EXAMINING THE PREDICTIVE AND INCREMENTAL VALIDITY OF TWO GENERAL MODELS OF PERSONALITY: A STUDY OF PSYCHOPATHY USING THE HEXACO-PI-R AND NEO PI-R

by

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(Under the Direction of Josh Miller)

ABSTRACT

The Five-Factor model is one of the most popular models of general personality, but recently a competing model, the HEXACO, has been put forth as an alternative. This study compared the two models by examining the interrelations between their primary measures, the Revised NEO Personality Inventory (NEO PI-R) and the Revised HEXACO Personality Inventory (HEXACO-PI-R), and their relations with psychopathy and externalizing behaviors in a sample of undergraduates. Results revealed good convergence between conceptually related personality traits. Both inventories accounted for substantial proportions of variance in psychopathy scores although the HEXACO-PI-R accounted for larger proportions and manifested greater incremental validity. The findings are discussed in relation to the trait of fearlessness, which appears to be unique to the HEXACO-PI-R. The results suggest that both measures assess psychopathy-related traits, but the HEXACO-PI-R offers an advantage. Neither measure was successful at longitudinally predicting externalizing behavior when controlling for previous antisocial behavior.

INDEX WORDS: FFM, HEXACO, Psychopathy, NEO PI-R, HEXACO-PI-R, Externalizing behavior

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TABLE OF CONTENTS

LIST OF TABLES

Page

CHAPTER 1

INTRODUCTION

In addition to being one of the most researched psychiatric conditions (Lilienfeld, 1994), psychopathy may also be the first recognized personality disorder (PD; Trull & Durrett, 2005). However, despite this long history and extensive research background, several prominent issues remain unresolved. In particular, the nature of the factor structure of psychopathy, its strong covariation with other PDs, and the numerous deficits found to be associated with this construct continue to pose significant problems in the conceptualization of psychopathy. Recently, it has been suggested that examining psychopathy from the perspective of general models of personality may provide some explanation of these issues.

Research with various personality models, including Tellegen's (1985) three-factor model and the Five-Factor Model (FFM; McCrae & Costa, 1990), has shown that structural models of personality are generally successful in predicting the different facets of psychopathy (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005; Miller & Lynam, 2003). As one of the most prominent models of personality, the FFM, as operationalized by the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) has been the focus of much research in the assessment of psychopathy; recently, however, a competing model of personality, the HEXACO model (Lee & Ashton, 2004), has been put forth as an alternative to the FFM. Although the HEXACO model, as operationalized by the Revised HEXACO Personality Inventory (HEXACO-PI-R; Lee & Ashton, 2006), includes five broad personality domains similar to those found in the FFM, it also contains a sixth factor known as Honesty-Humility, which should be

particularly relevant to the study of psychopathy. If understanding psychopathy from the perspective of general personality traits can explain some of the aforementioned issues, then determining which model best captures psychopathy is an important undertaking. Unfortunately, at this time little research had compared the two models in relation to psychopathy.

History and Conceptualization of Psychopathy

It may be helpful to consider the historical context and background of psychopathy before delving into a more detailed explanation of the rationale and previous research on the study of this PD from the perspective of general models of personality. As early as the 19th century, Pinel (1801) and Pritchard (1835) introduced such terms as *manie sans délire* (insanity without delirium) and *moral insanity* to describe individuals who repeatedly engaged in impulsive and antisocial acts despite retaining the ability to reason. From there, the conception of psychopathy continued to be refined, leading to Cleckley's (1941/1976) extraordinarily influential conceptualization of psychopathy put forth in his book *The Mask of Sanity*. Here, Cleckley provided a detailed description of the psychopathic personality, which included 16 traits (e.g., superficial charm and "good intelligence;" absence of delusions and other signs of irrational thinking; absence of "nervousness" or psychoneurotic manifestations; lack of remorse or shame; inadequately motivated antisocial behavior; pathologic egocentricity and incapacity for love). Further characterizations of the psychopathic personality have been rather similar to both Cleckley's description and each other (A.H. Buss, 1966; Hare, 1970; Karpman, 1941; McCord & McCord, 1964; Millon, 1981), although not identical with regard to the presence of certain traits (e.g., anxiety; Lynam & Widiger, 2007).

The influence of Cleckley's conceptualization can be seen today in the current "gold standard" for psychopathy assessment, Hare's Psychopathy Checklist-Revised (PCL-R; Hare,

1991, 2003). The development of the PCL-R was substantially influenced by Cleckley's (1976) writing although some have argued that there has been "conceptual drift" (Lynam & Widiger, 2007) away from Cleckley's psychopathy construct. An examination of the various correlates of psychopathy, as measured by the PCL-R, clearly demonstrates the severity of the behavioral problems associated with this PD. For example, psychopathic offenders are more likely to engage in institutional misconduct (Guy, Edens, Anthony, & Douglas, 2005) and to violate the conditions of their release (Hart, Kropp, & Hare, 1988). In general, psychopathy is strongly associated with general recidivism (Hemphill, Hare, & Wong, 1998; Salekin, Rogers, & Sewell, 1996; Serin, Peters, & Barabree, 1990), violent recidivism (Harris, Rice, & Cormier, 1991; Rice, Harris, & Quinsey, 1990), and sexual recidivism (Quinsey, Rice, & Harris, 1995; Rice et al., 1990; Serin, 1996). Beyond criminality, the link between psychopathy and substance use is also well documented. Psychopathy is associated with increased risk for alcoholism as well as drug abuse and dependence diagnoses (Hemphill, Hart, & Hare, 1994; Smith & Newman, 1990). Finally, psychopathic individuals may be more resistant to treatment and show less improvement than nonpsychopathic individuals (Ogloff, Wong, & Greenwood, 1990; Harris & Rice, 2006; cf, Salekin, 2002; Skeem, Monahan, & Mulvey, 2002). Taken together, these findings convey both the extensive problems associated with psychopathy as well as the need to continue to refine and improve our understanding of this PD.

A substantial amount of research with the PCL has been devoted to identifying its underlying factor structure. Early factor analyses suggested that the PCL-R conformed to a two-factor structure (Hare, Harpur, Hakstian, & Forth, 1990; Harpur, Hakstian, & Hare, 1988; Templeman & Wong, 1994), with Factor 1 reflecting a "selfish, callous, and remorseless use of others" (Hare, 1991, p. 38) and Factor 2 reflecting a "chronically, unstable and antisocial

lifestyle" (p. 31). These two factors have been found to correlate around .50 (Harpur et al., 1988; Hare, 1991). Although the two-factor model has been the dominant model of the past 20 years, several authors have recently proposed alternative factor structures. Cooke and Michie (2001) developed a three-factor model that deemphasized the role of antisocial behavior in the psychopathy construct (and the PCL-R). Subsequently, Hare (2003) introduced a four-factor model that reemphasized the role of antisocial behavior in the conceptualization of psychopathy, and this model has received empirical support (Neumann, Kosson, & Salekin, 2007; Vitacco, Rogers, Neumann, Harrison, & Vincent, 2005). According to the four-factor model, PCL-R psychopathy is composed of four correlated dimensions, including domains related to Interpersonal and Affective functioning, as well as, Lifestyle and Antisocial features.

Investigations of the psychopathy factor structure have also focused on the unique associations related to each factor. An examination of the original two factors sufficiently details their divergent relationships with various external criteria. Factor 1 has been positively associated with narcissism and interpersonal dominance (Harpur, Hare, & Hakstian, 1989) as well as emotional detachment (Patrick, Bradley, & Lang, 1993). Furthermore, Factor 1 has been positively correlated with histrionic personality disorder (HPD; Hart & Hare, 1989) and negatively correlated with anxiety (Harpur et at., 1989). Factor 2 has been positively associated with negative emotionality (Verona, Patrick, & Joiner, 2001), substance use (Taylor & Lang, 2006) and recidivism (Hemphill et al., 1998). Although both factors have been found to be correlated with antisocial personality disorder (APD), the correlation between APD and Factor 2 is significantly stronger than that of Factor 1 (Harpur et al., 1989). Clearly the two factors manifest different associations with various external criteria; moreover, these divergent relations

underscore the importance of developing a more complete understanding of the factor structure underlying psychopathy.

Along with identifying the psychopathy factor structure, research has also focused on the taxometric nature of this PD. Determining whether psychopathy is a categorical or dimensional construct is an important step in continuing to refine its conceptualization. Early evidence supporting a categorical view of psychopathy was provided by Harris, Rice, and Quinsey (1994) when they reported the existence of a taxon underlying only Factor 2 and childhood antisocial behaviors. Despite these initial results, various concerns have been voiced concerning this study (see Lilienfeld, 1998) and more recent studies employing both self-report and interview measures have found support for the notion that psychopathy lies on a continuum. Specifically, the dimensional structure of psychopathy has been demonstrated with both the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996; Marcus, John, & Edens, 2004) and the PCL-R (Edens, Marcus, Lilienfeld, & Poythress, 2006; Guay, Ruscio, Raymond, & Hare, 2007). The convergent findings of these studies, with each using different forms of assessment, suggest that psychopathy may be considered a dimensional construct and are consistent with the notion that psychopathy may lie on a continuum with normal personality functioning.

Unresolved Issues and Conceptual Problems

Despite the contributions of the aforementioned research toward refining the conceptualization of psychopathy, several prominent issues remain unresolved. The first issue involves inconsistent interpretations of the two-factor structure, which remains prominent among self-report psychopathy scores (Levenson, Kiehl, & Fitzpatrick, 1995; Benning, Patrick, Hicks, Blonigen, & Kreuger, 2003). Because various interpretations have been suggested, confusion as to the true meaning of the two factors remains. One interpretation is that the two factors reflect

differences in methodology. Regarding Factor 1, Harpur et al. (1988) stated "clinical judgment and inference from interview impressions play an important role in scoring most of these items" whereas "items in Factor 2 items were scored on the basis of file information" (p. 745). However, the notion that the two factors are method factors has largely been viewed as unsatisfactory given that two-factor structures have also has been found using several self-report measures.

A second interpretation involves the distinction between personality traits and antisocial behaviors and lifestyle. Accordingly, Factor 1 represents both a "callous, selfish, and remorseless use of others" (Harpur et al., 1988, p. 745) and "a constellation of interpersonal and affective traits commonly considered to be fundamental to the construct of psychopathy" (Hare, 1991, p. 38). On the other hand, Factor 2 describes "a chronically unstable and antisocial lifestyle" (Harpur et al., 1988, p. 745). Although this interpretation provides a more lucid explanation of the two factors, it is not without criticism. Lilienfeld (1994) first questioned the notion that Factor 1 reflects the core personality traits by asking "is an individual with very high scores on the first PCL factor (who, according to Harpur et al., possess[es] the major personality traits of psychopathy), but with very low scores on the second PCL factor, a psychopath?" (p. 28). Additional problems with this interpretation surround the notion that Factor 2 represents a pure behavioral domain. For example, the idea of a personality-behavior dichotomy fails to recognize that Factor 2 assesses several personality traits, including impulsivity and irresponsibility (Rogers & Bagby, 1994). Moreover, such a dichotomy further does not consider the possibility that "both PCL factors represent personality traits, but the traits assessed by the second factor are more highly associated with antisocial behavior" (Lilienfeld, 1994, p. 28). Clearly, this interpretation continues to leave the distinction muddled.

A second problematic issue surrounding the conceptualization of psychopathy involves the numerous attempts to identify a single pathology underlying this PD. In the search for a specific deficit unique to psychopathy, various models of pathology have been formulated. Lynam (2002) compiled an extensive list of such models which included deficits in role-taking ability (Gough, 1948), fearlessness (Lykken, 1957), chronic underarousal and subsequent sensation seeking (Quay, 1965), electrodermal hyporeactivity (Fowles, 1980) semantic aphasia (Hare & McPherson, 1984), poor response modulation (Newman, 1987), deficient defensive emotional response (Patrick, 1994), deficits in psychopathic constraint (Lynam, 1996) and callous-unemotional temperament (Frick, 1995). The multitude of deficits associated with psychopathy is difficult to interpret and in need of further explanation.

An additional aspect of the psychopathy construct that is still hindered by unanswered questions involves the concept of "successful" psychopathy. Since the early work of Cleckley (1941), authors have described a subset of "successful" psychopaths who have the core personality features of psychopathy but do not have a history of antisocial behavior. Despite the consensus that these successful psychopaths exist, a clear conceptualization of this phenomena is lacking. A variety of diverse conceptions have been suggested (Babiak, 2000; Gustafson & Ritzer, 1995; Hare, 1993), each with differing views of successful psychopathy. Currently, there is no general consensus as to the traits that define this variant of psychopathy.

