits are related to ineffective leadership was examined by assessing their relationship to imbalanced leadership behavior. Imbalanced leadership behavior involved two pairs of opposing yet mutually exclusive leadership behaviors: one pair of leadership behaviors are social in nature and reflect how one leads (Forceful and Enabling scales) and another pair are functional in nature and reflect what one leads (Strategic and Operational scales; Kaiser et al., 2010; Kaplan & Kaiser, 2006). The correlations between the four imbalanced leadership behaviors and dark personality traits are reported in Table 33.

Table 33

Correlations Between Dark Personality Traits and Job Stress with Supervisor-Rated Job Performance

Dark Traits	Imbalanced Leadership Behavior			
	Forceful	Enabling	Strategic	Operational
Excitable	.28	-.23	-.12	-.01
Skeptical	.39	-.50	-.10	-.07
Cautious	-.31	.07	-.51	.09
Reserved	.04	-.42	-.26	-.14
Leisurely	-.16	-.13	-.41	-.10
Bold	.34	-.46	.05	-.20

Dark Traits	Imbalanced Leadership Behavior			
	Forceful	Enabling	Strategic	Operational
Mischievous	-.07	-.04	-.17	-.28
Colorful	.03	-.06	-.16	-.20
Imaginative	.02	.01	.12	-.27
Diligent	.10	-.26	-.12	.11
Dutiful	-.38	.19	-.28	.12
Dark-Trait Composite	.04	-.27	-.29	-.14

Note: N = 113. All correlations > .18 significant at $p < .05$, > .24 at $p < .01$.

Each of the dark traits was significantly correlated with at least one of the imbalanced leadership behaviors. This suggests that, in one way or another, each of the dark traits is related to ineffective or imbalanced leadership behavior. Many of the dark traits that were significantly related to imbalanced leadership behavior showed opposite patterns of relationships with the opposing pairs of imbalanced leadership behaviors. For instance, the Excitable dark trait was positively related to forceful leadership behavior but negatively related to enabling leadership behavior. This suggests that this dark trait is related to both being highly forceful as well as not being very empowering of others. Other dark traits showed an imbalance between one leadership behavior but not its opposite behavior. For example, the Cautious dark trait was negatively related to forceful behavior but not significantly related to enabling behavior, suggesting that individuals high in this dark trait may not be sufficiently forceful but at the same time are likely appropriately enabling (i.e., they simply lack forcefulness).

A couple of dark traits showed marginally significant relationships in the same direction for both opposite leadership behaviors pairs, which is not typical but is possible given that the opposing pairs of leadership behaviors are not mutually exclusive (Kaiser et al., 2010; Kaiser et al., 2015; Kaplan & Kaiser, 2006). For instance, the Mischievous dark trait was negatively

related to operational leadership behavior and marginally significantly negatively related to strategic leadership behavior. This suggests that individuals high in this trait may not sufficiently make use of either type of leadership behavior and are insufficiently involved in planning for day-to-day operations as well as in planning strategically for the long-term.

In terms of ineffective interpersonal behavior (i.e., Forceful and Enabling scales), several dark traits were related to these two types of leadership behaviors. The Excitable, Skeptical, and Bold dark traits were positively related to forceful behavior and negatively related to enabling behavior. This suggests that these dark traits, which are characterized by being moody, distrustful of others, and excessively self-confident, are related to higher levels of forceful behavior and lower levels of being empowering toward others. The Reserved and Diligent dark traits were negatively related to enabling behavior, suggesting that such socially withdrawn or overly precise and critical individuals tend to be insufficiently empowering of others. The Dutiful dark trait was positively related to enabling and negatively related to forceful leadership behavior, suggesting that such dependent individuals are empowering of others but not very forceful as leaders. Similarly, the Cautious dark trait was negatively related to forceful leadership behavior, suggesting that such socially anxious individuals are not very forceful either.

In terms of ineffective task-related leadership behaviors (i.e., Strategic and Operational scales), several of the dark traits were related to these variables. The Cautious, Reserved, Leisurely, and Dutiful dark traits were all significantly correlated with lower levels of strategic leadership behavior. This suggests that individuals who are withdrawn from others (be it because of a lack of interest, being socially anxious, or an indifference toward others), as well as those who are dependent on others, tend to spend less time thinking strategically and planning

for the long-term of the company. On the other hand, the Bold and Imaginative dark traits were significantly negatively related to operational behavior. This suggests that individuals who are unusually self-confident or unusual and creative types tend not to spend sufficient amounts of time planning and focusing on the day-to-day operations involved with running the organization. The Mischievous and Colorful dark traits were significantly negatively related to operational leadership behavior and marginally negatively related to strategic leadership behavior. This suggests that antisocial and risk-taking individuals, or those who are attention-seeking, tend to spend insufficient amounts of time focusing on either of these task-related leadership behaviors.

A set of four multiple regression analyses were conducted to examine the relationships between all of the 11 dark personality traits and each of the four leadership behaviors. Testing all of the dark traits at the same time represents a conservative approach that minimizes the Type I error rate, because it examines the relationship between each dark trait and the criterion variable controlling for all of the other dark traits; in other words, the regression coefficients actually test the incremental validity of each of the dark traits, above and beyond each of the others (LeBreton, Hargis, Griepentrog, Oswald, & Ployhart, 2007; Lunneborg & Abbott, 1983).

The overall regression models were significant for each of the four leadership behaviors and the regression coefficients are listed in Table 34. The overall model predicted between 19% (operational leadership behavior) and 45% (enabling leadership behavior) of the criterion variables. In terms of the two interpersonal dimensions of leadership behavior, the Excitable and Bold dark traits were significantly positively related to forceful leadership behavior. There was also a marginally significant negative relationship between forceful leadership behavior and the Leisurely dark trait ($p = .06$) as well as the Dutiful dark trait ($p = .06$). This suggests that both of these dark traits are related to too little forceful leadership behavior. In terms of enabling

leadership behavior, the Skeptical and Reserved traits were significantly negatively related to enabling leadership behavior, which suggests that these traits are related to not sufficiently empowering others to take the lead. The Imaginative dark trait was also positively significantly related to enabling leadership behavior, suggesting that individuals high in this dark trait are overly permissive in letting others take the lead.

In terms of the two task-focused dimensions of leadership behavior, the Cautious and Colorful dark traits were significantly negatively related to strategic leadership behavior. This suggests that these traits place too little of a focus on strategic planning for the long-term of the company. On the other hand, the Imaginative dark trait was significantly positively related and the Excitable and Bold dark traits were marginally significantly positively related (at $p = .053$ for both dark traits) to strategic leadership behavior. This suggests that individuals high in these traits spend too much time focusing on thinking strategically. In terms of operational leadership behavior, although the overall regression was found to be significant, none of the standardized coefficients reached statistical significance.

Table 34

Study 2 Regression Results for the Relationship Between Dark Traits and Imbalanced Leadership Behavior

Dark Trait	Imbalanced Leadership Behavior											
	Forceful			Enabling			Strategic			Operational		
	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>	β	SE	<i>t</i>
Excitable	.44	.19	2.96	.18	.16	1.23	.29	.16	1.96	.17	.14	0.99
Skeptical	.14	.25	0.82	-.40	.20	-2.38	-.23	.21	-1.36	.07	.18	0.32
Cautious	-.21	.21	-1.63	.22	.17	1.72	-.34	.18	-2.64	.24	.15	1.57
Reserved	-.04	.22	-0.31	-.51	.18	-3.69	-.14	.19	-0.99	-.15	.16	-0.92
Leisurely	-.28	.24	-1.88	.20	.20	1.33	-.25	.21	-1.66	-.15	.17	-0.86
Bold	.25	.19	2.12	-.12	.16	-1.04	.23	.17	1.96	-.10	.14	-0.75
Mischiefous	.04	.26	0.36	.04	.21	0.36	.01	.22	0.10	-.16	.18	-1.23
Colorful	-.16	.21	-1.43	-.15	.17	-1.40	-.34	.18	-3.11	-.12	.15	-0.95
Imaginative	-.15	.20	-1.44	.25	.16	2.45	.31	.17	2.97	-.14	.14	-1.09
Diligent	-.01	.18	-0.15	-.10	.15	-1.09	.01	.16	0.12	.13	.13	1.16
Dutiful	-.18	.19	-1.94	-.02	.15	-0.22	-.08	.16	-0.86	.02	.13	0.21
Model R^2	$R^2 = .43$			$R^2 = .45$			$R^2 = .42$			$R^2 = .19$		
	$F(11, 101) = 6.77$			$F(11, 101) = 7.45$			$F(11, 101) = 6.77$			$F(11, 101) = 2.21$		
	$p < .001$			$p < .001$			$p < .001$			$p < .05$		

Note. $N = 113$. β = standardized regression coefficient; SE = Standard Error; t = *t*-value from tests of significance (with $df = 101$). Bolded coefficients are significant ($p < .05$).

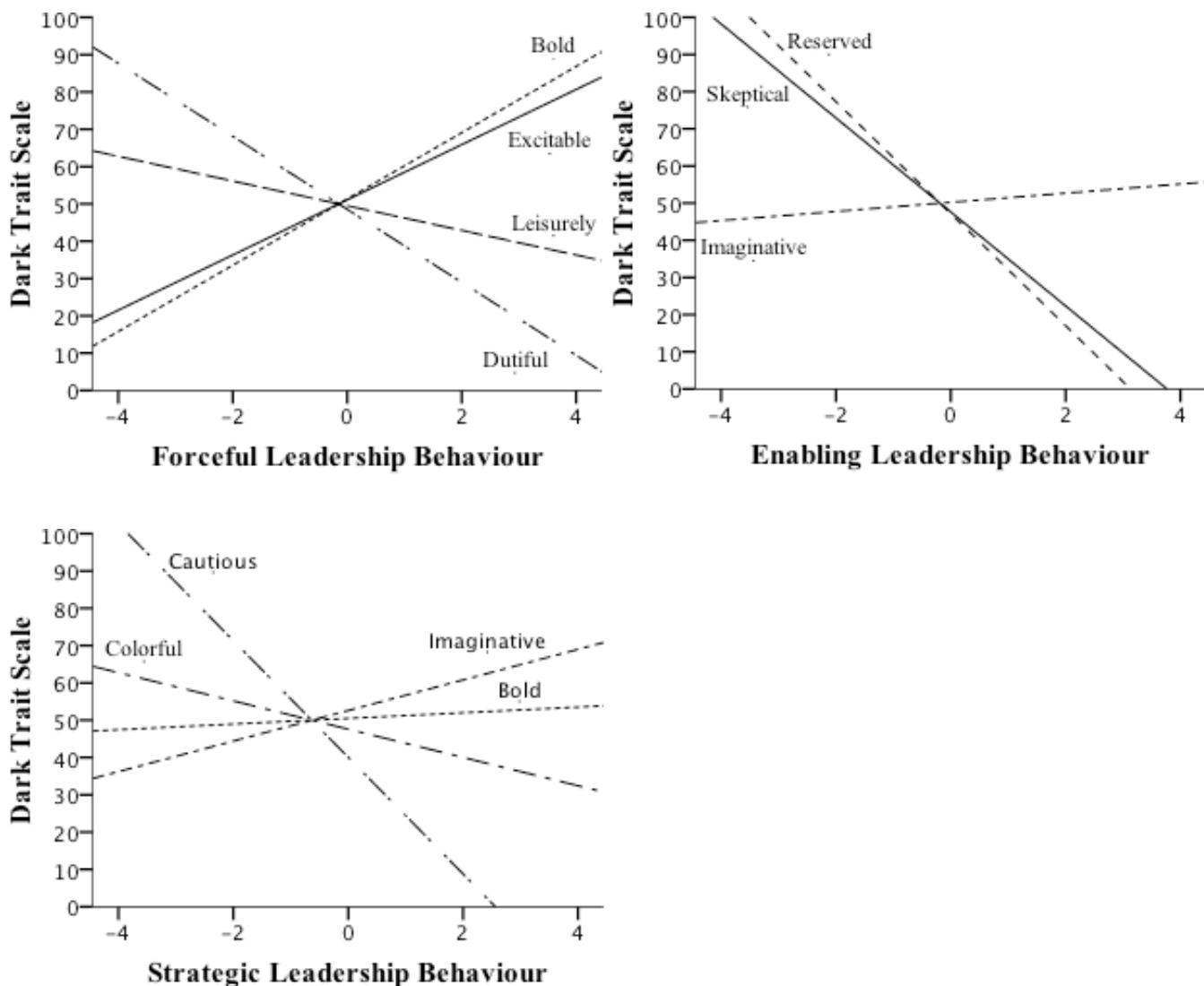


Figure 6. The regression lines for each bivariate relationship for the significant (and marginally significant) predictors from regression analyses. The dark traits are expressed in percentile scores for ease of interpretation. The leadership behavior scores are expressed in raw scores, which range from -4 (*much too little*) and 4 (*much too much*) with 0 (*right amount*) in the middle. The dependent variable (leadership behavior) was placed on the abscissa of these graphs for the purpose of facilitating the interpretation of which percentiles of the dark traits were associated with "too little," "the right amount," and "too much" leadership behavior.