The final unresolved issue involves the covariation between psychopathy and various other PDs, especially those from Cluster B. Research has found significant associations between psychopathy and antisocial personality disorder (APD; Harpur et al., 1989; Hart & Hare, 1989; Salekin, Trobst, & Krioukova, 2001; Shine & Hobson, 1997), histrionic personality disorder (HPD; Hart & Hare, 1989; Shine & Hobson, 1997) and narcissistic personality disorder (NPD;

Hart & Hare, 1989; Salekin et al., 2001). Although borderline personality disorder (BPD) is related to factor 2 of the PCL, research has shown less support for an association between BPD and psychopathy total scores (Hare & Hare, 1989). While several possible interpretations of this comorbidity are possible, including "poor discriminant validity of the psychopathy construct" or "genuine overlap among etiologically different syndromes" (Lilienfeld, 1994, p. 33), there is no clear explanation.

General Models of Personality

Research suggests that the use of general/normal models of personality may help bring resolution and clarity to the study of psychopathy (see Widiger & Lynam, 1998; Lynam & Widiger, 2007). Specifically, examining conceptualizations of psychopathy based on general models of personality may be helpful in resolving several of the aforementioned "problems" in this field. These models appear to provide a detailed description of the basic personality traits underlying psychopathy and, as such, provide a base from which to explore and interpret the aforementioned conceptual problems. Various researchers have explored the idea that psychopathy can be understood as a configuration of extreme levels of personality traits (Benning et al., 2005; Miller, Lynam, Widiger, & Leukefeld, 2001). Several models of personality have been studied in relation to psychopathy including Eysenck's Psychoticism-Extraversion-Neuroticism (PEN) model (Eysenck & Eysenck, 1970) and Tellegen's (1985) three-factor model, (e.g., Negative Emotionality, Positive Emotionality, & Constraint), and the FFM.

Eysenck's PEN model consists of three factors, Psychoticism, Extraversion, and Neuroticism. Psychoticism assesses egocentricity, interpersonal coldness and disconnectedness, lack of empathy, and impulsiveness while Extraversion assesses sociability and agency and

Neuroticism assesses emotional stability and adjustment. Tellegen's model also consists of three factors, including Positive Emotionality, Negative Emotionality, and Constraint. Positive Emotionality assesses sociability and the tendency to experience positive emotions, and Negative emotionality asses the tendency to experience negative emotions and the ability to manage stress. Constraint refers to the ability to control impulses, avoid dangerous situations, and endorse traditional values and standards. A recent meta-analysis (Lynam & Derefinko, 2006) examined the relations between these two models and psychopathy. From Eysenck's PEN model, psychopathy was primarily positively associated with Psychoticism and Neuroticism and to a smaller, though still significant, degree with Extraversion. From Tellegen's three-factor model, psychopathy was primarily negatively associated with Constraint and positively with Negative Emotionality and to a smaller, though significant, degree with Positive Emotionality.

Five-Factor Model and Psychopathy

Although these alternative models have received significant attention, the dominant model of personality is the FFM (Church, 1994), which is composed of five broad domains, including Neuroticism, Extraversion, Agreeableness, Openness to experience, and Conscientiousness. Although the FFM is often used interchangeably with the Big Five (Digman, 1990; John, 1990; Wiggins & Pincus, 1992), for the purpose of this research it is important to distinguish between the two models. Whereas the Big Five was developed from lexical studies of personality structure that identified the major domains of personality from personality-descriptive adjectives of the English language (Digman, 1990; John & Srivastava, 1999; Wiggins & Pincus, 1992), the FFM was primarily developed from factor analyses of personality questionnaires. From a cluster analysis of the 16PF (Cattell, Eber, & Tatsuoka, 1970), three dimensions emerged that were similar to the Neuroticism, Extraversion, and Openness/Intellect

domains found in the lexical studies (Costa & McCrae, 1976). The original NEO Personality Inventory (Costa & McCrae, 1985) was then constructed to assess these domains. Reflecting the influence of the lexical studies, scales for the remaining dimensions from the lexical Big Five, Agreeableness and Conscientiousness, were included in the revision of this instrument (NEO PI-R; Costa & McCrae, 1992), which is the primary measure of the FFM. The five domain scales incorporated in the NEO PI-R have been found to converge with measures of the Big Five (McCrae & Costa, 1987). Moreover, according to a review by Digman (1990), these dimensions have been recovered in various personality inventories, including the Eysenck Personality Questionnaire (EPI; Eysenck & Eysenck, 1964; McCrae & Costa, 1985), the Myers-Briggs Type Indicator (MBTI; Myers & McCauley, 1985; McCrae & Costa, 1989), and the California Q-Set (Block, 1961; McCrae, Costa, & Busch, 1986). Unique to the FFM, as assessed by the NEO PI-R, is the inclusion of six lower-order facet scales in each broader dimension. As a wealth of research has been devoted to the FFM and NEO PI-R, particularly with regard to the study of psychopathy and other personality disorders (e.g., Costa & Widiger, 2002), the present study focuses on this model.

Within the NEO PI-R, Neuroticism refers to emotional adjustment and instability, and Extraversion represents sociability and agency. Openness to Experience refers to interest and willingness to try or consider new activities, ideas, and beliefs. Agreeableness represents different interpersonal strategies ranging from agreeable to antagonistic, and Conscientiousness refers to the ability to control impulses and carry out plans and tasks, as well as organizational skills. As noted above, each of these higher order dimensions is further composed of six lower order facets, which are important to the precise characterization of personality pathology (Axelrod, Widiger, Trull, & Corbitt, 1997).

The research in this area has demonstrated generally consistent findings regarding the relations between the FFM and psychopathy across data source (i.e., interview vs. self-report) and populations (i.e., criminal, clinical, and student samples). For example, in an early study study involving both an incarcerated and student sample, PCL total scores were negatively associated with Agreeableness and Conscientiousness although the correlation with Agreeableness was only significant with the incarcerated sample and the correlation with Conscientiousness was only significant for the student sample (Harpur, Hart, Hare, Costa, & Widiger; 1994). No significant correlations were found between PCL total scores and the other personality dimensions of the FFM. These findings were replicated in a more recent study (Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005) with a clinical sample that utilized a derivative of the PCL-R, the Psychopathy Checklist-Screening Version (PCL-SV; Hart, Cox, & Hare, 1995). Consistent with Harpur et al.'s results, psychopathy total scores were significantly associated with low Agreeableness and low Conscientiousness. Moreover, findings at the factor level were consistent with research employing self-report psychopathy measures (e.g., Derefinko & Lynam, 2006). Specifically, whereas both factors were associated with low Agreeableness, Factor 2 was more strongly related to low Conscientiousness.

In addition to these studies examining the bivariate links between the FFM domains and PCL scores, several other studies have used the NEO PI-R in a different manner to address important questions surrounding psychopathy. For example, Widiger and Lynam (1998) presented a translation of the PCL-R into the language of the FFM. More specifically, they created an FFM profile of psychopathy from the description of each construct of the PCL-R on an item-by-item basis. For example, glibness and superficial charm (PCL-R item 1) was translated into low Self-Consciousness (a facet of N); shallow affect (PCL-R item 7) was

translated into low Warmth (a facet of E), low Positive Emotionality (a facet of E), low Altruism (a facet of A), and low Tender-Mindedness (a facet of A). The completed FFM profile included facets from *low Agreeableness* (high Deception, high Exploitation, high Aggression, high Arrogance, and high Tough Mindedness), *low Conscientiousness* (low Dutifulness, low Achievement Striving, low Self-Discipline, and low Deliberation), *high Neuroticism* (high Angry Hostility and high Impulsiveness) and *low Neuroticism* (low Self-Consciousness), and *high Extraversion* (high Excitement Seeking) and *low Extraversion* (low Warmth and low Positive Emotions). This translation demonstrated that "all of the features of PCL-R psychopathy have a close correspondence with one or more facets of the FFM of personality" (Widiger & Lynam, 1998, p. 179) and paved the way for further psychopathy research with the FFM.

Building upon the research of Widiger and Lynam (1998), Miller and colleagues (2001) developed an expert rated profile of psychopathy using the FFM that was broader and more inclusive as there was no attempt to restrict the description to only those traits included in the PCL-R. In this broader study, 21 psychopathy experts were asked to rate the prototypical psychopath on 30 bipolar statements representing the 30 facets of the NEO PI-R. Each rating was based on a 5-point Likert scale with 1 representing *extremely low* and 5 representing *extremely high*. Because experts were not limited to the PCL-R's conceptualization of psychopathy, they were free to include prototypical features associated with this PD that are not included in the PCL-R (e.g., low anxiety). Overall, fifteen experts returned ratings for the prototypical male and female psychopath. Agreement on the prototypic psychopath was good, especially for the male prototype. In general, there was a strong correlation (r = .98) between the prototypes for the two sexes. Additionally, the average inter-rater reliability for each rater was also found to be good. A

final FFM psychopathy prototype was then created by aggregating across the experts' ratings on the 30 FFM facets.

To examine the utility of the FFM prototype, Miller and colleagues (2001) administered the NEO PI-R along with various other measures relevant to psychopathy to a community sample. Each participant's NEO PI-R profile was compared with the FFM psychopathy prototype and the degree of similarity between the two was computed using a double-entry Q-correlation, which is a variant of an intraclass correlation. The final result is a single number, the Psychopathy Resemblance Index (PRI), which reflects the level of similarity between an individual's NEO PI-R profile and the FFM psychopathy prototype. Higher scores on the PRI indicate greater similarity to the prototypical psychopath. The FFM psychopathy prototype demonstrated both convergent and divergent relations with various individual difference variables. PRI scores were positively correlated with Levenson's Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995), antisocial behavior, symptoms of APD, substance abuse, and dependence. Additionally, PRI scores demonstrated good divergent validity as they were negatively correlated with various internalizing disorder symptoms including anxiety and depression. These findings provide support for the notion that psychopathy can be conceptualized and assessed using the FFM.

Further support for FFM psychopathy was given by Miller and Lynam (2003). In this study, the PRI was calculated for each participant from a sample of college students. Again, NEO PI-R psychopathy demonstrated both convergent and divergent relations with various constructs. FFM psychopathy was significantly and positively correlated with substance use, criminal/delinquent behavior, sexual activity, and three different forms of aggression including proactive, reactive, and relational. Additionally, consistent with the findings of Newman,

Kosson, and Patterson (1992), individuals higher on FFM psychopathy were less likely to delay gratification and more likely to engage in behavioral discounting (i.e., choosing smaller, more immediate rewards over larger, delayed ones). Importantly, FFM psychopathy also provided incremental validity over past antisocial behavior in accounting for various outcomes, including lifetime substance use and behavioral discounting, as well as proactive, relational, and reactive aggression. Overall, these findings are consistent with the previous study by Miller and colleagues (2001) and provide additional support for the construct validity of FFM psychopathy. Moreover, they provide support for the notion that psychopathy can understood as a constellation of extreme levels of continuously distributed personality traits.

Understanding psychopathy from the perspective of the FFM, as operationalized by the NEO PI-R, may bring some clarity to the field. Specifically, Widiger and Lynam (1998) and Lynam (2002) have suggested that the FFM conceptualization of psychopathy may provide resolution to the various unresolved issues previously noted. First, regarding the factor structure of the PCL-R, an FFM conceptualization of psychopathy provides a more substantive explanation for the distinction between Factor 1 and Factor 2 than previous interpretations. Upon examination of the translations of each item of the PCL-R into the language of the FFM, "Factor 1 appears to be confined largely to facets of Antagonism (with a minimal representation of neuroticism and extraversion), and Factor 2 is dominated by the items that are a mixture of low Conscientiousness and Antagonism" (Widiger & Lynam, 1998, p. 181). Conceptualizing Factor 1 as primarily low Agreeableness and Factor 2 as low Agreeableness and low Conscientiousness also provides further explanation for the correlation between the two factors. Because both factors include facets of low Agreeableness, it is understandable that they generally correlate at around .50 (Harpur et al., 1988; Hare, 1991).

Additionally, an FFM conceptualization of psychopathy may also clarify the numerous pathologies suggested to be underlying this PD. As stated by Lynam (2002, p. 339), "the FFM conceptualization of psychopathy posits that these pathologies are on a continuum with normal personality functioning and that the litany of deficits is due to the fact that different investigators are examining different domains of the FFM's representation of psychopathy". From this perspective, it is understandable that numerous deficits have been suggested because each one is tapping different aspects of FFM psychopathy. For example, Lynam suggested that role-playing deficits and callous-unemotional temperament may both be associated with high Antagonism, whereas poor response modulation and deficient psychopathic constraint may be related to low Conscientiousness.

Furthermore, FFM psychopathy may provide a more precise conceptualization of successful psychopathy. According to Lynam (2002), successful psychopaths possess some of the personality traits (from both the domains and facets of the FFM) but not others. It appears that different investigators, who have proposed different conceptualizations of the successful psychopath, may have focused on different personality traits (e.g., fearlessness without antagonism; antagonism without impulsivity). Additionally, the FFM conceptualization may explain the covariation between psychopathy and other PDs. Those PDs that share personality traits with psychopathy would be expected to covary with psychopathy due to this commonality. For example, APD from the perspective of the FFM is composed of low Agreeableness, low Conscientiousness, and high Neuroticism (Trull, 1992; Widiger & Trull, 1992). Hence, the strong correlation between psychopathy and APD is explained from their both being composed of low Agreeableness and low Conscientiousness. Alternatively, the positive association between

APD and Neuroticism, which is present to a lesser degree in psychopathy, limits the relationship between the PDs.