The significant relationships between the dark trait scores expressed as percentiles and the imbalanced leadership behaviors are depicted in Figure 6. The regression lines depicting the bivariate relationships between dark traits and imbalanced leadership behavior are listed in a

similar manner to past work (Kaiser et al., 2015). These graphs depict the level of each dark trait that is associated with “the right amount” and varying degrees of doing “too much” or “too little” of each of the leadership behaviors. The level of dark traits associated with optimal levels of each leadership behavior is reflected by the point at which the regression line crosses “0” on the leadership behavior scale. The graph shows that optimal levels of each of the leadership behaviors correspond to average scores of each of the dark traits (around the 50th percentile). This suggests that high, but also low, levels of dark traits are related to imbalances in leadership behavior and that moderate levels are most related to effective and appropriately balanced leadership behavior.

The Excitable dark trait and its relationship to strategic leadership behavior are not graphed because its marginally significant standardized regression coefficient reflects the effects of suppression and this would be misrepresented by a bivariate graph. The suppression effect is evidenced by the fact that the Excitable dark trait’s bivariate relationship with strategic leadership behavior was nonsignificant, whereas its standardized regression coefficient was significant and in the opposite (positive) direction. Therefore, it is a case of classical suppression when the predictor variable is only significantly related to the criterion when controlling for the other dark traits (Paulhus et al., 2004).

Study 2: Discussion

Study 2 sought to examine the relationship between bright traits and dark traits as rated by supervisors, including the ability of the CPI to predict supervisor-rated dark traits. It also sought to examine the relationship between supervisor-rated dark traits and various indices of job performance, including task performance, contextual performance, counterproductive workplace behavior, and overall job performance. The ways in which job performance was influenced by job stress and self-awareness were also assessed. In addition to examining how dark traits are related to job performance, Study 2 also sought to examine the ways in which such traits are related to leadership behavior. This was accomplished by examining the relationships between dark traits and imbalances of core leadership behaviors.

The relationship between bright traits (including critical thinking ability) and supervisor-rated dark traits was initially examined using multivariate regression analyses. These analyses demonstrated that bright and supervisor-rated dark traits were significantly related. Following this, multiple regression analyses demonstrated that significant and meaningful proportions of the variance of about half of the dark traits could be predicted from bright traits. These effect sizes were large ($R^2 \geq .26$; Cohen, 1988), with bright traits predicting between 27% and 34% of the variance of about half of the dark traits, with an average R^2 of .30.

These multiple correlations are in line, but of smaller size, with similar past work using self-report measures (Butrus & Witenberg, 2015; Furnham & Crump, 2005). Similarly, Study 2 multiple correlations are in line, but of smaller size, with the multiple correlation effects of Study 1, although about half of Study 2 multiple correlations did not reach statistical significance. The latter is likely influenced by the relatively lower level of power of Study 2, which had less than half the sample size of Study 1, but did have medium-sized multiple correlation effect sizes for

nonsignificant overall regression models ($.12 \leq R^2s \leq .25$). The intercorrelations between bright and dark traits in Study 2 also showed weaker effects, although they were often in the same direction as those in Study 1. The smaller effect sizes observed in Study 2 (compared with Study 1) likely reflect differences related to using observer (i.e., supervisor) ratings of dark traits as opposed to self-reported dark traits (Connelly & Ones, 2010; Oh et al., 2011). In addition, differences in specific bright–dark trait relationships between both prior research (which has typically focused on self-report measures) and Study 1 with Study 2 may reflect differences in the bright traits that predict self-reported compared to supervisor ratings of dark traits.

In terms of the specific bright traits that are related to dark traits, Study 2 found that critical thinking ability was minimally related to dark traits. As hypothesized, only a few dark traits were significantly related to critical thinking ability, which aligns with the mixed and inconsistent findings of Study 1 and past research that fail to provide significant support for the relationship between critical thinking ability and dark traits (Furnham, 2006; Hogan & Hogan, 1997, 2009). The regression standardized beta coefficients showed that critical thinking ability was only significantly related to the Cautious dark trait and this reiterates the conclusions of Study 1, suggesting that critical thinking ability may be related to a few dark traits but that it does not contribute meaningful information, above and beyond bright personality traits, to facilitate the understanding or the prediction of dark traits. This is in contrast to the theoretical hypothesis that critical thinking ability is related to individuals' ability to overcome, in part, the biased perceptions and distorted cognitions that characterize their dark personality traits (Hogan & Hogan, 2001), which has shown to be an effective intervention for clinical personality disorders (Matusiewicz et al., 2010). It may be that other related factors are more important to overcoming biased perceptions and cognitions, such as one's level of self-awareness regarding

their dark traits (see Study 2 findings on self-awareness discussed below; see also Atwater & Yammarino, 1992; Church, 2000; Tiuraniemi, 2008; Van Velsor et al., 1993).

The CPI and Supervisor-Rated Moving-Away Dark Traits

Study 2 demonstrated that meaningful patterns of bright traits significantly (or marginally significantly) predicted four of the five moving-away dark traits. Similar to Study 1, the most evident pattern of correlations with this group of dark traits tended to be their negative correlations with CPI scales related to being socially dominant, assertive, and empathic. These relationships align with the theory of this group of traits as interpersonal tendencies related to withdrawing from others (Hogan & Hogan, 2001; Horney, 1950). The relationships between each of the moving-away dark traits with the CPI and how they relate to Study 1 and past research will now be briefly summarized (more elaborate discussion in regards to past research was provided in the Study 1 discussion section because many of these findings are mirrored in Study 2).

The Excitable dark trait was only significantly positively correlated with the Good Impression scale related to a concern to please others and make a good impression. However, Study 2 regression analyses found that the Excitable dark trait was significantly predicted by several CPI scales, including being negatively related to the Wellbeing and Intellectual Efficiency scales, as well as positively related with the Good Impression, Femininity/Masculinity and Achievement via Independence scales. These findings support a couple of our hypotheses regarding the lack of psychological adjustment and the sensitive and high-strung nature of such individuals. On the other hand, the relationship between the Excitable and Good Impression scale was in the opposite direction than hypothesized. In addition to the hypothesized relationships, the Excitable dark trait was also significantly related to a lack of motivation or

ability for intellectual pursuits and being achievement-oriented in an independent-minded way and questioning of conventional advice. Altogether, these findings align with the theory of this dark trait (Hogan & Hogan, 1997, 2001) and suggest that, whereas such individuals desire to be somewhat independent, they may also lack the motivation, capability, and psychological adjustment to do so effectively.

The Skeptical dark trait was significantly correlated with CPI scales related to not being very understanding of others' feelings, being distrustful or hostile toward others, and being conservative and disliking change. The latter two align with our hypotheses and each of these relationships seems to fit with the theory of this dark trait as characterized by paranoia and distrust in relationships (Hogan & Hogan, 1997, 2001). Regression analyses demonstrated that the Skeptical dark trait was primarily characterized by being distrustful and not understanding of others' feelings as well as being achievement-oriented in an independent-minded way or questioning of conventional wisdom. The latter is an unexpected finding and likely reflects such individuals' questioning and skeptical personality (Hogan & Hogan, 1997, 2001).

The Cautious dark trait was significantly correlated with CPI scales related to being sensitive and high-strung, not socially ascendant, quiet and cautious, and dependent on others. The latter two findings support our hypotheses regarding the cautious and dependent nature of such individuals and the pattern of correlations aligns with the theory of this dark trait as characterized by a fear of being evaluated negatively and a lack of independence (Hogan & Hogan, 1997, 2001). The Study 2 regression analyses showed that this dark trait was primarily characterized by being not very socially ascendant, poor psychological adjustment, being achievement-oriented in an independent-minded way or questioning of convention, and weaker critical thinking ability. In terms of the latter, it was the only dark trait that showed a significant

standardized beta coefficient with critical thinking ability, suggesting that one part of such individuals' difficulties with acting independently regards their lack of ability to think critically, which is also related to lower general cognitive ability (Watson & Glaser, 1994, 2008).

The Reserved dark trait was only significantly negatively correlated to being socially ascendant and understanding of others' feelings. These same relationships were observed in Study 1 and align with the theory of this dark trait as characterized by being socially withdrawn and emotionally distant (Hogan & Hogan, 1997, 2001; Widiger & Costa, 2012). However, Study 2 did not support the hypothesized relationships between the Reserved dark trait and CPI scales to cautious, quiet, and withdrawn behavior. Moreover, Study 2 regression analyses found that this dark trait was not significantly predicted by bright traits.

The Leisurely dark trait was significantly negatively correlated with CPI scales related to being socially ascendant and lacking motivation or ability for intellectual pursuits. The latter supports our hypothesis regarding this dark trait's relationship with a lack of motivation. The Study 2 regression analysis found that the Leisurely dark trait was significantly related to being achievement-oriented in an independent-minded way and resistant toward conventional wisdom or authority as well as not being very socially ascendant. The former supports our hypothesis and likely relates to such individuals' resistant or rebellious nature, whereas the latter may relate to their lack of ability to confront others in an assertive and direct, rather than passive-aggressive, manner (Groth-Marnat, 2009; Hogan & Hogan, 1997, 2001).

The CPI and Supervisor-Rated Moving-Against Dark Traits

Study 2 found that there were only a few meaningful correlations between bright traits and moving-against dark traits, and that the set of bright traits only marginally significantly predicted one (i.e., the Bold dark trait) of the four moving-against dark traits.

In terms of the Bold dark trait, Study 2 found support for the hypothesized relationships between this dark trait and scales related to a lack of conscientiousness, being conservative and disliking change, and being distrustful or hostile toward others. In addition to the hypothesized relationships, the Bold dark trait was also found to be significantly correlated with a lack of ability or motivation for intellectual pursuits, as well as a low level of empathy and distrust of others' feelings. Study 2 did not support the hypothesized relationships between the Bold dark trait and CPI scales related to social dominance and extraversion, suggesting that such CPI scales may not be significantly related to supervisors' perceptions of this dark trait. The Study 2 regression analyses showed that the Bold dark trait was primarily characterized by a lack of understanding or concern for others' feelings, a lack of motivation or ability for intellectual pursuits, and being achievement-oriented in an independent-minded way that can be resistant toward authority or rules. The latter may reflect the self-aggrandizing behaviors of such individuals (Hogan & Hogan, 1997, 2001) and all of these characteristics are likely some of the reasons that high levels of this dark trait are associated with poorer levels of job performance (Grijalva et al., 2015).

The other three moving-against dark traits showed few meaningful patterns of correlations with bright traits. The Mischievous dark trait was only significantly negatively correlated to the Independence scale and did not support any of the hypothesized relationships. This one significant relationship is also inconsistent with both Study 1 and theory on this overly self-confident and risk-taking dark-trait tendency (Hogan & Hogan, 1997, 2001). The Colorful dark trait was significantly correlated to wanting to make a good impression on others, as well as being sensitive and high-strung. None of the hypothesized relationships regarding this dark trait were supported in Study 2 and the two significant relationships that were observed differ from

Study 1 findings, although they do fit with the theory of this excessively dramatic and attention-seeking dark trait (Hogan & Hogan, 1997, 2001). In terms of the Imaginative dark trait, it was not found to be significantly related to any of the CPI scales in Study 2 and none of the hypothesized relationships were supported. This lack of significant findings differs from Study 1 and the reasons for the lack of relationships with this dark trait (as well as several of the other moving-against dark traits) are unclear, but may be influenced by a lack of power in Study 2, and should be explored with further research.

The CPI and Supervisor-Rated Moving-Toward Dark Traits

Study 2 found that nearly all of the significant correlations between bright traits and moving-toward dark traits concerned the Diligent dark trait, and that this dark trait was the only one of the two to be significantly predicted by the set of bright traits.

In terms of the Diligent dark trait, the only hypothesized relationship that was supported in Study 2 was the significant positive relationship between this dark trait and the Self-Control scale, suggesting an individual who is quite self-disciplined and emotionally controlled. In addition to the hypothesized relationships, the Diligent dark trait was also significantly negatively related to scales related to being quiet and cautious, reserved, not socially ascendant, lacking self-confidence, and not empathic. Many of these relationships were also observed in Study 1. The regression analyses in Study 2 showed that the Diligent dark trait was primarily characterized by being sociable, but at the same time not very confident or socially ascendant, as well as unassertive and cautious. The latter likely reflects the overly risk-averse and perfectionistic nature of individuals with high levels of the Diligent dark trait (Hogan & Hogan, 1997, 2001).