Lastly, an FFM perspective may bring clarity to our understanding of the different psychopathy instruments, specifically the various self-report measures. Currently, three self-report instruments, including the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), the Self-Report Psychopathy Scale (SRP-II; Hare, Harpur, & Hemphill, 1989), and Levenson's Self-Report Psychopathy Scale (LSRP; Levenson, et al., 1995), have been put forth with varying degrees of empirical support. Examining these measures and their factor scores in relation to the domains and facets of the FFM has been quite useful in determining their actual make-up at the trait level. For example, Hicklin and Widiger (2005) demonstrated that the domains and facets of the FFM may explain the similarities and differences among various antisocial and psychopathy self-report instruments. Moreover, research with the FFM has assisted in developing a better understanding of the commonalities of the factor scales of these measures. Derefinko and Lynam (2006), for example, found that the Factor 1 psychopathy scales are differentially related to various personality traits from the FFM. In addition to possibly explaining the weak convergence found among these scales, this finding also suggests that the different Factor 1 scales may not be assessing the same construct. This research not only provides a substantive explanation for the convergence and divergence found using self-report psychopathy measures, but also demonstrates that different instruments may be capturing different personality profiles. Overall, broad, comprehensive models of normal personality are helpful in refining our understanding of the prominent self-report measures of psychopathy.

HEXACO Model and Psychopathy

Although understanding psychopathy from the perspective of the FFM clarifies these various issues, a competing model of personality, the HEXACO model, has been put forth as an alternative to the FFM. The HEXACO model is the result of recent lexical studies of several diverse languages that support six major dimensions of personality (Ashton & Lee, 2001; Ashton, Lee, Perugini, et al., 2004). Five of these dimensions represent variants of the broad factors of the FFM plus the addition of a sixth factor (i.e., Honesty-Humility). As operationalized by the original HEXACO-PI (Lee & Ashton, 2004) and its revision the HEXACO-PI-R (Lee & Ashton, 2008), each of the six higher order domains is composed of four lower order facets.

The broad domains include Honesty-Humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness to Experience. Honesty-Humility represents sincerity, fairness, greed-avoidance, and modesty, and Emotionality refers to fearfulness, anxiety, dependence, and sentimentality. eXtraversion refers to expressiveness, social boldness, sociability, and liveliness, and Agreeableness is defined by content related to forgiveness, gentleness, flexibility, and patience. Finally, Conscientiousness refers to organization, diligence, perfectionism, and prudence, and Openness to Experience represents aesthetic appreciation, inquisitiveness, creativity, and unconventionality.

In their description of this new model, Lee and Ashton (2004) discussed the presumed relations between the HEXACO dimensions and those of the FFM and Big Five. According to these authors, eXtraversion, Conscientiousness, and Openness to Experience are similar to their counterparts in the FFM. However, the Agreeableness and Emotionality domains of the HEXACO model correspond roughly to the Neuroticism and Agreeableness domains of the FFM respectively. An examination of the content of these dimensions can explain this rotation. For

example, HEXACO Agreeableness contains content associated with even-temper versus anger, irritability, and harshness (Lee & Ashton, 2006); however, within the FFM framework, content related to even-temper versus anger is included in Neuroticism, not Agreeableness. Hence, Lee and Ashton suggest that HEXACO Agreeableness more closely corresponds to FFM Neuroticism. On the other hand, HEXACO Emotionality, unlike FFM Neuroticism, is not characterized by content related to anger. Instead, HEXACO Emotionality includes content related to sentimentality, which is found primarily in FFM Agreeableness (Lee & Ashton, 2006). Therefore, HEXACO Emotionality more closely aligns with FFM Agreeableness than with FFM Neuroticism according to Lee and Ashton. The final factor, Honesty-Humility, has no direct counterpart in the FFM and primarily refers to sincerity and fairness.

Limited research comparing the HEXACO-PI and measures of the FFM are moderately consistent with Lee and Ashton's hypothesized relations. For example, research employing an abbreviated measure of the FFM (i.e., the NEO Five-Factor Inventory; NEO FFI; Costa & McCrae, 1992) demonstrated that HEXACO eXtraversion, Conscientiousness, and Openness were most strongly correlated with the FFM dimensions of Extraversion, Conscientiousness, and Openness, respectively (e.g., Ashton, Lee, Visser, & Pozzebon, 2008; Lee, Ashton, & de Vries, 2005; Lee, Ashton, Morrison, Cordery, & Dunlop, 2008). HEXACO Emotionality and Agreeableness, however, bore differing relations with the FFM dimensions. Specifically, HEXACO Emotionality was most strongly associated with FFM Neuroticism and exhibited smaller relations with FFM Agreeableness, whereas HEXACO Agreeableness was most strongly associated with FFM Agreeableness and demonstrated smaller relations with FFM Neuroticism (Lee, et al., 2005; Lee, et al., 2008). Honesty-Humility, which has no direct counterpart in the FFM, was primarily associated with FFM Agreeableness and to a lesser extent with

Conscientiousness. While research comparing the predictive abilities of the HEXACO-PI and the most popular measure of the FFM, the NEO PI-R, with regards to various individual difference variables has started to accumulate (e.g., Ashton & Lee, 2008), no research comparing the bivariate relations between the domains and facets of the two measures currently exists to the author's knowledge.

Although less research has been conducted with the HEXACO model due to its recent emergence, several initial studies are of particular relevance. Early research examining psychopathy from the perspective of this model has focused on the Honesty-Humility dimension. In one of the first studies, the association between the Honesty-Humility dimension and both primary psychopathy, as measured by the primary psychopathy scale of the LSRP, and Machiavellianism was investigated in a Korean sample (Ashton, Lee, & Son, 2000). Machiavellianism (Christie & Geis, 1970) is characterized by manipulativeness, insincerity, and callousness and has been found to be associated with psychopathy (McHoskey, Worzel, & Szyarto, 1998). Analyses revealed significant negative correlations between Honesty-Humility and both primary psychopathy (r = -.45) and Machiavellianism (r = -.40).

Consistent with these findings, Lee and Ashton (2004) reported a significant negative association between psychopathy, again as measured by the primary psychopathy scale of the LSRP, and Honesty-Humility in a sample of undergraduate college students. Moreover, all four facets of Honesty-Humility were significantly negatively correlated with psychopathy. The other five domains of the HEXACO-PI also showed expected correlations with primary psychopathy: Emotionality (r = -.18), eXtraversion (r = -.07), Agreeableness (r = -.19), Conscientiousness (r = -.18), and Openness (r = -.30). These results were replicated in an additional study examining the relations between psychopathy and both the HEXACO model and the Big Five (Lee & Ashton,

2005). In this study, primary psychopathy showed the strongest correlation with Honesty-Humility and its four facets although it was also significantly negatively correlated with Agreeableness from the Big Five. It should be noted that the domains of the Big Five were measured with the Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) and not the NEO PI-R. This distinction is important because two facets, Straightforwardness and Modesty, found within the NEO PI-R measure of Agreeableness but not in the BFI, have been found to be strongly related to Honesty-Humility (Ashton & Lee, 2005). Although the correlation between primary psychopathy and Big Five Agreeableness was significant, this association may have been stronger with the inclusion of these facets. The consistent findings of these studies provide preliminary support for the HEXACO-PI's prediction of psychopathy.

Current Study

The current study examines the areas where the FFM, as operationalized by the NEO PI-R, and HEXACO model, as operationalized by the HEXACO PI-R, converge and suggest important commonalities, as well as where they diverge. In addition, the study examines the utility of the two personality inventories by testing their respective "predictive" abilities with regard to psychopathic personality traits.[1] Specifically, the correlations between the two inventories and scores on a self-report measure of psychopathy are first examined. To determine whether either measure is better able to account for the various sub-factors of psychopathy, the amount of variability (i.e., Adjusted R-squared) explained by each inventory is then compared. Additionally, the incremental validity of each inventory is examined to determine if either provides information above and beyond the other in regard to scores on the psychopathy self-

[1] By predictive validity, I mean statistical prediction, not longitudinal prediction. I am testing the amount of variance in psychopathy scores explained by each of the two personality measures.

report measure. Finally, the ability of each inventory to longitudinally predict externalizing behaviors three months after the original data collection phase is compared.

CHAPTER 2

METHOD

Participants

Participants were 290 undergraduate students (133 males; 149 females; 8 unidentified) at a large Southeastern university. Of those participants for whom data on race is available (N = 237), 82% were White, 9% were Black, and 6% were Asian. The average age was 19.37 years. A subset of these participants (n = 126) completed the follow-up assessment of externalizing behaviors three months after the original data collection phase.

Procedure

Participants completed a variety of questionnaires, which are described below, related to personality traits and externalizing behaviors. The measures were administered in counterbalanced order in mass testing sessions of 25 participants. Participants gave written informed consent, completed the battery of self-report questionnaires, and received research credit for participating. Additionally, individuals interested in participating in the follow-up portion of the experiment provided consent to be contacted later, as well as their email address. All Institutional Review Board requirements were followed throughout the study.

Three months after the data collection period, consenting participants were contacted by email and asked to complete an online questionnaire assessing externalizing behaviors. The questionnaire was posted on an online survey website and took approximately five minutes to complete. Individuals who completed this portion of the study were entered into a drawing for one of three gift cards.

Measures

Background Information Questionnaire (BIQ-S). The BIQ-S is a 7-item questionnaire used to collect demographic information (i.e., age, gender, ethnicity, race, marital status, and education).

NEO PI-R. The NEO PI-R (Costa & McCrae, 1992) is a 240-item self-report measure of the Five-Factor Model of personality, which includes five broad domains of Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Each of these five domains is underlain by six facets. Items are scored on a 1 ("Disagree Strongly") to 5 ("Agree Strongly") scale. Studies with the NEO PI-R have consistently demonstrated its strong reliability and validity. In the normative data, internal consistency for the facets ranged from .56 to .81 and from .86 to .92 for the five broad domains (Costa, McCrae, & Dye, 1991). The NEO PI-R has shown good convergent and divergent validity in relation to various criteria at both the domain and facet level. For example, at the lower level, the facets have been found to correlate with expected items from the California Q-Set (CQS; Block, 1961), and blind judges have successfully identified NEO PI-R facets from CQS correlates (Costa & McCrae, 1995). At the higher level, the broad domains have demonstrated expected correlations with other measures of the FFM including the Wiggins's Revised Interpersonal Adjective Scales-Big Five Version (IASR-B5; Trapnell & Wiggins, 1990) and Goldberg's Transparent Trait Rating Form (TTRF; Goldberg, 1990; Costa & McCrae, 1995). In the current study, coefficient alphas for the facets ranged from .57 (Dutifulness) to .83 (Aesthetics) (median = .75) and from .89 to .91 for the domains.

HEXACO-PI-R. The HEXACO-PI-R (Lee & Ashton, 2008) is a 200-item self-report measure of the HEXACO model of personality, which includes six broad domains: eXtraversion,

Conscientiousness, Openness to Experience, Agreeableness, Emotionality, and Honesty-Humility. Each of these six domains is underlain by four facets. Items are scored on a 1 ("Disagree Strongly") to 5 ("Agree Strongly") scale. Although the psychometric properties of the HEXACO-PI-R have not yet been published, internal consistency reliabilities for the HEXACO-PI facets ranged from .75 to .88 and from .89 to .92 for the six broad domains (Lee & Ashton, 2004). Moreover, the research with the HEXACO-PI has demonstrated evidence of strong convergent and divergent validity at both the domain and facet level. Specifically, the HEXACO-PI showed expected correlations with five scales from Goldberg's International Personality Item Pool (IPIP; 1999) and the Primary Psychopathy Scale from the LSRP (Lee & Ashton, 2004). In the current study, coefficient alphas for the facets ranged from .71 (Flexibility) to .89 (Organization) (median = .81) and from .89 to .92 for the domains.

Self-Report Psychopathy scale: Version III (SRP-III). The SRP-III (Williams, Paulhus, & Hare, 2007) is a 64-item, self-report measure of psychopathy. Items are scored on a 1 ("Disagree Strongly") to 5 ("Agree Strongly") scale. The SRP-II provides a global psychopathy score (SRP-T), as well as scores for 4 subscales: Interpersonal Manipulation (SRP-IPM), Callous Affect (SRP-CA), Erratic Life Style (SRP-ELS), and Anti-Social Behavior (SRP-ASB). Coefficient alphas for SRP-T, SRP-IPM, SRP-CA, SRP-ELS, and SRP-ASB were .94, .87, .85, .86, and .80, respectively. Correlations between the four subscales ranged from .43 (SRP-CA and SRP-ASB) to .64 (SRP-IPM and SRP-CA) with a median of .53.

Crime and Analogous Behavior Scale (CAB). The CAB (Lynam, Whiteside, & Jones, 1999) is a 55-item self-report inventory that measures various delinquent behaviors. The inventory contains content related to drug and alcohol use, antisocial behavior (e.g., physical fighting or assaults, stealing, driving under the influence of alcohol or other substance, arrests),

intimate-partner violence, sexual experience (e.g., lifetime number of partners, condom use) and gambling behavior. Scoring of the inventory provides information on the age of first engaging in each behavior as well as the frequency of each behavior over the previous 12 months. In the current study, the primary focus was the frequency of each externalizing behavior. A shortened version of the CAB was used to measure externalizing behaviors three months after the original data collection phase. This version assessed the frequency with which participants engaged in various antisocial behaviors during the previous three months.

Data Analytic Approach

First, all of the correlations from Tables 1, 2, 3, 4, 9, and 10 were examined separately for men and women. Because fewer than 3% of the correlations were significantly different across gender, all subsequent analyses were conducted with a combined data set that included both men and women. Second, the relations between the two personality inventories were examined to assess the convergence across similar scales and to test the degree to which each model accounted for the variance in the other's scales, adjusting for the number of predictors (see Tables 1 and 2). Third, to examine the relations between the personality inventories and psychopathy scores, bivariate correlations were computed between the domains and facets of the NEO PI-R (see Table 3), HEXACO-PI-R (see Table 4), and the global and factor scores of the SRP-III. The mean effect sizes (ES) between the inventories and the factor scores of the SRP-IIII are included in the last column of Table 3 and Table 4.[2]

In order to examine the similarity of the correlation profiles across the psychopathy factors, similarity scores were calculated, which are double-entry correlations that take into account similarity in shape and magnitude, between the column of facet correlations for one

[2] Individual correlations were transformed using the Fischer-Z transformation before being averaged and then transformed back before reporting the mean effect size.

SRP-III factor with the column of facet correlations for another factor (see McCrae, 2008, for a review of this method). The double-entry correlation between correlational profiles is the correlation calculated on two columns of data that have been "double-entered" with each column consisting of scores from both profiles in different orders. For example, to compute the similarity of the 30 correlations with the NEO PI-R facets for SRP-IPM and SRP-CA in Table 3, two new columns of data are created. The first column consists of the 30 correlations for SRP-IPM followed by the 30 correlations for SRP-CA, whereas the second column consists of the 30 correlations for SRP-CA followed by the 30 correlations for SRP-IPM. These two columns of 60 rows are then correlated with one another.

Next, the proportion of variance accounted for in the global psychopathy score and four SRP-III factor scores by the domains (see Table 5) and facets (see Table 8) of the NEO PI-R and HEXACO-PI-R were examined using hierarchical regression. In the first regression, NEO PI-R domains were entered at Step 1 followed by the HEXACO-PI-R domains at Step 2; this order was reversed in the second analysis. When examining the predictive and incremental validity of the measures' facets, only those facets that exhibited significant bivariate correlations with the relevant psychopathy score were included in the regression analyses. For example, the NEO PI-R facets which were significantly correlated with SRP-IPM were entered at Step 1 followed by the HEXACO-PI-R facets which were significantly associated with SRP-IPM at Step 2; again, the order was reversed in the next analysis. To further investigate the incremental validity of the HEXACO PI-R domains and facets, additional analyses were conducted using alternative regression methods (see Tables 6 and 7). Although both R-squared and adjusted R-squared are reported, it is important to note that the significance tests are for the non-adjusted scores.

Finally, the relations between the personality inventories and externalizing behaviors (assessed at Time 1) were examined by computing bivariate correlations between the domains and facets of the NEO PI-R (see Table 9), HEXACO-PI-R (see Table 10), and four indices of externalizing behavior, including antisocial behavior, substance use, intimate partner violence, and number of sex partners. Then the predictive and incremental validity of the two inventories in the context of externalizing behaviors was compared. Specifically, the ability of each inventory to longitudinally predict externalizing behaviors assessed three months after the original data collection phase (i.e., Time 2) was examined through hierarchical regression analyses (see Table 11). To control for Type 1 error, only results significant at $p \leq .01$ are interpreted.

CHAPTER 3

RESULTS

Relations between the Personality Inventories

In general, the domains of each personality model converged with the corresponding domains from the other model (see Table 1). For example, HEXACO-PI-R eXtraversion was only significantly correlated with Extraversion from the NEO PI-R (r = .86); HEXACO Conscientiousness demonstrated its largest correlation with Conscientiousness from the NEO PI-R (r =.87); and Openness from the HEXACO-PI-R was most strongly associated with NEO PI-R Openness (r =.76). Although HEXACO-PI-R Agreeableness was significantly associated with Neuroticism (r = -.38), it was most strongly correlated with NEO PI-R Agreeableness (r = .68). Similarly, Emotionality was significantly correlated with NEO PI-R Agreeableness (r = .27), but exhibited its strongest relation with Neuroticism (r = .52). Lastly, Honesty-Humility was most strongly associated with Agreeableness (r = .67), but also exhibited significant relations with Neuroticism (r = -.23). For the NEO PI-R, Neuroticism bore moderate to strong relations with both HEXACO Agreeableness (r = -.38) and Emotionality (r = .52), respectively, but was also strongly correlated with eXtraversion (r = -.50). The facets of each personality model also demonstrated good convergence with the facets of the corresponding domains. For example, all facets of HEXACO-PI-R Extraversion were significantly correlated with the facets of NEO PI-R Extraversion, and the Conscientiousness facets from both models were all significantly related. Honesty-Humility was significantly correlated with all facets of Agreeableness, as well as specific facets from each of the other four domains.

When predicting content from the alternative model's domains, the HEXACO-PI-R accounted for slightly larger portions of variance (see Table 1). Adjusted R^2s derived from using the NEO PI-R to predict the HEXACO-PI-R domains ranged from .50 to .80 with an average of .62. Adjusted R^2s derived from using the HEXACO-PI-R to predict the NEO PI-R domains ranged from .63 to .76 with an average of .70. At the facet level, however, the two personality models accounted for similar portions of variance in facet content (see Table 2). Adjusted R^2s derived from using the NEO PI-R to predict the HEXACO-PI-R facets ranged from .29 to .74 with an average of .55. Adjusted R^2s derived from using the HEXACO-PI-R to predict the NEO PI-R facets ranged from .25 to .75 with an average of .54.

Relations between the Personality Inventories and Psychopathy: Bivariate Correlations

The personality models both manifested meaningful relations with the various psychopathy factors. For the NEO-PI-R (see Table 3), the SRP-III factors designed to capture the interpersonal and affective features of psychopathy (i.e., SRP-IPM and SRP-CA) were primarily associated (inversely) with Agreeableness. Additionally, SRP-IPM bore a small negative correlation with Conscientiousness, and SRP-CA exhibited a significant negative relationship with Openness. Alternatively, the behavioral and deviance factors of the SRP-III (i.e., SRP-ELS and SRP-ASB) demonstrated similar negative relations with Agreeableness and Conscientiousness. Specifically, SRP-ELS was strongly negatively correlated with Agreeableness and Conscientiousness, while SRP-ASB was moderately associated with these domains.

For the HEXACO-PI-R (see Table 4), SRP-IPM was strongly negatively correlated with Honesty-Humility and moderately negative correlated with Agreeableness, Emotionality, and Conscientiousness. Conversely, SRP-CA was mostly strongly associated (inversely) with

Emotionality and demonstrated small to moderate relations with Conscientiousness, Agreeableness, and Honesty-Humility. SRP-ELS bore moderate negative relations with Honesty-Humility, Emotionality, and Conscientiousness, and a small negative association with Agreeableness. Lastly, SRP-ASB exhibited small to moderate correlations with Conscientiousness, Emotionality, and Honesty-Humility.

The primary focus at the facet level was on the similarity scores. While the specific facet correlations are presented in Tables 3 and 4, only the profile correlations are discussed here. The similarity scores, which represent the similarity of the correlation profiles across the psychopathy factors, are useful for examining the convergence and divergence of personality profiles. Higher correlations between profiles indicate stronger convergence, whereas lower correlations suggest greater divergence. The personality inventories were equally capable of generating personality profiles of varying degrees of divergence, with median correlations of .66 and .69 for the NEO-PI-R and HEXACO PI-R, respectively. For the NEO PI-R, the SRP-IPM profile was the least divergent from the other three profiles (*median r* = .81), while the remaining factor profiles were moderately similar (*median r* = .57). The same was true for the HEXACO PI-R as the SRP-IPM profile was most convergent with the other profiles (*median r* = .79), whereas the SRP-CA, SRP-ELS, and SRP-ASB profiles were moderately similar (*median r* = .69). The similar personality profiles generated by the four psychopathy factors is consistent with their substantial degree of overlap (i.e., *median r* = .53) and the consistent role of certain traits such as straightforwardness and compliance from the NEO PI-R and fairness and sincerity from the HEXACO-PI-R.

Relations between the Personality Inventories and Psychopathy: Predictive and Incremental Validity

The predictive and incremental validity of each measure with regards to psychopathy scores from the SRP-III were then examined. The first set of analyses focuses exclusively on the domains of the two inventories (see Table 5). When the NEO PI-R domains were entered at Step 1 of the hierarchical regression analyses, they accounted for significant portions of the variance in each of the psychopathy scores, explaining 49% (SRP-T), 54% (SRP-IPM), 49% (SRP-CA), 42% (SRP-ELS), and 8% (SRP-ASB) of the variance, with an average adjusted R-squared of .40. When entered at Step 1 of the hierarchical regression analyses, the HEXACO-PI-R domains also accounted for a significant proportion of variance in each psychopathy score, including 63% (SRP-T), 56% (SRP-IPM), 64% (SRP-CA), 49% (SRP-ELS), and 15% (SRP-ASB), with an average adjusted R-squared of .49. Overall, the HEXACO-PI-R domains accounted for more variance than the NEO PI-R in each psychopathy score.

When the HEXACO-PI-R domains were entered at Step 2, they accounted for additional significant variance in each psychopathy score, including SRP-T (16%), SRP-IPM (8%), SRP-CA (20%), SRP-ELS (13%), and SRP-ASB (7%), with an average change in adjusted R-squared of .13. When entered at Step 2, the NEO PI-R domains explained additional significant variance in four of the five psychopathy scores, including SRP-T (3%), SRP-IPM (6%), SRP-CA (4%), and SRP-ELS (6%), with an average change in adjusted R-squared of .04. Similar to the predictive validity results, the HEXACO-PI-R provided larger increments in variance than the NEO PI-R for each of the psychopathy scores.

An examination of the beta weights from these regression analyses indicated that both Honesty-Humility and Emotionality were each significantly contributing to the HEXACO-PI-R's

ability to explain larger amounts of incremental variance. Given the close link between psychopathy and the traits included in the Honesty-Humility domain (e.g., sincerity, modesty), this finding was not unexpected. The significant contribution of Emotionality was, however, somewhat unexpected as content from this domain was expected to be well represented in the Neuroticism and Agreeableness domains of the NEO PI-R. To further explore the meaning of these findings, additional regression analyses were performed.

To determine which domains of the HEXACO-PI-R were most important in explaining additional variance in psychopathy scores, the incremental validity of the HEXACO-PI-R was examined using step-wise regression (see Table 6). After simultaneously entering the NEO PI-R domains at Step 1, the HEXACO-PI-R domains were allowed to enter the model in a step-wise manner. Both Honesty-Humility and Emotionality were the only domains to provide significant portions of additional variance. Interestingly, Emotionality emerged as the largest predictor of incremental variance for three of the five psychopathy scores, including SRP-T (12%), SRP-CA (17%), and SRP-ELS (13%). Honesty-Humility then explained significant additional variance for each of these scores, including SRP-T (4%), SRP-CA (1%), and SRP-ELS (1%). Alternatively, Honesty-Humility was the first and largest predictor of additional variance for two of the five psychopathy scores, explaining 6% (SRP-IPM) and 4% (SRP-ASB) of incremental variance. Emotionality then accounted for significant increments in variance for each of these scores, explaining 2% (SRP-IPM) and 3% (SRP-ASB) of additional variance. Overall, these analyses indicate that both Honesty-Humility and Emotionality are responsible for the greater incremental variance accounted for by the HEXACO-PI-R.

As the significant contribution of Emotionality was unexpected, the facet level relations were explored (see Table 7). After entering the NEO PI-R domains simultaneously at Step 1, the

Emotionality facets were entered simultaneously at Step 2. The Emotionality facets accounted for significant additional variance for four of the five psychopathy scores, including SRP-T (13%), SRP-CA (19%), SRP-ELS (17%), and SRP-ASB (6%), with an averaged adjusted R-squared of .11. An examination of the regression coefficients indicated that the Fearfulness facet was a particularly important contributor of additional variance, as the beta weights for this facet were significant for four of the five psychopathy scores. Additionally the facets of Sentimentality, and to a lesser extent Dependence, were significant predictors for several psychopathy scores, including SRP-T (Sentimentality) and SRP-CA (Sentimentality and Dependence).