The Dutiful dark trait was only significantly correlated to one CPI scale reflective of being overly sensitive and high-strung. Although this aligns with the theory on this trait, which is characterized by being overly dependent on others for support and a reluctance to act independently or go against popular opinion (Hogan & Hogan, 1997, 2001), Study 2 failed to support any of the hypothesized relationships. Moreover, the regression analyses in Study 2 indicated that the set of bright traits did not significantly predict this dark trait.

CPI Principal Components and Nonlinear Relationships with Supervisor-Rated Dark Traits

Study 2 principal component analysis reduced CPI bright traits into four variables resembling the five-factor model traits of extraversion, conscientiousness, openness to experience, and neuroticism. These factors are similar to the principal components derived in Study 1 and those derived in past research on the CPI's factor structure (Deniston & Ramanaiah, 1993; Johnson, 2000; McCrae et al., 1993; Soto & John, 2009). These four factors were derived in order to examine nonlinear relationships between bright and dark traits while avoiding conducting an excessive amount of regressions (Field, 2013). In the same manner to Study 1, the 11 dark traits were combined into one overall dark-trait composite, such that nonlinear analyses examined the relationship between broad CPI factors (viz., higher order traits) and overall dark traits in general.

The analyses examining nonlinear relationships failed to support any nonlinear relationships between bright and dark traits. This is contrary to our hypotheses and the findings in Study 1. It also differs from some similar studies that have found nonlinear relationships between bright traits and job or leadership performance (Ames & Flynn, 2007; Benson & Campbell, 2007; Carter et al., 2014; Le et al., 2011). However, some have failed to find

significant nonlinear relationships between bright traits and job performance (Robie & Ryan, 1999; Whetzel, McDaniel, Yost, & Kim, 2010). In addition, these studies have all examined nonlinear relationships between bright traits and an outcome measure of job or leadership performance, but the nonlinear relationship between bright traits and dark traits (as rated by the self or a supervisor) have not been empirically examined and require further research.

Job Stress as a Moderator of the Bright–Dark Trait Relationship

Study 2 demonstrated that job stress (as rated by supervisors) was significantly related to almost all of the dark traits (mostly medium- to large-sized correlations), although it only had a few modest correlations with bright traits. It was hypothesized that job stress would moderate the bright–dark trait relationship, but this hypothesis was not supported. Although Study 2 found that job stress was significantly predictive of overall dark traits, over and above bright personality traits, it did not interact with bright personality (i.e., CPI principal components). This suggests that bright traits and job stress may be independently related to dark personality traits. However, it should also be noted that Study 2 only had sufficient power for a reasonable chance at detecting a medium-sized interaction effect, and therefore could have failed to detect a smaller-sized interaction, which is more likely to occur in psychological research (Aiken & West, 1991; Cohen et al., 2003). Therefore, the theorized moderating role of job stress should be examined in future research with a much larger sample.

Dark Personality Traits and Job Performance

Study 2 supported the hypothesis that each of the dark traits, except for the Dutiful trait, were correlated to significantly lower levels of job performance, including poorer task performance, contextual performance, and counterproductive workplace behavior. The Dutiful trait was not significantly related to any of the three indices of job performance, suggesting that

this overly eager to please and very conforming personality style may not confer a risk for counterproductive workplace behavior, but is also not adaptive in terms of improving other areas of job performance (Hogan & Hogan, 2001). The pattern of correlations between dark traits and job performance in the negative direction is similar to other work that has found most, although not all, of the dark personality traits to be negatively related to similar measures of job performance in a sample of job applicants (Moscoso & Salgado, 2004), as well as for key managerial work behaviors (Gaddis & Foster, 2015). In general, of all of the dark traits it was the moving-away dark traits (Excitable, Skeptical, and Leisurely) that tended to be most strongly related to the various indices of job performance. This aligns with other research, suggesting that the maladaptive tendency to withdraw from others at work may be most strongly related to poorer work outcomes (Gaddis & Foster, 2015; Moscoso & Salgado, 2004; Palaio, Zarola, & Furnham, 2016; Quirk et al., 2003).

The regression analyses predicting job performance from dark traits demonstrated that dark traits significantly predicted large amounts of variance of the three indices of job performance, which were consistently related to poorer levels of job performance. Specifically, the dark traits were associated with lower levels of task performance, contextual performance, and overall job performance, as well as higher levels of counterproductive workplace behavior. These relationships tended to be characterized by very large effect sizes and likely overestimate, to some extent, the true relationships between dark traits and job performance as a result of the common method bias associated with having the same supervisors provide ratings of both dark traits and job performance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We tried to mitigate this bias by randomizing the order of measures completed by the supervisors, but future research would benefit from using multiple raters such that dark traits are rated by different

individuals than those who rate job performance (or other outcomes measures, such as leadership behavior).

The one dark trait that was unexpectedly not found to be related to poorer job performance in the regression analyses was the Skeptical dark trait, which was related to superior levels of all four indices of job performance. However, this finding in the regression analyses is questionable for two reasons. The first is that the Skeptical dark trait had significant negative zero-order correlations with task performance, contextual performance, and overall performance, as well as a significant positive zero-order correlation with counterproductive workplace behavior. Secondly, past research has found that the Skeptical dark trait is negatively correlated to task performance and contextual performance (Moscoso & Salgado, 2004).

The relationship between dark traits and job performance was also examined for nonlinear relationships. Study 2 found support to suggest that dark traits share significant nonlinear relationships with certain forms of job performance but not others. Specifically, Study 2 found that dark traits had a significant nonlinear relationship with counterproductive workplace behavior, but only linear relationships with task performance and contextual performance. These findings underscore the comments made by Benson and Campbell (2007) regarding the importance of measuring specific forms of job performance, rather than relying on broad overall measures of job performance, as well as extending work on counterproductive workplace behavior.

Job Stress as a Moderator Between Dark Traits and Job Performance

Study 2 moderation analyses supported the hypothesis that job stress moderates the relationship between dark traits and counterproductive workplace behavior, but not task performance or contextual performance. The findings supported our hypothesis that higher levels

of job stress would be related to higher levels of counterproductive workplace behavior, although this was just observed at low and moderate levels of dark traits. On the other hand, those with high levels of dark traits were likely to engage in high levels of counterproductive workplace behavior regardless of their level of job stress. This suggests that job stress is a risk factor for engaging in counterproductive workplace behavior, but only for those with low and moderate levels of dark traits. This also suggests that interventions to reduce job stress and reduce counterproductive workplace behavior are likely to be most effective when targeting individuals who exhibit low to moderate levels of dark traits.

Self-Awareness, Dark Traits, and Job Performance

Study 2 supported the hypothesis that self-awareness about one's dark traits was highly correlated with higher levels of task performance and contextual performance and lower levels of counterproductive workplace behavior. This pattern of results was found with two types of self-awareness scores that were calculated according to the difference score approach (Church, 1997; Wohlers & London, 1989) or the standardized residuals from the regression equations that predicted supervisor-rated dark traits from self-reported dark traits (Paulhus et al., 2004; Tangney & Dearing, 2002).

Study 2 also examined the hypothesis that self-awareness regarding one's dark personality traits moderates the relationship between dark traits and job performance. This hypothesis was generally not supported, although Study 2 evidenced a trend toward significance in which self-awareness appeared to moderate the relationship between dark traits and counterproductive workplace behavior. Although this trend was only marginally significant ($p < .10$), it was considered to be worth noting given that the effect size was of the same magnitude as the interaction term for the job stress moderation analyses, and that these analyses were

especially underpowered because they were conducted on a subset of the Study 2 sample ($n = 60$) who had both self-reported and supervisor-rated dark-trait data.

The Study 2 moderation analyses provide initial evidence to suggest that high levels of self-awareness may serve to buffer against counterproductive workplace behavior for individuals with moderate and high levels of dark traits. Whereas individuals with low levels of dark traits are at low risk of engaging in counterproductive workplace behavior regardless of their level of self-awareness, individuals who have moderate or high levels of dark traits, but also a greater awareness of these maladaptive tendencies, may be able to better manage the extent to which they engage in counterproductive workplace behavior compared to those who have lower levels of self-awareness. This aligns with theory that suggests dark traits often operate, at least to some extent, beyond the awareness of the individual (Harms et al., 2014; Hogan & Hogan, 2001; O'Boyle et al., 2012) and that having higher levels of self-awareness between one's own and other's perceptions of their behavior is an important step to decreasing such negative behavior through coaching or other psychological interventions (Hogan & Warrenfeltz, 2003; Nelson & Hogan, 2009). It should be noted that this was a tentative and exploratory trend that was observed in Study 2 and it requires further research before drawing firmer conclusions.

In addition, Study 2 supported the hypothesis regarding the discrepancies between self-reported and supervisor-rated measures of dark traits. Study 2 found that the correlations between these two perspectives of dark traits (both rated on the same dark personality adjective checklist measure) were modest at best, with correlations ranging from $r = .06$ (Excitable dark trait) to $r = .25$ (Bold dark trait) and an average correlation of $r = .14$ across all the dark traits. This supports the hypothesis that there are meaningful differences between self- and other-perceptions of dark traits, and it underscores the importance of moving beyond simply using self-

report measures of dark traits to examine the ways in which observer ratings of dark traits are related to important job outcomes and leadership behavior (Gaddis & Foster, 2015).

Dark Traits and Imbalanced Leadership Behavior

After establishing that dark traits were related to poorer job performance, Study 2 examined the ways in which dark traits disrupt leadership behavior. This was accomplished by examining how the dark traits affect four different types of core leadership behaviors that can reflect leadership imbalances related to either overdoing a leadership behavior or neglecting it (Kaiser et al., 2010; Kaplan & Kaiser, 2006). Study 2 supported our hypotheses by finding that all of the dark traits were significantly correlated with at least one form of leadership behavior imbalance. Regression analyses found that nine of the dark traits were significantly (or marginally significantly) related to underdoing or overdoing at least one of each of the leadership behaviors. In addition, the Study 2 findings that both low and high levels of dark traits were related to imbalanced leadership and that moderate levels of dark traits were most related to balanced leadership, aligns with our hypothesis and similar past research (Kaiser et al., 2015). Overall, dark traits predicted between 19% (operational leadership behavior) and 45% (enabling leadership behavior) of leadership behavior, which reflects medium to large effect sizes (Green, 1991). This suggests that the relationship between dark traits and the four specific forms of leadership behavior imbalances are practically important.

In terms of forceful leadership behavior, the regression analyses showed that dark traits associated with emotional volatility (Excitable dark trait) and being overly self-confident (Bold dark trait) are related to being overly forceful as leaders. On the other hand, individuals who are passive-aggressive or indifferent to the requests of others (Leisurely dark trait) as well as those

who are overly eager to please or too dependent on others (Dutiful dark trait) appear to be insufficiently forceful as managers.

In terms of enabling leadership behavior, dark traits related to being cynical and distrustful of others (Skeptical dark trait), as well as socially withdrawn and detached from others (Reserved dark trait), were related to being insufficiently enabling and empowering of others. On the other hand, individuals who are maladaptively unusual but creative in their thinking and behavior (Imaginative dark trait) were too enabling of others in their management style, suggesting that individuals high in this dark trait are overly permissive in letting others take the lead perhaps because they are overly focused on reflecting about their own creative ideas (Hogan & Hogan, 2001).

In terms of strategic leadership behavior, individuals characterized as being overly risk-averse and reluctant to take even reasonable chances (Cautious dark trait), as well as those who tend to be overly dramatic and attention-seeking (Colorful dark trait), tended to focus too little on strategic planning. On the other hand, individuals who are overly unusual but highly creative (Imaginative dark trait), as well as those who are excessively self-confident and overly focused on high levels of success (Bold dark trait), tended to spend too much time thinking about strategic issues; this likely reflects the former dark trait's tendency to get lost in creative thought and the latter's tendency to be overly focused on grand visions of success (Hogan & Hogan, 2001). In addition, a suppressor effect was found that, when controlling for all of the dark traits, individuals who are emotionally volatile (Excitable dark trait) were also found to be overly focused on strategic planning (Paulhus et al., 2004). This may reflect the overly high level of enthusiasm that such individuals can bring to new and exciting tasks (Hogan & Hogan, 2001).

In terms of operational leadership behavior, regression analyses failed to find any

significant relationships between dark traits and this leadership behavior. This differs from our predictions and similar work finding that several dark traits are related to imbalances in this area of leadership as well (Kaiser et al., 2015). One possible reason for this is that this past study focused on a sample of upper-management level positions (i.e., directors and executives) and their findings were most related to the strategic–operational dimension of leadership behavior (Kaiser et al., 2015), whereas Study 2 consisted primarily of mid-level managers who tend to spend more time in direct contact managing their subordinates and their job involves a greater degree of relational aspects and therefore a stronger focus on the relational dimension (forceful–enabling) of leadership behavior. In addition, the regression analyses represent a conservative test of the incremental validity of each of the dark traits (LeBreton et al., 2007; Lunneborg & Abbott, 1983). Therefore, these analyses may have overlooked potentially meaningful relationships between other dark traits and leadership behavior imbalances, because including all dark traits together as predictors apportions the variance of the dependent variable (leadership behavior) to the stronger effects first, which leaves little residual variance for weaker effects (LeBreton et al., 2007). Similar findings have been noted in a related study (Kaiser et al., 2015). The Operational leadership behavior scale also had a relatively low level of internal consistency (Cronbach $\alpha = .66$), which is much lower than the other three leadership behavior scales and this may also have been a factor in this scale's nonsignificant relationships with dark traits.

Comparing Managers Who Were Hired With Those Who Were Not

Study 2 examined whether the participants who were hired following employment testing differed from a group of managerial candidates who underwent the same testing process but were not hired. The main difference between the two groups was that hired managers had higher levels of critical thinking ability, which is also related to higher levels of cognitive ability (Watson &

Glaser, 1994, 2008). There were no significant differences in terms of demographics and the personality traits of the two groups tended to be quite similar with a few exceptions. The only differences in personality were that the hired managers were better adjusted, more tolerant of others, had higher motivation or ability for intellectual pursuits, and were less sociable although all of these differences were of modest effect size. It is not surprising to find some differences between hired and nonhired job candidates, given that hiring decisions are based, in part, on the personality traits and cognitive ability of job candidates. At the same time, the Study 2 analyses found that hired managers and nonhired managerial candidates had much more in common and that their differences were relatively minor, with the largest difference concerning critical thinking ability. This suggests that, for the most part, the findings of Study 2 would extend to managerial job candidates who were not successful in attaining the position for which they were evaluated.

Study 2 Contributions

In summary, Study 2 extends the findings of Study 1 and contributes to the research literature by providing one of the first examinations of the relationship between bright traits and observer ratings of dark traits. Study 2 provides evidence that the CPI is able to meaningfully predict about half of the dark traits as rated by supervisors. This is practically important for industrial/organizational practitioners because it suggests that the CPI shows promise in screening for maladaptive personality tendencies that supervisors consider to be problematic and a hindrance to job performance. Therefore, one of the primary contributions of Study 2 is to provide initial evidence that the CPI represents one way to address the gap of effective means for screening dark personality traits that are meaningfully related to supervisor perceptions of job performance in personnel selection contexts (Schyns, 2015).

On a conceptual level, Study 2 contributes some information to our understanding of the relationship between bright traits and dark traits based on supervisors' perspectives. It also suggests that the bright traits that predict self-reported dark traits are not necessarily the same ones that predict supervisor ratings of dark traits. For instance, Study 2 found that all of the moving-away dark traits (i.e., Excitable, Cautious, Reserved, Skeptical, and Leisurely) were positively related to the CPI Achievement via Independence scale. These relationships were not found among self-report scores in Study 1, and suggest that individuals who are perceived by their supervisors to exhibit such moving-away dark traits are predicted by this CPI scale related to being achievement-oriented in an independent-minded way and being questioning of conventional advice or rules (Groth-Marnat, 2009). Another example is that Study 2 demonstrated that individuals rated by their supervisors as having higher levels of the Bold and Skeptical dark traits tended to have lower scores on the CPI Empathy scale; these findings provide additional information based on the supervisors' perspectives of dark traits that were not observed when simply considering self-reported dark traits in Study 1.

Study 2 also extends the findings of Study 1 by examining the relationship that observer-rated dark traits have with job performance as well as the ways in which they are related to imbalanced leadership behavior. Study 2 demonstrated that supervisor-rated dark traits were highly predictive of poorer managerial job performance based on all domains, including task performance, contextual performance, counterproductive workplace behavior, and overall job performance. This aligns with similar research on bright personality traits, showing that observer ratings of bright personality traits are more accurate than self-reported bright traits in predicting job performance (Oh et al., 2011).

Study 2 also demonstrated that job stress was highly related to poorer performance on

each index of job performance. In particular, evidence was found to suggest that job stress is a risk factor for engaging in counterproductive workplace behavior for those with only low or moderate levels of dark traits. Lastly, evidence was also found to suggest the benefits of self-awareness in regards to one's dark trait tendencies, with higher levels of self-awareness being related to superior levels of job performance on each of the domains.

In addition to demonstrating the pernicious effects of dark traits on job performance, Study 2 also examined the ways in which dark traits disrupt leadership effectiveness. It demonstrated that about half of the dark traits were related to ineffective and imbalanced leadership behavior. These patterns of ineffective leadership were related to imbalances in the extent to which leaders were forceful and enabling in leading their team as well as the extent to which they focused on strategic planning in their work (Kaiser et al., 2010; Kaplan & Kaiser, 2006).

The findings of Study 2 highlight the importance of considering observer-ratings of dark traits. The latter represents a gap in the literature (Gaddis & Foster, 2015), which is concerning given that self-report measures of dark traits may be prone to biases associated with responding in a socially desirable manner as well as a lack of awareness of one's own dark trait tendencies (O'Boyle et al., 2012, 2014; Viswesvaran et al., 2007); these biases are likely a particular concern in high-stakes employment testing contexts. Study 2 reinforces the need to address these concerns by providing evidence of the discrepancies between self-reported and observer-rated dark traits, suggesting that the two perspectives are largely unrelated. This aligns with similar work that also only found modest correlations between self- and other-perceptions of individuals' personality disorders (Klonsky, Oltmanns, & Turkheimer, 2002). As alluded to above, one reason for these discrepancies likely concerns the nature of dark traits, which are

considered to be maladaptive personality and interpersonal tendencies that operate, at least to some extent, beyond the awareness of the individual (Harms et al., 2014; Hogan & Hogan, 2001; O'Boyle et al., 2012). A further discussion of broad implications and limitations as well as future directions is provided in Chapter 4, the overall discussion.

Chapter 4: Overall Discussion

This dissertation considers two main topics of inquiry. The first concerns assessing the relationship of CPI bright personality traits with self-reported dark personality traits. The second concerns investigating the relationship between CPI bright traits and supervisor-rated dark traits as well as the relationship between supervisor-rated dark traits, job performance, and imbalanced leadership behavior.

Study 1 contributes to research on the relationship between bright and self-reported dark personality traits. This literature has typically focused on five-factor measures of personality traits and Study 1 extends this line of research to the CPI, which is a personality inventory designed for, and commonly used in, employment contexts that has the potential to screen for dark personality traits in personnel selection contexts (Gough & Bradley, 1996; Groth-Marnat, 2009). Study 1 demonstrated that there is a large amount of overlap between the CPI and self-reported dark traits, and that there are meaningful patterns of CPI scales that predict each of the dark traits with large effect sizes and that also contribute to the theoretical understanding of individual dark personality traits. After Study 1 demonstrated that these measures of bright and dark personality are significantly related, Study 2 built on these findings in three ways.

First, Study 2 examined the relationship between the CPI and supervisor ratings of dark personality traits. This study demonstrated that the CPI can predict significant and meaningful amounts of variance in about half of the dark traits. This is important because observer ratings of dark personality traits have rarely been examined and represent a gap in the literature, which has tended to focus on self-report measures of dark personality traits (Gaddis & Foster, 2015). Study 2 also showed that the bright traits that are predictive of self-reported dark traits differ from those that predict supervisor ratings of dark personality traits. This reinforces the importance of

researching observer ratings of dark traits in addition to self-reported dark traits to elucidate the differing relationships between the two perceptions of a person's dark-trait tendencies (Gaddis & Foster, 2015).

Second, Study 2 examined the ways that supervisor ratings of dark personality traits are related to job performance. In line with the recommendations of Burch and Anderson (2008), Study 2 examined three specific types of job performance and demonstrated that dark traits negatively influence task performance, contextual performance, and counterproductive workplace behavior. Counterproductive workplace behavior, in particular, has been pinpointed as an area of job performance requiring further study and which is of considerable relevance to dark personality traits (Gaddis & Foster, 2015; Schyns, 2015). Study 2 reinforced the importance of examining specific areas of job performance and found evidence that dark traits have a nonlinear relationship with counterproductive behavior (but not the other two types of job performance); it was found that at very high levels of dark traits, after a certain cutoff point, they are no longer related to higher levels of counterproductive workplace behavior. This nonlinear trend is similar to what has been observed in research on the bright trait of emotional stability (i.e., neuroticism) and its relationship with counterproductive workplace behavior (Le et al., 2011).

Counterproductive workplace behavior was also the only one of the three job performance measures to show evidence of being moderated by job stress. It was found that job stress is a risk factor for individuals who have low levels of dark traits. Such individuals are typically at low risk for counterproductive workplace behavior, but are more likely to engage in such destructive behavior when experiencing higher levels of job stress. This aligns with the person-situation interactionist model of behavior, which states that the environment influences

the extent to which a trait is expressed (Judge et al., 2009; Tett & Burnett, 2003). In regards to dark traits, job stress represents an important environmental contingency that is considered to moderate the extent to which dark traits manifest in a given situation for individuals with generally low levels of dark traits. On the other hand, individuals with high levels of dark traits are at high risk of counterproductive behavior regardless of their stress level.

Study 2 also found that dark traits and job stress were highly correlated, which suggests that individuals with high levels of dark traits are likely to be experiencing higher levels of job stress (certainly higher than those with low levels of dark traits). In other words, the moderating role of job stress attenuates as individuals have high levels of dark traits likely because most of these individuals are experiencing elevated levels of job stress. These findings support the theory that dark traits reflect people's personality functioning when working under stressful and suboptimal conditions (Hogan & Hogan, 2001) and align with past research indicating that the two are related (Wille et al., 2013).

Some evidence for a similar moderating effect with counterproductive workplace behavior was observed with the level of self-awareness managers had about their dark traits. Study 2 found evidence to suggest that high levels of self-awareness may buffer the level of counterproductive workplace behavior by those with high levels of dark traits. Individuals who had greater self-awareness of their dark-trait tendencies tended to engage in less counterproductive workplace behavior than their less self-aware peers. This aligns with past work on self-awareness indicating that higher levels of self-awareness are adaptive for job performance (Church, 1997). It also suggests that using psychological interventions related to gaining awareness of one's dark traits can be useful for improving counterproductive workplace behavior (Hogan & Warrenfeltz, 2003; Nelson & Hogan, 2009). These findings are preliminary

and highlight the importance and the need of future research to examine counterproductive workplace behavior as a distinct aspect of job performance.

The third set of findings provided by Study 2 regards the relationships of dark personality traits with imbalanced leadership behaviors. These analyses move beyond the question of whether dark traits disrupt job performance to the ways in which they affect managers' leadership effectiveness. All of the dark traits were found to be correlated with overdoing or underdoing core leadership behaviors in ways that align with theory and similar research (Kaiser et al., 2015), and regression analyses indicated the dark traits most predictive of each type of leadership imbalance. Similar to recent work using self-report dark-trait measures, it was found that both low levels and high levels of dark traits are related to leadership imbalances with moderate levels of dark traits related to appropriate amounts of leadership behavior (Kaiser et al., 2015). Study 2 extends this line of research to supervisor-rated dark traits and suggests it is also a fruitful avenue for future research.

Comparing the Bright–Dark Trait Relationships of Study 1 and Study 2

There were two broad and important differences that should be emphasized in the relationships between bright and dark personality traits that were observed in Study 1 and Study 2. First, the correlations between bright and dark traits were much stronger in Study 1 than in Study 2. Second, although the two studies showed some similarities in the patterns of bright–dark trait correlations, the bright-trait CPI scales that predicted dark traits in the regression analyses were very different between the two studies. There may be several factors that contribute to these differences but they are likely influenced by at least two broad categories.

One key reason for the discrepant relationships between bright traits and dark traits as rated by the self or by a supervisor is that the two sets of dark-trait ratings are themselves quite

different. This is evidenced by the Study 2 correlations between self-reported and supervisor ratings of dark traits that were typically not meaningfully related and at best shared only modest correlations. This aligns with a review on this issue in regards to clinical personality disorders, which found that the relationship between self- and other-ratings of personality disorders tend to be of only modest size, although the relationships in this study were larger than those observed in Study 2 (Klonsky et al., 2002).