Because the personality facets are generally more predictive than the broader domains, the predictive and incremental validity of the measure's facets was also examined (see Table 8). As previously mentioned, only facets which were significantly associated with the relevant psychopathy score at the bivariate level were included in these analyses. When entered at Step 1 of the hierarchal regression analyses, the NEO PI-R facets predicted significant portions of variance in each of the psychopathy scores, explaining 60% (SRP-T; 20 facets), 64% (SRP-IPM; 15 facets), 64% (SRP-CA; 20 facets), 54% (SRP-ELS; 21 facets), and 13% (SRP-ASB; 9 facets) of the variance, with an average adjusted R-squared of .51. At Step 1 the HEXACO-PI-R facets also accounted for significant portions of variance of the scores, including 69% (SRP-T; 18 facets), 59% (SRP-IPM; 17 facets), 71% (SRP-CA; 16 facets), 61% (SRP-ELS; 18 facets), and 22% (SRP-ASB; 10 facets) of the variance, with an average adjusted R-squared of .56.

At step 2, the HEXACO-PI-R facets accounted for 14% (SRP-T), 6% (SRP-IPM), 11% (SRP-CA), 11% (SRP-ELS), and 8% (SRP-ASB) of significant incremental variance, with an average adjusted R-squared of .10. When the NEO PI-R facets were entered at Step 2, they

explained 4% (SRP-T), 11% (SRP-IPM), 5% (SRP-CA), and 4% (SRP-ELS) of significant additional variance, but no additional variance for SRP-ASB. The average adjusted R-squared for the NEO PI-R facets was .05.

Relations between Modified Personality Domains and Facets and Psychopathy

To examine the degree to which each inventory includes items which are highly overlapping with psychopathy, the correlations between all of the individual items from both personality measures and the four SRP-III factors were examined. For the NEO PI-R, 16 items exhibited correlations of .40 or greater with at least one of the psychopathy factors, including nine items from facets of Agreeableness (Straightforwardness: 5 items; Altruism: 3 items; Compliance: 1 item), four items from facets of Extraversion (Warmth: 1 item; Positive Emotions: 2 items), and three items from the Deliberation facet of Conscientiousness. Alternatively, for the HEXACO-PI-R 28 items exhibited correlations of .40 or greater with at least one of the psychopathy factors, including eight items from facets of Honesty-Humility (Fairness: 4 items; Sincerity: 2 items; Greed Avoidance: 1 item; Modesty: 1 item), eight items from facets of Emotionality (Sentimentality: 4 items; Dependence: 3 items; Fearfulness: 1 item), five items from the Conscientiousness facet of Prudence, and seven items from the individual Altruism facet.

The HEXACO PI-R had nearly twice as many items than the NEO PI-R which demonstrated correlations of .40 or greater with at least one of the psychopathy factors. To determine whether the previous findings primarily reflect issues related to predictor-criterion overlap, new facet and domains scores were calculated in which all items with a correlation of .40 or greater with a psychopathy factor were excluded. As such, 16 and 28 items were removed

from the NEO PI-R and HEXACO-PI-R, respectively, and modified facet and domain scores were calculated.

The previous correlation analyses were then conducted again using the modified domains and facets. In general, the correlations between the modified domains and facets of both inventories and the psychopathy factors did not differ significantly from the original correlations in which all items were included. For the majority of the facets, the correlations were only slightly weaker in strength than those from the original analyses. Select facets from each inventory, however, did exhibit significantly smaller relations with the psychopathy factors, including Fairness, Prudence, and Altruism from the HEXACO-PI-R and Straightforwardness and Altruism from the NEO PI-R.

The hierarchical regression analyses examining the incremental validity of the domains and facets were also conducted using the modified facets and domains. As expected, the overall predictive variance explained by the two inventories was less than in the original analyses which included the full domains and facets. Although the inventories explained smaller portions of variance, their overall rank remained the same with the HEXACO PI-R accounting for slightly larger amounts of variance in the psychopathy scores at both the domain and facet level. The amount of incremental variance explained by each inventory over the other did not differ from the original regression findings. Both measures were successful at accounting for incremental variance, with the HEXACO accounting for slightly larger increments. In sum, the correlation and regression findings using modified domains and facets were similar to and consistent with the original findings using the full domains and facets.

Relations between the Personality Inventories and Externalizing Behavior: Bivariate Relations

Next, the cross-sectional bivariate correlations between the domains of the personality measures and several indices of externalizing behavior, including antisocial behavior (e.g., driving under the influence of alcohol or other substance, stealing, physical fighting or assaults) substance use, intimate partner violence, and number of sex partners were examined. Antisocial behavior was significantly negatively associated with Agreeableness and Conscientiousness from the NEO PI-R (see Table 9). Substance use was significantly positively correlated with Openness and negatively with Conscientiousness. Intimate Partner violence was positively related to Extraversion and Openness and negatively with Agreeableness. Lastly, the number of sex partners was significantly negatively correlated with Agreeableness.

For the HEXACO-PI-R domains, antisocial behavior was significantly negatively correlated with Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness, and positively associated with Openness. Substance use demonstrated significant negative relations with Honesty-Humility, Emotionality, and Conscientiousness. In contrast, intimate partner violence was only significantly related (inversely) with Agreeableness, and number of sex partners was only significantly associated (inversely) with Honesty-Humility.

Relations between the Personality Inventories and Externalizing Behavior: Predictive and Incremental Validity

Next, the longitudinal predictive and incremental validity of the two personality measures in the context of various externalizing behaviors was examined (see Table 11). Specifically, the ability of each measure to predict engagement in externalizing behavior during the three months following the original data collection phase was tested. The outcome variables for these analyses include two indices of alcohol use, including an individual alcohol use pattern (with respect to

frequency and quantity of alcohol use) and frequency of binge drinking (i.e., consuming five or more drinks), marijuana use, a substance use index (including marijuana, cocaine or crack, and psychedelics), antisocial behavior, and the number of sex partners. In order to test these relations, two sets of hierarchical regression analyses were conducted. Using a more conservative analytic approach, the predictive and incremental validity of the personality models was first examined while controlling for Time 1 externalizing behavior (e.g., predicting three month marijuana use while controlling for marijuana use at Time 1). A second, less conservative approach, was also used in which identical analyses were conducted but without controlling for Time 1 externalizing behavior. The results of the second set of analyses are in the parentheses of Table 11.

To control for previous behavior, Time 1 externalizing behavior was entered at Step 1 followed by the domains of the individual personality models at Step 2. When entered at Step 1, Time 1 externalizing behavior accounted for significant variance in all indices of externalizing behavior, including alcohol use (63%), binge drinking (41%), marijuana use (57%), substance use (33%), antisocial behavior (25%), and number of sex partners (35%). When entered at Step 2, the NEO PI-R did not account for significant incremental variance above and beyond Time 1 behavior for any of the externalizing behaviors. The average adjusted R-squared for the NEO PI-R at Step 2 was .02. Similarly, with the exception of antisocial behavior (7%), the HEXACO-PI-R, with an average adjusted R-squared .03, did not explain significant additional variance for the externalizing behaviors. When entered at Step 3, neither measure provided significant incremental variance above and beyond that explained by the other model at Step 2. At Step 3, the average adjusted R-squared was .02 and .00 for the HEXACO-PI-R and NEO PI-R, respectively.

Both models were more successful at predicting the externalizing behaviors when there was no statistical control for Time 1 behavior. When entered at Step 1, the domains of the NEO PI-R accounted for significant portions of variance in binge drinking (8%), substance use (9%), antisocial behavior (13%), and number of sex partners (13%), with an average adjusted R-squared for all externalizing behaviors of .08. Similarly, the HEXACO-PI-R explained significant portions of variance in alcohol use (12%), binge drinking (16%), substance use (11%), antisocial behavior (20%), and number of sex partners (14%), with an average adjusted R-squared for all externalizing behaviors of .13. In general, the HEXACO-PI-R explained larger amounts of variance for the externalizing behaviors. When entered at Step 2, the NEO PI-R, with an average adjusted R-squared of .03, did not explain significant additional variance for any of the externalizing behaviors. Alternatively, at Step 2 the HEXACO PI-R, with an average adjusted R-squared of .07, accounted for additional significant variance for alcohol use (13%) and binge drinking (11%).

CHAPTER 4

DISCUSSION

Research indicates that general models of personality may be particularly useful for understanding and assessing psychopathy (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005; Miller, Lynam, Widiger, & Leukefeld, 2001). The majority of this research has focused on one of the most popular models of personality, the FFM. More recently, the HEXACO, an alternative personality model which includes five dimensions similar to those in the FFM plus an additional sixth dimension known as Honesty-Humility, has emerged and gained empirical support (Ashton & Lee, 2005; Lee & Ashton, 2004). While both models appear to be valuable platforms for examining personality configuration, little research has compared them to determine which best captures psychopathy. The present research seeked to fill this void by comparing the two inventories which operationalize the models, including: 1) examining the relations between the domains and facets of the two inventories; 2) comparing the relations between each measure and psychopathy; 3) testing the ability of each measure to differentiate between various aspects of psychopathy; 4) testing the predictive and incremental validity of the NEO PI-R and HEXACO-PI-R in relation to psychopathy scores; and 5) testing the two measures' ability to longitudinally predict externalizing behaviors after three months.

Relations between Personality Inventories

Although limited research has examined the associations between the original HEXACO-PI and an abbreviated measure of the FFM (e.g., Ashton, Lee, Visser, & Pozzebon, 2008; Lee, Ashton, & de Vries, 2005; Lee, Ashton, Morrison, Cordery, & Dunlop, 2008), there is no

research comparing the HEXACO-PI-R with the NEO PI-R, the primary measure of the FFM, currently available. Determining the level of convergence between the two primary measures of the personality models is important, as this information may be helpful in understanding any differences in each model's respective abilities to predict and assess psychopathy. One of the primary aims of the current study was to examine how Honesty-Humility, which purportedly has no direct counterpart in the FFM, would be related to the dimensions of the NEO PI-R. Based on the strong convergence between Honesty-Humility and NEO PI-R Agreeableness (i.e., $r = .67$), it is clear that this sixth factor overlaps substantially with NEO PI-R Agreeableness and assesses similar interpersonal content. An inspection of the facet level descriptions from the two inventories is consistent with this notion and suggests that high scores on both are characterized by a genuine, sincere, and modest disposition and tendencies to interact with others in an honest and nondeceptive manner.

The findings are also consistent with previous research relating Honesty-Humility and FFM Agreeableness. For example, Ashton and Lee (2005) found that Honesty-Humility was strongly related ($r = .54$) to FFM Agreeableness as assessed by the NEO PI-R but only weakly associated with Big Five Agreeableness as assessed by two alternative Big Five measures. Additionally, they found that Honesty-Humility was most strongly related to the NEO PI-R Agreeableness facets of Straightforwardness and Modesty, both of which bore minimal to weak relations with measures of Big Five Agreeableness. Based on these findings, they argued that: 1) although Big Five Agreeableness and FFM Agreeableness both include traits related to kindness and cooperation, there are significant conceptual differences between the two dimensions such that FFM Agreeableness is broader and includes content related to straightforwardness and manipulativeness, which are not included in Big Five Agreeableness; and 2) select facets of FFM

Agreeableness (i.e., Straightforwardness and Modesty), as operationalized by the NEO PI-R, are highly overlapping conceptually with Honesty-Humility. Similarly, the present findings indicate strong convergence between Honesty-Humility and FFM Agreeableness as assessed by the NEO PI-R, and particularly the facets of Straightforwardness (i.e., r = .68), and Modesty (i.e., r = .65), which were the two strongest correlates of this dimension. Overall, these findings suggest that due to the inclusion of traits related to straightforwardness, sincerity, and modesty, the NEO PI-R, the primary measure of the FFM, is better suited at capturing variance associated with Honesty-Humility than measures of the Big Five which operationalize the Agreeableness dimension in a more limited manner.

In general, the remaining domains of each personality model showed good convergence with the corresponding domains of the other model and were consistent with past research (e.g., Lee, et al., 2005; Lee, et al., 2008). As expected, HEXACO-PI-R Agreeableness was most strongly associated with NEO-PI-R Agreeableness but was also significantly negatively related with Neuroticism, although significantly less strongly. Similarly, HEXACO-PI-R Emotionality was most strongly associated with NEO-PI-R Neuroticism but was also significantly related with Agreeableness, though to a substantially lesser degree.

Though these relations are consistent with previous findings using the NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992), an abbreviated measure of the FFM, they are somewhat incongruent with Lee and Ashton's (2004) original conceptualization of these dimensions, which indicated that HEXACO Agreeableness and Emotionality more closely correspond to FFM Neuroticism and Agreeableness, respectively. An examination of the facet descriptions for each of these domains may be useful for understanding these discrepancies. Facets from HEXACO-PI-R and NEO PI-R Agreeableness indicate that both dimensions include

content related to having a trusting disposition and a cooperative vs. competitive approach to interpersonal conflict, being considerate of the needs of others, and a tendency to be forgiving of others.

Consistent with Lee and Ashton's (2004) description, the smaller, though still significant, relationship between HEXACO-PI-R Agreeableness and NEO PI-R Neuroticism can primarily be explained by the individual NEO PI-R Angry Hostility facet included in this domain, which bore significant relations with all facets of HEXACO-PI-R Agreeableness and in particular the Patience facet. Both Patience from the HEXACO-PI-R and Angry Hostility from the NEO PI-R assess the tendency to experience anger.

An inspection of the facets associated with HEXACO-PI-R Emotionality and NEO PI-R Neuroticism reveal similar points of convergence. Facets from both dimensions include content related to experiencing anxiety, worry, and stress, and tap individual differences in one's perception of their ability to manage problems and tendency to rely on others for assistance with difficulties. The significant association between HEXACO-PI-R Emotionality and NEO PI-R Agreeableness primarily reflects the HEXACO PI-R facet of Sentimentality, which is characterized by a "tendency to feel strong emotional bonds" and "an empathic sensitivity to the feelings" and needs of others (Lee & Ashton, 2004, p. 334). Similar content can be found in the NEO PI-R Agreeableness facets, particularly Altruism and Tendermindedness, which capture "attitudes of sympathy and concern for others" (Costa & McCrae, 1992, p. 18).

In the investigation of the relations between the two inventories, one unexpected and noteworthy association emerged between NEO PI-R Neuroticism and HEXACO-PI-R eXtraversion. Although in prior research with the NEO-FFI these two domains have been found to be significantly related (e.g., Ashton, Lee, Visser, & Pozzebon, 2008; Lee, Ashton, Morrison,

et al., 2008), in the current study these relations were (surprisingly) as strong as those between Neuroticism and Emotionality. Again examining the facet content of these domains may help to clarify this finding. Facets from both dimensions include content related to having a positive view of one's self, interpersonal shyness and discomfort in social situations, and an optimistic vs. hopeless disposition. This shared content may explain the strong associations between these dimensions.

The strong convergence between the dimensions of the two inventories was also reflected in findings from the regression analyses. Although at the domain level, the HEXACO PI-R was able to account for slightly larger portions of variance in the NEO PI-R domains, both models explained significant amounts of variance in the alternative model's domains (NEO PI-R: mean adjusted R-squared: .62; HEXACO-PI-R: mean adjusted R-squared: .70). Additionally, both inventories were equally successful at predicting content at the facet level (NEO PI-R: mean adjusted R-squared: .55; HEXACO-PI-R: mean adjusted R-squared: .54). Despite differences in organization and the inclusion of an additional sixth factor in the HEXACO-PI-R, both the bivariate and regression findings indicate strong overlap among the measures and suggest that the two inventories assess rather similar content.

Personality Inventories and Psychopathy

Although identifying areas of convergence and divergence between the primary inventories of the FFM and HEXACO is a significant step towards understanding the relations between the two personality models, it is also important to compare them in relation to external constructs. Due to the abundance of research devoted to examining the utility of general personality models for conceptualizing and assessing personality disorders, and in particular psychopathy, the current study examined the two personality inventories in relation to

psychopathic traits. Correlational findings for the NEO PI-R were consistent with past research with the SRP-III (e.g., Williams, Paulhus, & Hare, 2007) and alternative self-report (e.g., Derefinko & Lynam, 2006) and interview (Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005) measures of psychopathy. Specifically, the SRP-III scales related to the interpersonal and affective features of psychopathy were primarily associated with low Agreeableness (*r*s = -.64 to -.72), whereas the scales related to the behavioral and deviance aspects of psychopathy were associated with both low Agreeableness (*r*s = -.27 to -.48) and low Conscientiousness (*r*s = -.20 to -.47).

Alternatively, the SRP-III factors scores demonstrated more varied relations with the HEXACO-PI-R dimensions. In contrast to previous work with the HEXACO-PI-R which indicated that psychopathy is primarily associated with low Honesty-Humility (e.g., Lee & Ashton, 2004), in the current research the SRP-III factors exhibited significant negative relations with several additional dimensions besides Honesty-Humility (*r* = -.48), including Emotionality (*r* = -.42), Agreeableness (*r* = -.28), and Conscientiousness (*r* = -.30). The medium associations with Agreeableness and Conscientiousness are not surprising given the abundance of research with the FFM highlighting the central role of these traits to psychopathy (e.g., Lynam, 2002; Miller et al., 2001), but were somewhat unexpected because these HEXACO dimensions have borne only weak relations with psychopathy in previous research (e.g., Lee & Ashton, 2004, 2005).

One potential explanation for this discrepancy is that in both studies by Lee and Ashton (2004, 2005) the only measure of psychopathy used was the Primary Psychopathy Scale of the LSRP. Previous theoretical conjecture and research has shown that low Conscientiousness is more associated with social deviance and antisocial behavior (i.e., features of Factor 2

psychopathy) than with the interpersonal and affective characteristics (i.e., features of Factor 1 psychopathy; Widiger & Lynam, 1998; Derefinko & Lynam, 2006). The weak relations between the LSRP Primary Psychopathy Scale, a measure whose content most closely resembles that of Factor 1 psychopathy (see Miller, Gaughan, & Pryor, 2008), and HEXACO Conscientiousness is consistent with prior research with the LSRP (e.g., Lynam, Whiteside, & Jones, 1999; Miller, Gaughan, & Pryor).

Because the current study included all scales of an alternative measure of psychopathy which assesses both the interpersonal and affective features of psychopathy, as well as the behavioral features, the findings here are more varied. Specifically, despite bearing only weak relations with the SRP-III scales that correspond to the interpersonal and affective characteristics of psychopathy (i.e., SRP-IPM and SRP-CA), HEXACO-PI-R Conscientiousness bore strong negative relations with SRP-ELS (r = -.48), a scale which captures the lifestyle characteristics associated with Factor 2 (e.g., impulsivity, substance use). The lack of convergence between HEXACO-PI-R Conscientiousness and SRP-ASB (r = -.18), which also assesses characteristics associated with Factor 2 (e.g., social deviance and antisocial behavior) may be more reflective of this psychopathy scale than the HEXACO-PI-R. For example, Gaughan, Miller, Pryor, and Lynam (in press) submitted the scales of three prominent self-report measures of psychopathy (i.e., LSRP, SRP-III, and PPI-R) to a principal component analysis and found that SRP-ASB loaded on a separate component than the other scales associated with Factor 2, suggesting that it may not be quite as convergent with other Factor 2 scales. This scale also exhibited only weak relations with NEO PI-R Conscientiousness in the current study. Smaller effect sizes in general for SRP-ASB may be due to issues of restriction of range in that the current sample did not endorse high rates of explicitly antisocial behavior.

In addition to the HEXACO-PI-R dimensions of Honesty-Humility, Agreeableness, and Conscientiousness, the psychopathy factors also exhibited significant relations with Emotionality. That the majority of the psychopathy factors demonstrated correlations with Emotionality which were equal to or stronger than those with Honesty-Humility is particularly surprising given that Emotionality has shown only weak correlations with psychopathy in previous research (Lee & Ashton, 2004, 2005). Due to the previously mentioned overlapping interpersonal content included in the Emotionality facet of Sentimentality, it makes sense, however, that this dimension would be highly related to psychopathic traits. Moreover, the moderate to strong relations between all of the psychopathy factor scores and the Fearfulness facet of Emotionality may also be responsible for the significant relations between this domain and the psychopathy scores. This finding suggests that low fearfulness, which is not directly assessed in the NEO PI-R, is an important component of psychopathy as assessed by the SRP-III (although this is an issue of debate regarding the broader psychopathy construct; Lilienfeld, 1994; Schmitt & Newman, 1999). This issue is further addressed in the context of the findings related to the predictive validity of the HEXACO-PI-R.

Further examination of the facet relations indicated that neither measure was able to provide a more differentiated profile for the psychopathy factors than the other (NEO PI-R: *median r* = .66; HEXACO-PI-R: *median r* = .69). For both inventories, the SRP-CA, SRP-ELS, and SRP-ASB personality trait profiles were quite convergent, although the SRP-CA profile manifested a personality profile that was less convergent. As previously mentioned, the overall similarity of the four profiles is consistent with the extensive overlap between the psychopathy factors (i.e., *median r* = .53) and the central role of such traits as insincerity, manipulativeness, and immodesty to all aspects of psychopathy. As suggested by the earlier comparison of the two

inventories, the HEXACO-PI-R and NEO PI-R are highly convergent and overlapping. Given this overlap and the overlap between the psychopathy factors, the general similarity of the personality profiles across measures is unsurprising.

Regarding the predictive and incremental validity of two inventories with respect to psychopathic traits, both the NEO PI-R and HEXACO-PI-R domains were successful at explaining significant portions of variance and accounting for significant increments in variance above and beyond the other inventory; however, the HEXACO-PI-R demonstrated stronger predictive and incremental validity overall. Because the HEXACO-PI-R includes an additional sixth factor, Honesty-Humility, that includes traits directly relevant to psychopathy (e.g., sincerity, modesty, manipulativeness), it could be expected that this inventory would be more successful at predicting psychopathy scores, at least at the domain level. Interestingly, the simultaneous regression analyses indicated that both Honesty-Humility and Emotionality were responsible for the greater prediction by the HEXACO-PI-R's domains. In fact, the beta weights indicated that Emotionality was an equal if not greater contributor than Honesty-Humility to the HEXACO-PI-R's ability to explain more predictive and incremental variance. Because previous research (e.g., Ashton, Lee, Visser, & Pozzebon, 2008; Lee, Ashton, Morrison, et al., 2008) and theoretical conjecture (e.g., Lee & Ashton, 2004) suggested that Emotionality was well represented by Neuroticism and Agreeableness from the NEO PI-R, this finding was unexpected and warranted further exploration.

To further investigate the incremental validity of the HEXACO-PI-R and determine which dimensions are most important for predicting psychopathy, regression analyses were run in which the HEXACO-PI-R domains were allowed to enter the model in a step-wise manner (after entering the NEO PI-R domains simultaneously at Step 1). The results of this analysis

demonstrated the importance of *both* Honesty-Humility and Emotionality in predicting psychopathy scores as these two domains were the only ones to explain additional significant variance. The most surprising finding from these analyses was that Emotionality emerged as the largest predictor of incremental variance for three of the five psychopathy scores. As noted earlier, any discrepancy in predictive ability between the two measures was presumed to reflect the additional Honesty-Humility dimension found in the HEXACO model. In contrast, the present findings suggest that Emotionality plays an equally important role in contributing to the HEXACO-PI-R's improved ability to capture psychopathy.

While the strong influence of Emotionality may seem difficult to understand, findings from an additional regression analysis in which only the Emotionality facets were entered simultaneously after entering the NEO PI-R domains at Step 1 provide some insight into this issue. In these analyses, the Emotionality facet of Fearfulness emerged as the primary predictor for most of the psychopathy scores, while the Sentimentality facet played a smaller but significant role in predicting several of the psychopathy scores. The contribution of Sentimentality is consistent with the overlap in content captured in this facet (e.g., empathy, emotional attachment) and traits believed to be highly associated with psychopathy (e.g., lack of empathy, callousness, incapacity for love; Cleckley, 1941/1976). For example, sample items from this facet (e.g., "When someone I know well is unhappy, I can almost feel that person's pain myself"; "People sometimes say that I am not sensitive to others' feelings") appear to capture an emotionally empathic and sensitive disposition which is considered absent in psychopathic individuals and central to the construct of psychopathy.

The emergence of Fearfulness as an integral predictor of psychopathy scores is, however, a more unique and potentially interesting finding. Several prominent researchers and theorists

have proposed that fearlessness is a central feature of psychopathy (e.g., Cleckley, 1941/1976; Lykken, 1957). According to the "low fear hypothesis", which stemmed from Lykken's (1957) early work, psychopathic individuals exhibit a significant deficit in fear conditioning. A significant body of research has examined this hypothesis using classical conditioning paradigms, and the link between psychopathy and electrodermal hyporeactivity (EDR) has been consistently demonstrated (see Fowles & Dindo, 2006). Additionally, research examining the fear-potentiated startled response, an alternative index of emotional hyporeactivity, has revealed significant differences between psychopathic and nonpsychopathic individuals. For example, Patrick, Bradley, and Lang (1993) found that psychopathic individuals did not exhibit an elevated startle in response to negative pictures, which they considered evidence of a fear response deficit. Beyond these empirical findings, it is evident from an inspection of the SRP-III item content that select items capture traits related to a fearless disposition (e.g., "I've often done something dangerous just for the thrill of it"; "I don't enjoy taking risks"), which further suggests that fearlessness is an important feature of psychopathy.