These differences in self- and supervisor-ratings of dark traits may be related to a variety of biases. Such biases can include those related to (a) socially desirable response biases (Connelly & Ones, 2010; Malloy, Albright, Kenny, Agatstein, & Winquist, 1997; Oh et al., 2011), (b) a lack of self-awareness regarding one's dysfunctional personality traits (O'Boyle et al., 2012; Vazire, 2010), (c) the limits of supervisor's awareness of the ratee's dark traits, particularly those that are less observable in nature or more difficult to evaluate (Connelly & Ones, 2010), as well as (d) other biases that may affect supervisors' ratings, such as those involved with making absolute ratings as opposed to comparative ones (Goffin & Olson, 2011). It is also worth noting that the sizes of the Study 2 self–other rating correlations are much weaker than those found between self-report and observer ratings of bright personality traits (Connelly & Ones, 2010; Oh et al., 2011). The larger discrepancies between self- and supervisor-ratings of dark traits than bright traits aligns with past research on clinical personality disorders (Klonsky et al., 2002), as well as with the theory of dark traits which are considered to reflect patterns of dysfunctional or destructive behaviors that operate, at least to some extent, beyond the awareness of the individual (Harms et al., 2014; Hogan & Hogan, 2001; O'Boyle et al., 2012). These findings underscore the need for future research on other-rated dark personality traits (Gaddis & Foster, 2015).

A second possible factor that may have influenced the differences in bright–dark trait relationships that were observed between the two studies concerns measurement error. As discussed in the Study 1 and 2 method sections, the HDS and the dark personality adjective checklist both have suboptimal internal consistency. The HDS represents the gold standard in the personnel selection literature and its suboptimal internal consistency is likely a result of both its focus on predictive validity rather than internal consistency (Hogan & Hogan, 1997, 2009), as well as the state of the science at this time. Similarly, the dark-trait adjective checklist used in Study 2 also represents the most suitable and accessible (attained from Hogan Assessments Inc.) observer-ratings measure of dark traits for use in employment contexts at the time of this study (a review of dark personality trait measures found no observer-rating scale suitable for employment contexts in the academic literature; see Furnham et al., 2014). Although the psychometric properties of the dark-trait adjective checklist have not yet been examined in the academic literature, Study 2 found its internal consistency to be superior to the HDS for supervisor ratings and comparable to the HDS for self-ratings of dark traits (Hogan & Hogan, 1997, 2009). Nonetheless, the relatively low level of internal consistency of both dark-trait measures attenuates the size of correlations due to measurement error and, as a result, suggests that the correlations in Study 1 and Study 2 are underestimates of the true relationships between variables (Goodwin & Leech, 2006).

This highlights the need for future research to develop appropriate and psychometrically sound measures of dark traits, particularly observer-rated dark traits, which represents a significant gap in the academic literature (Gaddis & Foster, 2015). Although a measure to assess for psychopathic personality traits in the workplace has received academic attention (the B-Scan 360; Mathieu, Hare, Jones, Babiak, & Neumann, 2013), other measures are needed to examine

observer ratings of the variety of dark personality traits in the workplace.

General Practical and Theoretical Contributions

The two studies of this dissertation provide several conceptual and practical contributions to the managerial and leadership personality literature and to organizational practice. Conceptually, they extend the theoretical understanding of bright–dark trait relationships to a normal personality inventory that was designed to predict important social and job-related personality and behavioral tendencies in occupational contexts. This provides an improved understanding of the relationships between various bright personality traits and dark personality traits and it also sheds light on some of the psychological underpinnings (i.e., motives, abilities, and perceptions) that are considered to drive maladaptive behavior (Harms et al., 2014). For instance, Study 1 found that the Skeptical dark trait was most strongly predicted by perceptions of distrust toward others or hostile motives toward others. This aligns with five-factor trait research showing that the Skeptical dark trait is negatively related to agreeableness (interpersonal sensitivity; Oluf & Furnham, 2015) but it also deepens the understanding of the bright traits, perceptions, and motives that characterize the Skeptical dark trait. In addition, Study 2 also speaks to the relationships that dark traits, as rated by supervisors, have with different aspects of job performance as well as how they relate to ineffective and imbalanced leadership.

In terms of practical contributions, the current studies provide an initial indication of the CPI's ability to predict both self-reported and supervisor-rated dark personality traits. The CPI is a longstanding personality inventory that is commonly used in employment contexts and these studies provide initial evidence that it may be one potential means through which to screen for dark traits in the workplace. The current two studies build on a significant body of research (reviewed in Appendix A), which suggests that the CPI is related to maladaptive personality

functioning, and they show that this extends to more modern conceptualizations of dark traits (e.g., Higgins-Lee, 1990; Standage & Ladha, 1988; Standage, Smith, & Norman, 1988). The current studies also highlight the importance of screening for dark traits by demonstrating their negative effects on job performance and leadership behavior.

This empirical examination provides a step toward finding an effective instrument to assess for dark traits in employment contexts, which has been pinpointed as a particular challenge in personnel selection and as an important area requiring future research (Schyns, 2015). Moreover, using the CPI to screen for maladaptive personality tendencies likely provides a fairly effective means to overcome some of the current difficulties in screening dark traits in selection assessments, including (a) social desirability response biases (Viswesvaran et al., 2007), (b) participant lack of self-awareness regarding their dark tendencies (O'Boyle et al., 2012), and (c) ethical or practical concerns regarding the use of invasive psychiatric/medical tests in selection contexts (Christiansen et al., 2014; Guenole, 2014). Future research is needed to examine the ability of the CPI to serve as a screening measure of dark personality traits for the purpose of personnel selection.

Future Research Directions

The current studies examined the relationship between bright and dark personality traits in a sample of managers working in a business context. The types of skills required for success in a business context vary from those in other workplace contexts that may have different demands. For instance, some of the skills needed to be successful in management in a business context are related to having solid interpersonal and leadership skills, good decision-making skills and diligent work style, and a focus on achieving goals (Gaddis & Foster, 2015). Research has also shown that business managers tend to

have different types of personality traits than individuals working in other professions and tend to be characterized by extraversion and emotional stability, openness to experience, conscientiousness, and agreeableness (Barrick & Mount, 1991). Future research is needed to examine the relationship between bright and dark personality traits in managers in other contexts as well as extend it to individuals in other types of professions or other types of leadership roles. For instance, an interesting application would be to examine the patterns and levels of dark personality traits in individuals who are considered to be virtuous leaders and moral exemplars (Frimer, Walker, Dunlop, Lee, & Riches, 2011; Frimer, Walker, Lee, Riches, & Dunlop, 2012; Walker, 2013a, 2013b).

Another area for future exploration concerns examining other ways in which dark traits affect leadership effectiveness. Although Study 2 considered this through the examination of dark traits and imbalanced leadership behavior, it is also important to examine how dark traits may influence other aspects of leadership. For instance, transformational leadership represents one important model of leadership that is related to a variety of positive outcomes in occupational contexts (Judge & Piccolo, 2004; Wang, Oh, Courtright, & Colbert, 2011) as well as other leadership contexts (Beauchamp et al., 2014, 2016). Some of the adaptive outcomes associated with transformational leadership behavior include increased follower motivation, self-efficacy, self-confidence, engagement, hope and wellbeing, job satisfaction, improved leader–follower relationships, as well as improved job performance based on a variety of different indices (Beauchamp, Barling, & Morton, 2011; Beauchamp et al., 2014, 2016; Judge & Piccolo, 2004; Wang et al., 2011). Given the important role of transformational leadership behavior, future research should examine the ways in which dark traits might affect such

leadership behavior. Some research has suggested that this would be a fruitful line of research, finding evidence that the dark traits associated with narcissism (Bold) and social avoidance (Cautious) undermine transformational leadership behavior, but that the dark trait related to being histrionic (Colorful) is actually positively related to transformational leadership behavior (Khoo & Burch, 2008).

Another important area for future research investigation concerns examining the developmental trajectories of individuals with dark traits. Whereas much of the research on children has focused on clinical samples (e.g., Bakker, Greven, Buitelaar, & Glennon, 2017), some research has suggested that certain dark traits, such as psychopathic traits, can be observed in children in a nonclinical sample (Cassels & Birch, 2014). This study found that subclinical levels of psychopathic traits were related to difficulties with social-emotional functioning in childhood. Other researchers examining a nonclinical sample of adolescents found evidence that dark-triad traits (psychopathy, narcissism, and Machiavellianism) were related to parent ratings of aggressive and delinquent behavior as well as lower levels of agreeableness, conscientiousness, openness to experience, and emotional stability (Muris, Meesters, & Timmermans, 2013).

In order to better understand the developmental trajectories of various dark traits, future research is needed to examine individual differences that may be related to dark traits and to examine these across the lifespan. One individual difference that has been found to be related to psychopathic traits in school-age children is theory of mind abilities, such that higher levels of psychopathic traits were negatively related to theory of mind abilities (Stellwagen & Kerig, 2013). Further exploring the relationship between dark traits and individual differences in social-cognition, such as the ability to reason

about mental states (Birch, 2005; Birch & Bloom, 2007), likely represents one promising avenue for future research. A related and important line of inquiry also needing further exploration concerns the risk factors, such as dysfunctional caregiver relationships (Quirk, Wier, Martin, & Christian, 2015), which may predispose individuals to the maladaptive intrapersonal and interpersonal personality tendencies associated with dark traits.

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Appendix A: A Review the CPI and Maladaptive Personality Functioning

This review first discusses the CPI's relationship to maladaptive personality functioning in general and then its specific relationships with each of the 10 DSM-5 personality disorders.¹ Some of these personality disorders, or maladaptive personality styles, that share certain common elements or that have been examined together in certain studies will be discussed together (i.e., paranoid, schizoid, and schizotypal; borderline and antisocial; narcissistic and histrionic), whereas others that have tended to be examined in isolation will be discussed individually (i.e., obsessive-compulsive, avoidant, dependent, and depressive). One additional dark personality trait that is included in Hogan and Hogan's (2001) taxonomy, but that is no longer included in the current version of the DSM (DSM-5; APA, 2013), is passive-aggressive personality disorder. No relevant research examining the relationship between this maladaptive personality style and the CPI was found and, therefore, this is not discussed in the following summary. The only exception to this is one study that examined the intercorrelations between the CPI and various personality disorders, including passive-aggressiveness (Holliman & Guthrie, 1989).

The CPI represents promise in tapping characteristics associated with maladaptive functioning because approximately 40% of the items of the early versions of the CPI were also part of the MMPI (the more recent 434-item version of the CPI shares 171 items with the MMPI and 158 items with the MMPI-2; Gough & Bradley, 1996). Some research seeking to use the CPI to assess for maladaptive functioning sought to use the CPI-MMPI shared items to predict MMPI scale scores using strictly CPI items (Rodgers, 1966). This was accomplished by using

¹ This appendix on the relationship between the CPI and maladaptive personality traits is a part of a larger unpublished review on the topic completed by the author.

the shared items to develop CPI short-form scales that mapped onto MMPI scales. Using a validation sample of psychiatric outpatients, linear combinations were developed to provide CPI-based estimates of the MMPI scales. Rodgers (1966) concluded that the CPI estimates of MMPI scales provided useful measures of maladaptive functioning, with correlations between the CPI estimates and the MMPI scales approaching levels sufficient for test-retest reliability, with an average correlation of $r = .74$ between each of the scales.

Since Rodgers' (1966) original CPI short-form scale, another similar CPI short-form was developed with the goal of improving the intercorrelations between the shortened and the full CPI scales, while simultaneously maintaining the same level of predictive ability with the MMPI (Schut et al., 1980). This scale was developed using the same CPI-MMPI shared items employed by Rodgers (1966), as well as additional CPI items that were similar in meaning but different in phraseology to MMPI items (Schut et al., 1980). These researchers found that their CPI short-form had strong correlations with the respective CPI full scales, and they suggested that it would also be a good predictor of MMPI scales, even though they did not provide data to support this assertion in their study.

Other work using shared CPI-MMPI items has sought to predict CPI scales from strictly MMPI items (Megargee, 1966). Megargee used CPI-MMPI shared items to develop short-form MMPI scales that could then be used to predict CPI scales. It was found that all of the short-form MMPI scales had strong relationships with the related full CPI scales, ranging from correlations of $r = .59$ (Self-Acceptance) to $r = .86$ (Tolerance), and a median correlation across the CPI-MMPI scales of $r = .70$. Other research has employed similar CPI short-forms to function as dependent variables of psychopathology, which serve as estimates of MMPI scales (Cook, Young, Taylor, & Bedford, 1996; Sheppy, Friesen, & Hakstian, 1988).

The relationship between the full CPI and MMPI scales has also been examined to assess the CPI's ability to screen for general maladaptive personality functioning. For instance, a few studies have found that an overall low CPI profile, characterized by low scores on most of the CPI scales, is predictive of maladaptive functioning, with lower scores representing more severe disturbances in functioning (Standage & Ladha, 1988; Standage et al., 1988). Other research has also supported the notion that low overall CPI scores (i.e., standard scores of 25 or below) can predict MMPI maladaptive personality functioning associated with neurotic, psychotic, or addictive tendencies, with a 79% level of accuracy (Higgins-Lee, 1990).