In describing an FFM conceptualization of psychopathy based on general personality traits, Lynam (2002) suggested that the proposed psychopathic deficits of fearlessness, hyporeactivity, and poor fear conditioning could be understood as reflecting low levels of Neuroticism, particularly the facets of Anxiousness and Vulnerability. Interestingly, these FFM facets bore minimal relations with the psychopathy factors in the current research and were only significantly related to SRP-CA. Alternatively, the Fearfulness facet of the HEXACO-PI-R was significantly associated with all of the psychopathy factors. This discrepancy may indicate that the FFM facets of Anxiousness and Vulnerability fail to adequately capture the trait of fearlessness, which may be an important omission with regard to the assessment and study of

psychopathy. As such, the inclusion of a specific fearlessness facet is a strength of the HEXACO-PI-R.

In addition to examining the predictive and incremental validity of the domains, the facets of the two inventories were also compared. Consistent with findings at the domain level, both measures were successful at predicting psychopathic traits and explaining additional variance above the other, though the HEXACO-PI-R accounted for slightly larger portions of predictive and incremental variance for most of the scores. Despite their extensive overlap, the HEXACO-PI-R appears to maintain a slight advantage over the NEO PI-R in explaining psychopathy scores, even at the facet level. One possible explanation for this difference is the inclusion of the Honesty-Humility dimension in the HEXACO-PI-R. While the current study and limited prior research (e.g., Ashton & Lee, 2008) suggest high convergence between Honesty-Humility and the domains and facets of the NEO PI-R, particularly those related to straightforwardness and modesty, it is possible that Honesty-Humility either captures content not well measured by the NEO PI-R or more extensively covers similar content.

One additional explanation for the HEXACO-PI-R's success in predicting psychopathy scores involves overlap in item content between it and the measure of psychopathy used in the current study. As previously mentioned, many of the traits associated with Honesty-Humility are highly overlapping with the core features of psychopathy (e.g., insincerity, manipulativeness, deceitfulness). A comparison of the items included in this domain and those of the SRP-III indicate strong overlap. For example, item 31of the HEXACO-PI-R ("I wouldn't cheat a person even if he or she was a real "sucker") and item 58 of the SRP-III (A lot of people are "suckers" and can easily be fooled"), as well as item 121 ("I wouldn't pretend to like someone just to get that person to do favors for me") of the HEXACO-PI-R and item 41 of the SRP-III ("Sometimes

you have to pretend you like people to get something out of them") appear to measure rather similar tendencies to manipulate others through flattery or deceit. Additionally, select items from the Altruism facet scale of the HEXACO-PI-R (e.g., item 193, "I am a soft-hearted person"; item 200 "People see me as a hard-hearted person") are nearly identical to related items of the SRP-III (e.g., item 44, "I am a soft-hearted person"; "Peoples sometimes say that I'm cold-hearted"). The HEXACO-PI-R's ability to out perform the NEO PI-R with respect to predicting psychopathy scores may be artificially inflated because of the overlap in item content between it and the SRP-III.

While the similarity in item content between the two measures may help to explain the current findings, several cautions to this interpretation should be considered. First, overlap in item content is not unique to the HEXACO-PI-R as several items from the NEO PI-R (e.g., item 62, "I'm known as a warm and friendly person") also significantly overlap with those of the SRP-III (e.g., item 19, "My friends would say that I am a warm person"). Second, the HEXACO-PI-R appears to still hold a slight advantage over the NEO PI-R in predicting psychopathic traits when items which are highly correlated with psychopathy are removed. In the present research, the HEXACO-PI-R continued to out predict the NEO PI-R when modified domains and facets which did not include items exhibiting correlations of .40 or greater with the SRP-III factors were used in the regression analyses. Despite removing from both inventories those items which were most correlated with psychopathy, the HEXACO-PI-R continued to have slightly stronger predictive and incremental validity with regards to psychopathic traits. These findings suggest that the predictive advantage of the HEXACO-PI-R may reflect more than tautology in item content. The HEXACO-PI-R assesses unique content which is directly relevant to psychopathy

but not included in the NEO PI-R (e.g., fearfulness) or assesses similar content but to a larger degree (e.g., interpersonal antagonism).

Personality Inventories and Externalizing Behaviors

Beyond the relations between the two inventories and psychopathy, this study also compared the ability of the NEO PI-R and HEXACO-PI-R to predict engagement in externalizing behaviors three months after the original data collection period. Correlational analyses indicated that high Antagonism, low Conscientiousness, and high Openness were significant correlates of several externalizing behaviors across both measures, including antisocial behavior, substance use, and intimate partner violence. In addition, Honesty-Humility and Emotionality, particularly the Fearfulness facet, were significantly associated with multiple behaviors for the HEXACO-PI-R.

The strong link between externalizing behaviors and interpersonal antagonism and behavioral disinhibition is consistent with previous work examining the relations between antisocial behavior and traits from various comprehensive models of personality. For example, Miller and Lynam (2001) conducted a meta-analysis of research with various structural models of personality, including the Five-Factor Model, Tellegen's three-factor model, (1985), Eysenck's PEN model (1977), and Cloninger's temperament and character model (Cloninger, Dragan, & Przbeck, 1993), and concluded that the basic traits of Agreeableness and Conscientiousness were most strongly related to antisocial behavior. Similar findings have emerged with regards to risky sexual behavior (Hoyle, Fejfar, & Miller, 2000; cf. Miller et al., 2004, in which Conscientiousness was inconsistently related to risky sex), as well as with substance use (Flory, Lynam, Milich, Leukefeld, & Clayton, 2002; Miller, Lynam, & Jones, 2008; Ruiz, Pincus, & Dickinson, 2003). This research and the present findings are further

evidence of the notion that individuals engaging in externalizing behaviors exhibit not only poor behavioral inhibition (i.e., low Conscientiousness) but also an antagonistic interpersonal style characterized by deceit, distrust, and a general lack of concern for others (i.e., low Agreeableness, low Honesty-Humility).

When not controlling for Time 1 externalizing behaviors, both inventories significantly predicted several indices of externalizing behavior during the following three months, including binge drinking, substance use, antisocial behavior, and number of sex partners. In general, the HEXACO-PI-R accounted for more variance in these behaviors. Neither measure manifested substantial incremental validity although the HEXACO-PI-R did account for significant increments in variance for the two alcohol indices (i.e., alcohol use pattern and binge drinking). The two inventories performed equally poorly when controlling for Time 1 externalizing behaviors. Specifically, neither measure was successful at predicting these behaviors at three months or explaining incremental variance. Overall these findings suggest stability in externalizing behaviors across this limited time period and are consistent with research demonstrating the co-occurrence of externalizing behavior across adolescence and early adulthood (e.g., Barnes, Welte, Hoffman, & Dintcheff, 2005; Mason & Windle, 2002). Consistent with previous research, past antisocial behavior is the best and primary predictor of future antisocial behavior. However, due to the brief duration between assessment points in the current research, the present findings should be interpreted with caution.

Implications

The use of general personality traits to conceptualize and assess personality disorders is a valuable enterprise. To further this area of research, it is important to understand which personality model/inventory is best suited to capture these personality configurations. The

present research suggests that there is extensive overlap in content between the FFM, as assessed by the NEO PI-R, and the HEXACO model, as assessed by the HEXACO-PI-R. Both inventories capture traits associated with an antagonistic disposition (e.g., manipulativeness, deceitfulness, callousness, lack of empathy) and poor behavioral inhibition (e.g., impulsivity) which have been considered the core personality features of psychopathy (Lynam, 2002).

With regards to relations between the inventories, the additional sixth dimension of the HEXACO-PI-R, Honesty-Humility, includes shared traits with FFM Agreeableness, including modesty, straightforwardness, and manipulativeness. Although the corresponding dimensions of the two models appear highly related and similar, there are some important differences in how each model organizes the various traits. These differences are most visible for HEXACO Agreeableness and Emotionality. HEXACO Agreeableness primarily taps the interpersonal strategies represented in FFM Agreeableness, but also assesses the tendency to experience anger, which is measure by the Angry Hostility facet of FFM Neuroticism. Additionally, HEXACO Emotionality assesses a tendency to experience negative affect similar to FFM Neuroticism, but also constructs of an interpersonal nature like empathy that are organized within Agreeableness in the FFM. Despite these organizational differences, the present findings suggest that the two models are rather similar and overlapping.

Perhaps the most intriguing finding from the current research was the emergence of the HEXACO-PI-R Emotionality dimension as central to understanding psychopathy. Because Emotionality also assesses empathy and the tendency to form close relationships within the Sentimentality facet, both of which are included in NEO PI-R Agreeableness, its relations with psychopathy are consistent with the conceptualization of the psychopathic individual as callous and lacking in empathy. What is surprising, however, is the importance of the Fearfulness facet

of Emotionality in the present research. Low Fearfulness, along with low Sentimentality to a lesser extent, was more often responsible for HEXACO-PI-R's ability to explain incremental variance in psychopathy scores over the NEO PI-R than Honesty-Humility. These findings are consistent with a fearlessness deficit (Lykken, 1957) and evidence that fearlessness may be a particularly important aspect of psychopathy. It will be important for future research to determine whether these findings can be replicated with alternative self-report and interview measures of psychopathy.

While the HEXACO-PI-R out performed the NEO PI-R in accounting for variance in psychopathy scores, it should be noted that both measures were successful at predicting psychopathic traits. Although some have suggested that constructs like psychopathy are "poorly accommodated by the Big Five" (Lee & Ashton, 2005, p. 1580), the current study and previous research suggest that this conclusion is limited to the Big Five. Because the FFM, as operationalized by the NEO PI-R, includes traits related to straightforwardness and modesty which are not included in measures of the Big Five, it appears to be better suited at capturing psychopathy and other maladaptive traits associated in the "Dark Triad" (i.e., machiavellianism and narcissism; Paulhus & Williams, 2002). The wealth of research demonstrating its utility for understanding psychopathy which has accumulated over the last 10 years attests to its ability to accommodate a range of traits associated with psychopathy. Because of the inclusion of traits related to fearlessness and Honesty-Humility, the HEXACO PI-R may be a slightly better inventory for assessing psychopathy, but the NEO PI-R also remains a useful tool for doing so.

Although neither measure was successful at longitudinally predicting externalizing behavior when controlling for previous antisocial behavior, both inventories were moderately successful at doing so when not controlling for past behavior. These findings suggest that in

addition to improving our understanding of personality disorders, general personality traits may also be helpful in studying externalizing behavior. This is consistent with previous research demonstrating the importance of personality traits for understanding these behaviors. For example, using Tellegen's Multidimensional Questionnaire (MPQ; Tellegen, in press), Krueger and colleagues (2002) found that disinhibited personality traits (i.e., low Constraint) are an indicator of their proposed latent externalizing factor underlying antisocial behavior and substance use.

Limitations, Future Research, and Conclusions

There are several limitations of the present research which may limit the generalizability of the findings. First, the sample was predominately White and included only college students. The use of a college sample may not be particularly problematic however, as prior research has provided evidence that psychopathy is a dimensional construct (e.g., Guay, Ruscio, Knight, & Hare, 2007). It will be beneficial for future research to examine these personality inventories in alternative sample (e.g., community, psychiatric, and forensic) with higher representations of diverse groups with regards to race and ethnicity.

The reliance on self-report measures to assess personality traits, psychopathy, and externalizing behavior may also be a limitation of this research. For example, there are several potential problems with assessing psychopathic traits with self-report measures, including the potential for deceptive responding and the issue of limited insight (see Lilienfeld and Fowler; 2006). The reliance on self-report measures also increases the likelihood that the current relations are artificially inflated due to the shared method variance; however, this should not have a significant effect on the current conclusions as this inflation of effect size should occur equally

across both personality measures. Future studies would be strengthened by utilizing other sources of information, including interviews (e.g., PCL-R) and informant reports.

The short duration between assessment points for the externalizing behavior may also be considered a limitation of the study. It seems likely that this could have contributed to limited variance in several of the externalizing behaviors. It would be interesting to see if the present findings would be replicated when the duration between assessment points is extended. For example, it is possible that the inventories may have improved success with longitudinally predicting externalizing behaviors (when controlling for past externalizing behavior) occurring over longer periods of time beyond three months. There is likely to be a higher occurrence of these behaviors as the assessment period enlarges.

In sum, the two inventories are highly overlapping and assess similar content. Additionally, both inventories appear successful at predicting psychopathy at both the domain and facet level, though the HEXACO-PI-R appears to have a slight advantage in doing so. Continuing to use general personality measures such as the HEXACO-PI-R and NEO PI-R in psychopathy research can improve our understanding of the basic personality traits underlying the various dimensions of this construct. The present research is strong evidence of this, as fearlessness was found to be an important aspect of psychopathy as assessed by the SRP-III. The inclusion of traits related to fearlessness appears to a major strength of the HEXACO-PI-R, at least as it relates to psychopathy. It will be important for future research to further compare the two inventories in relation to other personality traits and disorders to determine alternative strengths and weaknesses.