Some studies have examined the specific CPI scales that best distinguish abnormal personality traits or maladaptive functioning. For instance, one study examined the relationship between the CPI and the Diagnostic Inventory of Personality and Symptoms, a measure of DSM-III (APA, 1980) Axis I and Axis II disorders (Leroux et al., 1990). This study found that various scales were all negatively related to the three Axis II diagnostic scales, which assess maladaptive personality functioning related to immature, withdrawn, or neurotic personality tendencies. It was also found that these CPI scales were related to various Axis I scales, including those measuring schizophrenic, paranoid, depressive, and anxiety symptoms. In another study on the age-related decreases in personality disorder symptom severity, various CPI scales, particularly the Responsibility and Socialization scales, were able to distinguish the more severe personality disorder manifestations in the younger patients, from the relatively less severe symptomatology of the older adults (Molinari et al., 1999).

One scale that has been found to be particularly good at distinguishing maladaptive personality functioning is the CPI Socialization scale. For example, one study on psychiatric inpatients found that low scores on the Socialization scale (i.e., standardized scores below 32)

were able to detect all of the patients who had a diagnosis of a personality disorder (Standage, 1986). This has been replicated by another study on psychiatric outpatients, which concluded that the “[Socialization] scale could be used to screen for most, if not all, personality disorders” (Standage, 1990, p. 340). Yet, the Socialization scale is not equally applicable to all of the personality disorders; its relationship with the DSM-III (APA, 1980) personality disorders ranges from a relatively weak relationship with dependent personality disorder ($r = -.19$) to a relatively strong relationship with antisocial personality disorder ($r = -.66$; Alterman et al., 2003).

One other study has examined the intercorrelations between the CPI scales and the Millon Clinical Multiaxial Inventory (MCMI), which is a measure of personality disorders that corresponds to the DSM-III (Holliman & Guthrie, 1989; Millon, 1983). According to Cohen's (1988) criteria, all of the MCMI personality disorders were found to have moderate ($.30 < r < .50$) to strong ($r > .50$) correlations with various CPI scales (Holliman & Guthrie, 1989). The only exception to this was paranoid personality disorder, which only had small correlations ($.10 < r < .30$) with the CPI scales (Holliman & Guthrie, 1989). Many of the personality disorders tended to be negatively related to CPI scores. However, four of the Cluster B personality disorders (i.e., narcissistic, histrionic, and antisocial traits) were found to be positively related to measures of social dominance and status (Holliman & Guthrie, 1989). Additionally, this study found that the full CPI scale was able to predict between $R^2 = .32$ (borderline personality disorder) and $R^2 = .58$ (passive-aggressive personality disorder) of the variance of each of the DSM-III personality disorders.

In a similar vein, the CPI manual has provided the intercorrelations between the scales of the CPI and the MMPI (Gough & Bradley, 1996). According to the CPI manual, many of its scales were found to have moderate ($.30 < r < .50$) to strong ($r > .50$) correlations with most of

the MMPI scales related to maladaptive functioning, including the Depression, Psychopathic Deviate, Schizophrenia, and Social Introversion scales. One exception to this was the MMPI Paranoia scale, as was the case with the MCMI, which had only small ($.10 < r < .30$) correlations with the CPI scales. In general, the CPI and MMPI scales were characterized by a negative relationship, such that lower CPI scores were associated with more significant levels of impaired functioning (Gough & Bradley, 1996).

Schizoid, Schizotypal, and Paranoid Personality Traits

The schizoid, schizotypal, and paranoid personality tendencies are considered to reflect schizophrenia spectrum personality traits that share some overlap with each other and with the types of symptoms characteristic of schizophrenia (Braff, Freedman, Schork, & Gottesman, 2007; Camisa et al., 2005). While these three abnormal traits represent distinct patterns of behavior, a few studies have been conducted on this spectrum of maladaptive personality traits and the CPI.

A study examining the factor structure of the CPI found some evidence that it is related to the Cluster A schizophrenia spectrum personality traits (Worling, 2001). Using principal-component analysis, this researcher sought to examine different personality profiles of sexual offenders. Four types of personality profiles were found and one of the four factors was characterized by individuals who were unusual (schizotypal) and interpersonally detached (schizoid). The same factor was also related to low levels of suspiciousness and distrust of others (paranoid), suggesting that this subset of sexual offenders may be characterized by either paranoid or schizoid and schizotypal personality tendencies. Individuals with scores related to this factor were distinguished by high scores on the Flexibility, Achievement via Independence, and Tolerance scales and low scores on the Communality scale. Moreover, it was found that

individuals with these types of schizophrenia-spectrum traits were at increased risk of having had past criminal charges and were also significantly more likely to commit crimes in the future.

Additionally, one other study on paranoid personality traits found that the CPI Socialization scale was negatively related to a MMPI measure of suspiciousness (Stein et al., 1971).

One other study examined the relationship between schizophrenia and the CPI by assessing the ability of the Masculinity–Femininity scale to distinguish males with schizophrenia (Butler & Bieliauskas, 1972). These authors reasoned that they were testing a hypothesis from psychoanalytic theory, which posited that an identity disturbance relating to one's sexuality was part of the psychological difficulties in individuals with schizophrenia. Contrary to their hypotheses, these researchers found that schizophrenic men had scores associated with elevated levels of masculinity (i.e., low Femininity scale scores).

In sum, one study suggests that Schizoid and Schizotypal personality disorders are characterized by high scores on the Flexibility, Achievement via Independence, and Tolerance scales and low scores on the Communality scale; paranoid personality disorder is likely characterized by the opposite pattern of scores on these same scales (Worling, 2001). Another study also indicates that paranoid traits are related to low scores on the Socialization scale (Stein et al., 1971). As well, one study suggests that each of the three Cluster A personality disorders are characterized by low scores on the Femininity scales (Butler & Bieliauskas, 1972).

Antisocial and Borderline Personality Traits

The vast majority of the research conducted on the CPI and maladaptive functioning has been related to antisocial personality traits and this represents a significant body of research that will be briefly summarized below. On the other hand, no studies have directly assessed the relationship between borderline personality disorder and the CPI. Whereas borderline and

antisocial personality disorders are two distinct patterns of personality functioning, they have similarities in which both groups tend to be characterized by impulsive and risky behavior (e.g., substance abuse, reckless driving, and risky sexual activities), as well as patterns of hostile interpersonal behavior (Paris, 1997; Paris et al., 2013). This suggests that some of the findings related to the CPI and antisocial personality characteristics may generalize to individuals with borderline personality tendencies, particularly the studies related to impulsivity, risky behavior, substance abuse, and hostile behavior. Whereas most of the studies that are reviewed were conducted on antisocial individuals, some of these findings may also provide indirect insight into the relationship between the CPI and borderline personality traits.

One of the CPI scales that has received the most attention in assessing antisocial personality traits is the Socialization scale (Gough & Bradley, 1996; Groth-Marnat, 2009). The Socialization scale, originally labeled the Delinquency scale, was developed to classify individuals based on a sociological continuum ranging from severe antisocial behavior, to moderate levels of rebelliousness, to socially normative and rule-abiding behavior (Gough & Bradley, 1996; Groth-Marnat, 2009). The Socialization scale is routinely used as a measure of antisocial behavior and is often used alongside other common measures of antisocial behavior (e.g., Alterman, McDermott, et al., 1998; Alterman, Rutherford, et al., 1998; Edelmann & Vivian, 1988; Gudjonsson, 1984; Haertzen, Martin, Hewett, & Sandquist, 1978; Hare, 1978, 1984, 1985; Waid, 1976). It has also been shown to be highly related to other common measures of antisocial behavior, such as the Antisocial Behavior Checklist ($r = .68$) and the Personality Disorder Questionnaire antisocial personality disorder scale ($r = .66$; Alterman et al., 2003). Additionally, the Socialization scale has been shown to have cross-cultural applicability, with an

extensive study demonstrating its validity to measure antisocial traits across 10 countries (Gough, 1965).

Research has examined the Socialization scale's ability to detect individuals with various antisocial personality characteristics. For instance, low scores on this scale can distinguish individuals who have engaged in various criminal behaviors, as well as distinguish between varying degrees of severity of antisocial behavior (DeFrancesco, 1997; DeFrancesco & Taylor, 1993; Kosson, Kelly, & White, 1997; Pietrzak & Petry, 2005; Rosen & Schalling, 1974; Stein, Vadum, & Sarbin, 1970). Moreover, the Socialization scale was better able to detect those with antisocial personality traits than three commonly used clinical measures of antisocial personality disorder (i.e., the MMPI Psychopathic Deviate scale, the Hare Psychopathy Checklist, and the National Institute of Mental Health Diagnostic Interview Schedule; Cooney, Kadden, & Litt, 1990). Low scores on the Socialization scale are also predictive of impulsivity (Gomà-i-Freixanet, 2001; Gorenstein, 1982; Saunders et al., 2008; Waid & Orne, 1982). One form of impulsive and risky behavior that is particularly common among antisocial individuals is substance abuse (DSM-5; APA, 2013), which is also related to low scores on the Socialization scale (Alterman, McDermott, et al., 1998; Conway, Kane, Ball, Poling, & Rounsville, 2003; Sarchione et al., Sher & Levenson, 1982).

Two other CPI scales with particular relevance to antisocial traits are the CPI Empathy and the Hostility scales (Hogan, 1969). In terms of the former, the Empathy scale was developed to assess one's ability to take the perspective of another and align one's behavior to meet the needs or wishes of another (Gough & Bradley, 1996; Hogan, 1969). Individuals with high scores tend to be adept at perceiving the needs of others and being sensitive toward their feelings, whereas low scorers tend to be cold and insensitive to the feelings of others and typically

characterize antisocial individuals. The Hostility scale, on the other hand, was designed to assess hostile behavior and has been found to be related to other common measures of hostility (Adams & John, 1997). The Hostility scale has been demonstrated to be significantly positively related to observer ratings of hostile affect, cynicism, aggressive responding, social avoidance (as opposed to closeness), hostile attributions of others, and negative affect (Adams & John, 1997).

Many other CPI scales have also been found to be related to antisocial personality traits. For instance, criminals who acted violently or engaged in other forms of misconduct were characterized by lower scores on the Socialization, Responsibility, Self-Control, Good Impression, and Communality scales as well as higher scores on the Dominance, Social Presence and Self-Acceptance, and Independence scales (Carbonell et al., 1984; Forgac & Michaels, 1982; Ge, Donnellan, & Wenk, 2003; Gough et al., 1965). Other studies have found that many of these scales are related to both less severe (e.g., theft) and more severe (e.g., rape or murder) forms of antisocial behavior (Cowden, Schroeder, & Peterson, 1971; Wilcock, 1964). Likewise, similar patterns of scores have been replicated in other cultures as well, such as among Japanese youth (Mizushima & Devos, 1967). Other studies on noncriminal samples have found that individuals exhibiting violent or hostile behavior were characterized by lower scores on the Responsibility, Socialization, Self-Control, Empathy, Tolerance, Flexibility, Achievement via Independence, and Intellectual Efficiency scales (Barnett & Hamberger, 1992; Hooley & Hiller, 2000).

Some of the research on the CPI that is particular relevant to the current study has focused on assessing antisocial traits in the workplace. The majority of this work has been conducted on using the CPI to screen law enforcement applicants (Varela, Boccaccini, Scogin, Stump, & Caputo, 2004). A review of this literature has suggested that the CPI is the best measure for screening law enforcement officers for maladaptive personality tendencies, likely

because it predicts the interpersonal qualities that are needed for the job (Varela et al., 2004). In terms of antisocial behavior among law enforcement officers, lower scores on the Socialization, Responsibility, and Self-Control scales have been found to be related to a host of on-the-job antisocial behaviors, including using excessive force, sexual abuse, substance abuse, noncompliance, embezzlement of property, lying, reckless behavior, hostility towards the public, and failing to reliably perform duties (Sarchione et al., 1998). Likewise, research on other work environments has also found that the Socialization scale is sensitive to antisocial behavior among professionals and managers and that it can be used to assess for so-called white-collar crime (Collins & Bagozzi, 1999). The Socialization scale has also been found to be related to a variety of factors that are considered to be risk factors for destructive and counterproductive workplace behavior (e.g., power motives or negative life themes; Mumford et al., 2001).

In terms of impulsivity, research on criminals and the ability to delay gratification has found that the CPI Self-Control scale was predictive of the ability to control one's impulses (Wormith & Hasenpusch, 1979). Lower scores on other CPI scales, such as the Wellbeing, Socialization, and Self-Control scales, as well as higher scores on the Flexibility scale, have also tended to be associated with sensation-seeking, impulsivity, and a lack of inhibition (Alterman et al., 2003; Blaszczynski, Steel, & McConaghy, 1997; Nell & Strümpfer, 1978). Other research related to impulsivity has examined the relationship between the CPI and engaging in risky behavior. Some studies have found that lower scores on the Self-Control and Responsibility scales were related to engaging in reckless behavior, such as drunk driving or theft (Buikhuisen & Hemmel, 1972; McMillen et al., 1992). Similarly, low scores on the Socialization scale have been shown to predict other forms of risky behavior, such as sexual or drug-related behaviors that put one at risk of contracting HIV (e.g., sharing needles; Tourian et al., 1997).

Similarly, other studies have also found that the CPI measures related to self-regulation and social responsibility are associated with substance abuse. For instance, some studies have found that low scores on the Socialization, Responsibility, and Self-Control scales can distinguish individuals with alcohol or drug dependence (Haertzen et al., 1978; Kurtines, Hogan, & Weiss, 1975; McGuire & Megargee, 1974; Selzer & Barton, 1977; Tarter, 1975). Moreover, different patterns of scores were found to be able to distinguish the severity of substance dependence and substance-related impairment as well as the type of substance-related impairment (e.g., memory lapses, having the shakes, or solitary drinking; Giga & Redfering, 1983; Green & Haymes, 1973; Kurtines, Ball, & Wood, 1978). Similar research on the family history of alcoholism has found that individuals who had an alcoholic parent were characterized by lower scores on the Socialization, Self-Control, and Capacity for Status scales than individuals who did not grow up with an alcoholic parent (Fisher et al., 1993; Hunt, 1999; Sorocco, Lovallo, Vincent, & Collins, 2006). Other research has found that potential risk factors such as a genetic polymorphism or elevated gonadal hormone levels are related to low scores on the CPI Socialization and Self-Control scales (Daitzman & Zuckerman, 1980; Herman et al., 2011). Likewise, research employing physiological measures of substance dependence has found that low scores on the Socialization scale are related to other physiological measures associated with the stress response (Earleywine & Finn, 1994; Sher & Levenson, 1982; Sorocco et al., 2006; Waid, Orne, & Wilson, 1979).

In sum, antisocial personality traits have been found to be related to lower scores on the CPI Socialization, Self-Control, Responsibility, Communalism, Intellectual Efficiency, Tolerance, Wellbeing, Capacity for Status, Achievement via Independence, Good Impression, and Empathy scales, as well as higher scores on the Social Presence, Dominance, Independence, Self-

Acceptance, and Hostility scales (e.g., Adams & John, 1997; Alterman et al., 2003; Barnett & Hamberger, 1992; Carbonell et al., 1984; Fisher et al., 1993; Gough et al., 1965; Kish, 1971; McMillen et al., 1992; Reise & Wink, 1995; Reynolds & Nichols, 1976). Mixed findings were found in regards to the Flexibility scale, which was positively related to some aspects of antisocial traits (e.g., impulsivity), but negatively related to others (e.g., violent behavior; Alterman et al., 2003; Hooley & Hiller, 2000). Of particular relevance, low scores on the Socialization, Responsibility, and Self-Control scales are related to antisocial behavior in workplace contexts (Collins & Bagozzi, 1999; Mumford et al., 2001; Sarchione et al., 1998).

In terms of borderline personality traits, it is likely that they may be related to similar patterns of scores reflecting impulsivity and interpersonal hostility. Therefore borderline traits may be characterized by low scores on the Socialization, Responsibility, Self-Control, Capacity for Status, Wellbeing and higher scores on the Flexibility scales that are associated with impulsivity and substance abuse (Alterman, McDermott, et al., 1998; Alterman et al., 2003; Blaszczynski et al., 1997; Buikhuisen & Hemmel, 1972; Gomà-i-Freixanet, 2001; Gorenstein, 1982; McMillen et al., 1992; Nell & Strümpfer, 1978). In addition, they may be related to lower scores on the Empathy, Responsibility, Socialization, Self-Control, Tolerance, Flexibility, Achievement via Independence, and Intellectual Efficiency scales associated with hostile interpersonal behavior (Adams & John, 1997; Barnett & Hamberger, 1992; Hogan, 1969; Hooley & Hiller, 2000). These studies show that the Flexibility scale was found to be differentially related to the impulsivity and the hostility aspects of borderline personality disorder.

Narcissistic and Histrionic Personality Traits

A few studies have examined the relationship between the CPI and narcissistic personality traits, but no studies have directly assessed the CPI's relationship with histrionic

tendencies. However, there are some similarities between narcissistic and histrionic personality traits and the personality disorders are highly comorbid (APA, 2013; Watson & Sinha, 1998).

While histrionic and narcissistic personality disorders are two distinct types of maladaptive personality functioning, they have similarities in which both disorders tend to be characterized by a desire for excessive admiration and attention, self-centeredness, enviousness of others, and a bold interpersonal style (DSM-5; APA, 2013). Therefore, the research on these particular aspects of narcissistic personality characteristics may generalize to individuals with histrionic personality traits as well.

A CPI Narcissism scale has been developed to assess for narcissistic tendencies according to the DSM-III (Wink & Gough, 1990). The scale was developed to assess four core themes of narcissistic personality, including (a) feelings of entitlement, (b) an exaggerated self-esteem, (c) a devaluation of others, and (d) feelings of being underappreciated. The initial validation of the scale found that it was highly related to one of the most researched and commonly used measures of narcissistic personality, the Narcissistic Personality Inventory ($r = .72$; Wink & Gough, 1990). The CPI Narcissism scale has also been found to be related to a similar MMPI Narcissism scale ($r = .81$) as well as standardized observer ratings of narcissistic behavior ($r = .49$; Wink & Gough, 1990). Moreover, these authors found that scores on the CPI Narcissism scale were significantly positively related to narcissistic traits as rated by participants' spouses. Likewise, another study found that the CPI Narcissism scale was significantly related to various observer ratings of narcissistic traits based on the California Q-set (Wink, 1992).

The relationship between narcissism and the other CPI scales has also been studied. For instance, the initial validation study of the CPI Narcissism scale found that this scale was related

to other CPI scales reflecting a lack of self-control as well as an assertive, confident, and self-centered interpersonal style (Wink & Gough, 1990). Others have found that low scores on the CPI Socialization scale were related to narcissism (Mumford et al., 2001). One study examining various subtypes of adolescent criminals found that one cluster was characterized by narcissistic and histrionic tendencies, which were associated with higher scores on the Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance, Independence, Empathy, and Communal scales (Worling, 2001).

Other research has more closely examined three different aspects of narcissism related to willfulness, hypersensitivity, and autonomy (Wink, 1992). Some of these aspects of narcissism (i.e., willfulness and autonomy) were found to be positively related to social confidence and dominance, which is in line with past research (Wink, 1992). However, other aspects of narcissism related to hypersensitivity were found to be negatively related to measures of social dominance, suggesting that some aspects of narcissism are related to poor social poise and social functioning (Wink, 1992). The latter characteristics associated with insecurity align with other more recent work distinguishing between adaptive and maladaptive narcissistic traits (Cramer & Jones, 2008). In their research, these authors found that maladaptive narcissistic traits were negatively related to psychological adjustment, satisfaction with life, and self-actualization.

These studies suggest that individuals with narcissistic and histrionic traits will be most directly identified by higher scores on the Narcissism scale (Wink & Gough, 1990). Likewise, both of these traits are likely also characterized by lower scores on the Socialization scale and higher scores on the Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance, Independence, Empathy, and Communal scales (Mumford et al., 2001; Worling, 2001). Some of these findings, such as the elevated scores on the Empathy and Communal

scales, should be interpreted with caution as they were only found in one study and they do not appear to align with the theoretical understanding and definition of narcissistic and histrionic traits, which are generally considered to lack empathy and be characterized by a lack of commonality (APA, 2013). Additionally, another study has suggested that narcissism involves both adaptive and maladaptive elements that may be differentially related to the CPI (Wink, 1992).

Avoidant Personality Traits

An Anxiety scale was developed for the CPI to assess the effects of anxiety on social and emotional functioning (Gough & Bradley, 1996; Leventhal, 1966). This scale was originally considered to assess the relationship of anxiety to three areas of social functioning, two of them relating to academic and occupational outcomes and the third relating to general impairments in social or emotional functioning (Leventhal, 1966). The initial validation study of the Anxiety scale used a sample of university students who were seeking counseling help for moderate to severe emotional or social difficulties, as well as a comparison sample, to assess the ability of the Anxiety scale to differentiate between the two groups (Leventhal, 1966). The study found that the scale was related to the overall level of impairment in social and emotional functioning, but that it was not significantly related to academic performance. A follow-up validation study replicated these results with a larger sample, finding that higher CPI Anxiety scores were related to more severe impairments in functioning, as indicated by a poorer prognosis in therapy as well as the need for a longer duration of therapy before successfully reaching termination (Leventhal, 1968). This study, like the first validation study, also failed to find a significant relationship between the Anxiety scale and academic performance, reinforcing the notion that the scale seems

to measure overall impairments in social functioning, rather than those specifically related to academic and occupational outcomes.

This second validation study also demonstrated that the CPI Anxiety scale is related to other measures of anxiety. For instance, the Anxiety scale was found to have strong correlations with the Taylor Manifest Anxiety Scale ($r = .53$ for females and $.61$ for males) and the Welsh A First Factor ($r = .43$ for females and $.59$ for males; Leventhal, 1968). Likewise, the Anxiety scale was found to be significantly positively related to the MMPI Depression, Psychasthenia, and Social Introversion scales, and negatively related to the Hypomania scale (Leventhal, 1968). This suggests that the CPI Anxiety scale is related to social anxiety, but that it is also related to aspects of depressed mood and unusual thought content. An examination of the relationship between the CPI Anxiety scale and the other CPI scales supported these findings, showing that participants with high Anxiety scores tended to be socially detached and cold toward others, as well as poorly adjusted.

Four other studies have examined the relationship between other CPI scales and avoidant personality tendencies. The first study assessed the relationship between the CPI and the MMPI Social Introversion scale (Schuerger et al., 1987). The Social Introversion scale is considered to be a measure of social functioning that is related to shyness and self-consciousness, social avoidance, and alienation from others (Nichols, 2001). This study found that most of the CPI scales were significantly negatively related to the MMPI Social Introversion scale, suggesting that many of the CPI scales are relevant for assessing various aspects of poor social functioning and anxiety (Schuerger et al., 1987). However, it was also found that the MMPI measure of Social Introversion was positively related to the CPI Self-Control scale, perhaps reflecting the hypervigilance and rigidity that characterizes socially anxious and avoidant individuals.

(Schuerger et al., 1987). These findings align with another similar study that also found a negative relationship between a similar MMPI-based measure of social introversion and the CPI Socialization scale (Stein et al., 1971).

Another study has examined the CPI's relationship with a measure of social alienation (i.e., the A-scale; Kish & Timmons, 1971). This measure of social alienation assesses aspects related to social isolation, uncertainty about one's identity and interpersonal relationships, and dissatisfaction with one's present circumstances. This study had similar findings to Schuerger and colleagues (1987), finding that almost all of the CPI scales were negatively related to social alienation and could be considered useful in assessing avoidant personality tendencies. One other study related to avoidance personality tendencies sought to examine the differences between individuals who were rated as having either good or inadequate social skills and social functioning (Bryant et al., 1976). This study found that those rated as having impaired social functioning were distinguished by lower scores on the CPI Dominance, Sociability, Capacity for Status, and Self-Acceptance scales.

In sum, research has found that avoidant personality disorder is characterized by high scores on the Anxiety scale as well as low scores on most of the other Dominance, Sociability, Capacity for Status, Social Presence, Self-Acceptance, Wellbeing, Responsibility, Socialization, Self-Control, Tolerance, Good Impression, Achievement via Conformance, Achievement via Independence, Intellectual Efficiency, and Psychological-Mindedness scales (Bryant et al., 1976; Kish & Timmons, 1971; Leventhal, 1966; Schuerger et al., 1987; Stein et al., 1971).

Additionally, there were mixed findings regarding the Self-Control scale, one of which found that higher levels were related to avoidant traits, whereas the other found that lower levels were related to avoidant traits (Kish & Timmons, 1971; Schuerger et al., 1987).

Dependent Personality Traits

Only one study was found related to dependent personality tendencies. This study assessed the ability of the CPI to measure aspects related to submissiveness (Tuddenham, 1959). It was found that three groups of CPI scales were each negatively related to submitting to others, such that submissive individuals were characterized by lower levels of (a) intellectual ability and motivation (i.e., the Achievement via Independence, Achievement via Conformance, and Intellectual Efficiency scales), (b) psychological insight and awareness (i.e., the Self-Acceptance, Flexibility, and Tolerance scales), and (c) social status and interpersonal dominance (i.e., the Capacity for Status, Social Presence, and Dominance scales). This suggests that low scores on the CPI scales related to interpersonal effectiveness, independent thought and action, and psychological adjustment may be predictive of submissive personality tendencies, as well as dependent personality traits in general.

Obsessive–Compulsive Personality Traits

Only one study has examined the relationship between the CPI and obsessive–compulsive personality traits. This study, which was previously described in the section on paranoid personality traits, sought to examine various personality subtypes among a group of adolescent sexual offenders (Worling, 2001). One of the personality subtypes was characterized by obsessive–compulsive personality tendencies (Worling, 2001). The obsessive–compulsive component of this factor was characterized by being emotionally overcontrolled, responsible, reliable, and rigid, which was related to various CPI scales, including high scores on the Responsibility, Self-Control, Good Impression, Achievement via Conformance, and Intellectual Efficiency scales as well as low scores on the Tolerance and Flexibility scales (Worling, 2001).

This provides initial evidence to suggest that these scales may be related to obsessive-compulsive tendencies.

Using the CPI to Assess Dark Personality

A significant body of research suggests that the CPI can be used to assess maladaptive personality functioning. Several studies have demonstrated the CPI's ability to detect individuals who have been diagnosed with a clinical personality disorder as well as its ability to assess various forms of maladaptive personality functioning in general (e.g., Leroux et al., 1990; Molinari et al., 1999; Standage, 1990). While the CPI can detect individuals exhibiting maladaptive personality tendencies, as well as aid in providing a fuller understanding of an individual's personality functioning, it was not designed to be used as the sole basis for making diagnostic decisions in clinical settings. Rather, the CPI seems to be a suitable measure to assess the spectrum of maladaptive personality functioning, ranging from less severe nonclinical levels to more severe clinical levels of impairment (Gough & Bradley, 1996; Jay & John, 2004). Likewise, research suggests that the CPI could also be effectively used to screen for individuals with maladaptive personality functioning (e.g., Higgins-Lee, 1990; Standage & Ladha, 1988; Standage et al., 1988).

The vast majority of the research on the CPI and maladaptive personality functioning has focused on antisocial personality traits (e.g., Alterman, McDermott, et al., 1998; Carbonell et al., 1984). The CPI Socialization scale in particular has received extensive focus and is commonly used as a measure of antisocial personality traits or psychopathy, with lower scores representing increasingly severe impairments in functioning (e.g., Alterman, Rutherford, et al., 1998; Cooney et al., 1990; Gough, 1965). Research on antisocial personality traits has found that the CPI is related to various antisocial characteristics including violent behavior and other forms of social

misconduct (e.g., DeFrancesco, 1997), impulsivity and sensation-seeking (e.g., Earleywine & Finn, 1991), alcohol and drug abuse and dependence (e.g., Sarchione et al., 1998), and hostility (e.g., Adams & John, 1997).

While the majority of research has focused on antisocial personality traits, a good number of studies have also provided evidence that the CPI is related to several other DSM-5 patterns of maladaptive personality functioning. This includes narcissistic (e.g., Wink & Gough, 1990) and avoidant (e.g., Leventhal, 1966) personality tendencies. In terms of the other seven DSM-5 personality disorders, relatively little research has been conducted using the CPI. Five of these personality disorders (i.e., paranoid, schizoid, schizotypal, dependent, and obsessive-compulsive personality disorders) have each been examined by only one or two studies.

The other two of these personality traits, borderline and histrionic personality tendencies, have not received any direct empirical investigation. However, these personality styles share common characteristics with other abnormal personality traits that have been well researched. For instance, there is some similarity and overlap between antisocial and borderline personality tendencies related to impulsivity, risky behavior, and interpersonal hostility (Paris, 1997; Paris et al., 2013). Therefore, some of the findings on antisocial individuals may also be informative, at least in part, in understanding the relationship between the CPI and certain borderline personality tendencies. Likewise, narcissistic and histrionic traits also share some common characteristics and are highly comorbid (APA, 2013; Watson & Sinha, 1998). Therefore, some of the research on narcissistic traits may generalize and speak to the relationship between the CPI and histrionic personality tendencies. This suggests that even though borderline and histrionic personality traits have not been directly studied, some of the research still provides indirect support for their relationship with the CPI.

In all, a great deal of research has been conducted on the CPI and maladaptive personality functioning related to the DSM personality disorders. The extent of this research, however, varies substantially across different forms of maladaptive personality functioning. While the extent of research was not distributed evenly across the various abnormal personality traits, all of the DSM personality styles have been examined by at least one study or have otherwise received indirect empirical examination. Moreover, one study has provided the intercorrelations between 18 of the CPI scales and all of the DSM-III personality disorders (Holliman & Guthrie, 1989). Therefore, the significant amount of research on the CPI suggests it has the potential to assess, at least in part, aspects related to each of the dark personality traits.

Appendix B: Study 2 Questionnaires

Observer-Ratings Questionnaire

Instructions: Please fill out the following information about yourself:

1. Gender: male/female
2. Year of birth: [dropdown menu] 2013-1900
3. Ethnicity: Caucasian or White, African-American or Black, Asian American or Asian, Hispanic or Latino, Native American, Other
4. Number of years working in any management position (including front-line supervisor): [dropdown menu] <1-60
5. Number of years in current position: [dropdown menu] <1-60
6. Level of management: Front-line Supervisor; Middle-manager; Head of a department; General manager; Executive-level
7. Total compensation in 2014: [dropdown menu] Less than \$20,000; \$20,000-\$39,999; \$40,000-59,999; \$60,000-79,999; \$80,000-99,999; \$100,000-119,999; \$120,000-139,000; \$140,000-159,999; \$160,000 or more
8. Education: some high school, high school diploma, some college/university, bachelor degree, graduate or professional degree
9. How well do you know the worker that you are rating: 1(Not at all), 2, 3, 4, 5(Moderately well), 6, 7, 8, 9 (Extremely well)

General Instructions: This is a questionnaire on various aspects of workplace behavior and performance.

Please rate your worker on the following items in regards to his/her behavior at work.

If you are unsure about how your worker actually behaves or feels, please rate the extent to which you suspect that they behave or feel. We want your impressions of your worker.

Workplace deviance Scale (Bennett & Robinson, 2000)

Instructions: How often do you suspect that your worker has ...

[Rating scale: 1 (*Never*) to 7 (*Daily*)]

- 1) Made fun of someone at work.
- 2) Said something hurtful to someone at work.
- 3) Made an ethnic, religious, or racial remark at work.
- 4) Cursed at someone at work.
- 5) Played a mean prank on someone at work.
- 6) Acted rudely toward someone at work.
- 7) Publicly embarrassed someone at work.
- 8) Spent too much time fantasizing or daydreaming instead of working.
- 9) Taken an additional or longer break than is acceptable at your workplace.
- 10) Came in late to work without permission.
- 11) Littered his/her work environment.
- 12) Neglected to follow his/her boss's instructions.

- 13) Intentionally worked slower than he/she could have worked.
- 14) Discussed confidential company information with an unauthorized person.
- 15) Put little effort into his/her work.
- 16) Dragged out work in order to get overtime.

Organizational Citizenship Behavior (Williams & Anderson, 1991)

Instructions: How likely is it that your worker ...

[Rating scale: 1 (*Not at all likely*) to 5 (*Extremely likely*)]

- 1) Helps others who have been absent.
- 2) Helps others who have heavy work loads.
- 3) Assists a supervisor with his/her work (when not asked).
- 4) Takes time to listen to co-workers' problems and worries.
- 5) Goes out of way to help new employees.
- 6) Takes a personal interest in other employees.
- 7) Passes along information to co-workers.
- 8) That his/her attendance at work is above the norm.
- 9) Gives advance notice when unable to come to work.
- 10) Takes undeserved work breaks.
- 11) Spends a great deal of time with personal phone conversations.
- 12) Complains about insignificant things at work.
- 13) Adheres to informal rules devised to maintain order.

Task Performance Questionnaire (Williams & Anderson, 1991)

Instructions: How often does your worker ...

[Rating scale: 1 (*Not at all*) to 7 (*Frequently, if not always*)]

- 1) Adequately complete assigned duties.
- 2) Fulfill responsibilities specified in job description.
- 3) Perform tasks that are expected of him/her.
- 4) Meet formal performance requirements of the job.
- 5) Engage in activities that will directly affect his/her performance evaluation.
- 6) Neglect aspects of the job he/she is obligated to perform.
- 7) Fail to perform essential duties.

Job Stress Scale (De Fruyt, 2002)

Instructions: Please rate your impressions of your worker on the following items ...

[Rating scale: 1 (*totally false*) to 5 (*totally agree*)]

- 1) Often feels under pressure at work.
- 2) Experiences a good balance between professional and family life.
- 3) Recently, everything concerning his/her job takes great pains.
- 4) Sometimes he/she is not able to face the next work day.
- 5) His/her job demands too much from him/her.
- 6) Once he/she has finished his/her job, he/she can easily relax.
- 7) His/her job makes him/her tense most of the time.

Self-Ratings Questionnaire

Instructions: Please fill out the following information about yourself:

1. Gender: male/female
2. Year of birth: [dropdown menu] 2013-1900
3. Ethnicity: Caucasian or White, African-American or Black, Asian American or Asian, Hispanic or Latino, Native American, Other
4. Number of years working in any management position (including front line supervisor): [dropdown menu] <1-60
5. Number of years in current position: [dropdown menu] <1-60
6. Current position: Salesperson (non-management); Engineer or Technician (non-management); Front-line Supervisor; Middle-manager; Head of a department; General manager; Executive-level
7. Number of employees you manage: [dropdown menu] 0-100+
8. Total compensation in 2014: [dropdown menu] Less than \$20,000; \$20,000-\$39,999; \$40,000-59,999; \$60,000-79,999; \$80,000-99,999; \$100,000-119,999; \$120,000-139,000; \$140,000-159,999; \$160,000 or more
9. Education: some high school, high school diploma, some college/university, bachelor degree, graduate or professional degree

General Instructions: This is a questionnaire on personality and workplace behavior.

Please rate yourself on the following items in regards to your behavior at work.

Workplace deviance Scale (Bennett & Robinson, 2000)

Instructions: How often have you ...

[Rating scale: 1 (*Never*) to 7 (*Daily*)]

- 1) Made fun of someone at work.
- 2) Said something hurtful to someone at work.
- 3) Made an ethnic, religious, or racial remark at work.
- 4) Cursed at someone at work.
- 5) Played a mean prank on someone at work.
- 6) Acted rudely toward someone at work.
- 7) Publicly embarrassed someone at work.
- 8) Spent too much time fantasizing or daydreaming instead of working.
- 9) Taken an additional or longer break than is acceptable at your workplace.
- 10) Came in late to work without permission.
- 11) Littered your work environment.
- 12) Neglected to follow your boss's instructions.
- 13) Intentionally worked slower than you could have worked.
- 14) Discussed confidential company information with an unauthorized person.
- 15) Put little effort into your work.
- 16) Dragged out work in order to get overtime.

Organizational Citizenship Behavior (Williams & Anderson, 1991)

Instruction: How likely is that you ...

[Rating scale: 1 (*Not at all likely*) to 5 (*Extremely likely*)]

- 1) Help others who have been absent.
- 2) Help others who have heavy work loads.
- 3) Assist a supervisor with his/her work (when not asked).
- 4) Take time to listen to co-workers' problems and worries.
- 5) Go out of your way to help new employees.
- 6) Take a personal interest in other employees.
- 7) Pass along information to co-workers.
- 8) That your attendance at work is above the norm.
- 9) Give advance notice when unable to come to work.
- 10) Take undeserved work breaks.
- 11) Spend a great deal of time with personal phone conversations.
- 12) Complain about insignificant things at work.
- 13) Adhere to informal rules devised to maintain order.

Task Performance Questionnaire (Williams & Anderson, 1991)

Instructions: How often do you ...

[Rating scale: 1 (*Not at all*) to 7 (*Frequently, if not always*)]

- 1) Adequately complete assigned duties.
- 2) Fulfill responsibilities specified in job description.
- 3) Perform tasks that are expected of you.
- 4) Meet formal performance requirements of the job.
- 5) Engage in activities that will directly affect your performance evaluation.
- 6) Neglect aspects of the job you're obligated to perform.
- 7) Fail to perform essential duties.

Job Stress Scale (De Fruyt, 2002)

Instructions: Please rate yourself on the following items ...

[Rating scale: 1 (*totally false*) to 5 (*totally agree*)]

- 1) I often feel under pressure at work.
- 2) I experience a good balance between professional and family life.
- 3) Recently, everything concerning my job takes great pains.
- 4) Sometimes I am not able to face the next work day.
- 5) My job demands too much from me.
- 6) Once I have finished my job, I can easily relax.
- 7) My job makes me tense most of the time.