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APPENDIX

Table 1
Correlations between the Domains of the HEXACO-PI-R and NEO PI-R

	N	E	O	A	C		R^2
Honesty Humility	-.23*	-.11	.15	.67*	.15		.50*
Emotionality	.52*	.07	.18*	.27*	.11		.51*
eXtraversion	-.50*	.86*	.17*	.03	.21*		.80*
Agreeableness	-.38*	.05	.12	.68*	.11		.52*
Conscientiousness	-.13	.11	-.08	.22*	.87*		.76*
Openness	-.05	.09	.76*	.16*	-.05		.60*
							(.62)
R^2	.64*	.76*	.63*	.71*	.76*	(.70)	

Note. N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness; R^2 = Adjusted R^2; Parentheses = mean R^2.
*$p \leq .01$.

Table 2
Correlations between the Facets of the NEO PI-R and HEXACO-PI-R

	H	SI	FA	GA	MO	*E*	FE	AN	DP	SM
Neuroticism	-.23	-.30	-.17	-.14	-.10	.52	.35	.63	.35	.21
Anxiety	-.06	-.13	.05	-.11	.01	.63	.48	.73	.37	.31
Angry Hostility	-.34	-.27	-.23	-.24	-.31	.10	.04	.29	.07	-.09
Depression	-.11	-.18	-.14	.01	-.06	.27	.15	.41	.17	.09
Self-Consciousness	-.05	-.17	-.05	-.02	.08	.41	.38	.41	.26	.15
Impulsiveness	-.25	-.27	-.24	-.15	-.11	.23	.00	.29	.22	.18
Vulnerability	-.13	-.24	-.12	-.04	-.01	.52	.41	.47	.40	.26
Extraversion	-.11	-.02	.04	-.25	-.09	.07	-.13	-.06	.15	.26
Warmth	.16	.13	.24	-.02	.16	.26	.06	.03	.26	.42
Gregariousness	-.11	-.06	.01	-.24	-.03	.06	.00	-.14	.19	.12
Assertiveness	-.19	-.06	-.05	-.23	-.27	-.13	-.23	-.08	-.07	-.02
Activity	-.20	-.08	-.04	-.24	-.24	-.03	-.21	.03	.01	.10
Excite Seeking	-.26	-.12	-.19	-.32	-.15	-.12	-.28	-.07	-.01	.02
Pos Emotions	.15	.12	.21	-.01	.16	.30	.11	.04	.24	.51
Openness	.15	.16	.03	.18	.07	.18	.02	.09	.12	.31
Fantasy	-.01	.02	-.07	.04	-.01	.13	.10	.07	.10	.10
Aesthetics	.26	.23	.18	.26	.13	.21	.13	.10	.13	.29
Feelings	.04	.04	.02	.05	.02	.48	.17	.37	.36	.56
Actions	.12	.17	.03	.13	.05	-.05	-.14	-.14	.04	.08
Ideas	.03	.10	-.01	.09	-.08	-.16	-.21	-.08	-.17	.00
Values	.08	.06	-.07	.12	.15	.10	-.02	.02	.06	.22
Agreeableness	.67	.51	.54	.43	.61	.27	.18	.02	.18	.43
Trust	.34	.29	.26	.21	.31	.10	-.05	-.10	.14	.30
Straightforwardness	.68	.63	.60	.42	.46	.12	.13	-.02	.05	.19
Altruism	.44	.34	.41	.22	.38	.27	.12	.03	.18	.48
Compliance	.39	.28	.34	.20	.40	.22	.26	.00	.14	.25
Modesty	.65	.40	.40	.52	.70	.14	.12	.08	.01	.20
Tendermindedness	.41	.28	.33	.28	.39	.37	.21	.12	.30	.48
Conscientiousness	.15	.18	.36	-.10	.02	.11	.14	.06	-.01	.13
Competence	.14	.20	.30	-.07	.01	.00	-.01	-.04	-.08	.14
Order	-.03	.03	.12	-.16	-.08	.05	.12	.01	.02	.00
Dutifulness	.34	.30	.48	.09	.18	.01	.03	-.01	-.10	.11
Ach. Striving	-.07	.01	.17	-.24	-.15	.11	.04	.13	.06	.10
Self-Discipline	.10	.13	.27	-.09	.01	.06	.09	.02	-.03	.12
Deliberation	.25	.21	.36	.04	.16	.21	.32	.13	.06	.12
R^2		.46	.47	.45	.55		.49	.61	.37	.56

Note. H = Honesty-Humility; SI = Sincerity; FA = Fairness; GA = Greed Avoidance; MO = Modesty; E = Emotionality; FE = Fearfulness; AN = Anxiety; DP = Dependence; SM = Sentimentality; R^2 = Adjusted R^2.
*r*s ≥ |.15| = $p \leq .01$; underlined values = $r \geq |.40|$.

Table 2 continued

	X	SS	SB	SO	LV	*A*	FG	GE	FX	PT
Neuroticism	-.50	-.48	-.39	-.29	-.46	-.38	-.34	-.24	-.22	-.38
Anxiety	-.34	-.26	-.33	-.20	-.28	-.20	-.27	-.10	-.04	-.21
Angry Hostility	-.22	-.22	-.04	-.17	-.32	-.71	-.41	-.46	-.56	-.76
Depression	-.61	-.65	-.39	-.39	-.55	-.13	-.14	-.05	-.07	-.12
Self-Consciousness	-.55	-.46	-.53	-.37	-.40	-.05	-.16	.00	.06	-.04
Impulsiveness	.02	-.05	.05	.10	-.05	-.33	-.25	-.32	-.22	-.25
Vulnerability	-.39	-.35	-.42	-.16	-.30	-.12	-.17	-.01	-.03	-.13
Extraversion	.86	.60	.63	.79	.75	.05	.11	.03	.00	.01
Warmth	.62	.45	.38	.57	.62	.29	.17	.27	.23	.25
Gregariousness	.67	.47	.44	.79	.49	.03	.04	.01	.06	.00
Assertiveness	.69	.45	.76	.52	.45	-.18	.00	-.19	-.24	-.14
Activity	.58	.39	.40	.49	.58	-.08	.09	-.10	-.13	-.11
Excite Seeking	.51	.38	.38	.49	.40	-.10	-.01	-.11	-.09	-.12
Pos Emotions	.56	.42	.29	.45	.68	.26	.21	.27	.17	.18
Openness	.17	.06	.18	.09	.19	.12	.06	.06	.12	.13
Fantasy	.02	-.06	.03	.02	.05	.07	.02	-.03	.07	.15
Aesthetics	.03	-.10	.11	-.02	.09	.12	.06	.12	.09	.12
Feelings	.16	.12	.09	.11	.20	-.11	-.11	-.05	-.08	-.10
Actions	.23	.14	.19	.20	.19	.18	.12	.06	.20	.19
Ideas	.12	.06	.21	.00	.09	.05	.07	.02	-.01	.06
Values	.17	.16	.11	.11	.19	.15	.06	.09	.22	.10
Agreeableness	.03	.04	-.16	.03	.22	.68	.38	.64	.57	.54
Trust	.25	.18	.10	.23	.32	.47	.34	.44	.33	.37
Straightforwardness	.01	.06	-.13	-.03	.16	.37	.21	.38	.31	.27
Altruism	.28	.30	.03	.21	.42	.54	.28	.53	.50	.41
Compliance	-.09	-.04	-.26	-.06	.11	.75	.42	.60	.65	.67
Modesty	-.33	-.30	-.32	-.27	-.18	.37	.15	.40	.33	.31
Tendermindedness	.05	.06	-.09	.07	.15	.43	.25	.43	.38	.31
Conscientiousness	.21	.27	.08	.10	.25	.11	.04	.16	.09	.06
Competence	.36	.40	.22	.21	.34	.07	.01	.11	.05	.06
Order	.11	.15	.03	.08	.13	-.05	-.05	-.04	.00	-.05
Dutifulness	.12	.17	.03	.00	.21	.23	.16	.23	.17	.18
Ach. Striving	.26	.22	.17	.17	.27	-.07	-.04	.01	-.09	-.10
Self-Discipline	.28	.31	.12	.16	.34	.13	.09	.16	.11	.06
Deliberation	-.14	-.01	-.17	-.14	-.11	.19	.02	.27	.19	.14
R^2		.59	.66	.72	.71		.29	.49	.49	.65

Note. X = Extraversion; SS = Social Self-Esteem; SB = Social Boldness; SO = Sociability; LV = Liveliness; A = Agreeableness; FG = Forgiveness; GE = Gentleness; FX = Flexibility; PT = Patience; R^2 = Adjusted R^2.
*r*s ≥ |.15| = $p \leq .01$; underlined values = $r \geq |.40|$.

Table 2 continued

	C	OR	DI	PF	PR	*O*	AA	IN	CR	UC	AL	R^2
Neuroticism	-.13	-.09	-.13	.07	-.23	-.05	.08	-.11	-.14	-.01	.04	
Anxiety	.10	.02	.05	.21	.04	-.03	.10	-.10	-.07	-.04	.22	.61
Angry Hostility	-.03	.00	.06	.11	-.26	-.10	-.07	-.02	-.15	-.07	-.33	.68
Depression	-.14	-.11	-.20	.01	-.12	.06	.11	.03	-.04	.07	.01	.58
Self-Consciousness	-.02	-.10	-.05	.05	.07	-.03	.10	-.10	-.11	-.01	.14	.45
Impulsiveness	-.30	-.14	-.18	-.09	-.51	.00	.04	-.04	-.07	.08	.02	.42
Vulnerability	-.17	-.07	-.23	-.03	-.20	-.11	.07	-.24	-.15	-.05	.15	.54
Extraversion	.11	.13	.24	.10	-.12	.09	.02	.03	.15	.08	.20	
Warmth	.21	.13	.24	.16	.13	.18	.13	.09	.22	.12	.45	.58
Gregariousness	-.01	.07	.04	-.02	-.12	-.08	-.09	-.13	.05	-.05	.14	.64
Assertiveness	.07	.01	.26	.08	-.11	.13	.02	.13	.19	.07	-.07	.65
Activity	.17	.24	.34	.13	-.22	-.03	-.04	-.05	.00	.02	-.01	.52
Excite Seeking	-.10	-.01	.02	-.05	-.27	-.02	-.12	.00	.05	.05	-.11	.38
Pos Emotions	.18	.14	.16	.14	.08	.19	.21	.09	.14	.16	.48	.60
Openness	-.08	-.15	-.02	.03	-.06	.76	.69	.42	.60	.66	.27	
Fantasy	-.17	-.16	-.16	-.09	-.09	.40	.37	.11	.39	.39	.10	.25
Aesthetics	.03	-.15	.05	.14	.09	.75	.81	.37	.55	.55	.29	.70
Feelings	.03	-.04	.04	.15	-.05	.39	.40	.22	.26	.33	.34	.50
Actions	-.08	-.02	-.05	-.09	-.10	.42	.36	.23	.36	.36	.13	.25
Ideas	-.05	-.15	.05	.02	-.03	.67	.46	.54	.55	.53	-.01	.48
Values	-.08	-.04	-.05	-.04	-.10	.33	.23	.16	.22	.45	.23	.29
Agreeableness	.22	.07	.08	.09	.43	.16	.22	.10	.05	.10	.70	
Trust	-.01	-.04	-.05	-.11	.18	.13	.15	.06	.10	.11	.41	.36
Straightforwardness	.26	.12	.17	.17	.34	.09	.13	.09	.01	.03	.45	.53
Altruism	.28	.14	.19	.16	.38	.20	.22	.13	.14	.10	.66	.62
Compliance	.23	.13	.07	.09	.40	.04	.11	.01	.00	.00	.51	.67
Modesty	.05	-.08	-.05	.01	.29	.04	.11	.02	-.08	.05	.40	.60
Tendermindedness	.18	.09	.07	.11	.27	.22	.25	.14	.09	.18	.67	.48
Conscientiousness	.87	.61	.75	.62	.62	-.05	-.05	.06	.00	-.19	.17	
Competence	.51	.26	.48	.36	.45	.13	.04	.22	.18	-.05	.18	.49
Order	.74	.85	.45	.49	.31	-.18	-.11	.00	-.19	-.29	.02	.75
Dutifulness	.59	.37	.51	.43	.50	.01	-.03	.06	.07	-.06	.23	.49
Ach. Striving	.65	.40	.79	.54	.26	-.04	-.04	.00	.00	-.09	.06	.64
Self-Discipline	.74	.50	.75	.52	.47	-.06	-.07	.02	-.01	-.14	.14	.67
Deliberation	.61	.28	.39	.43	.79	-.03	.00	.02	.03	-.18	.18	.68
R^2		.74	.71	.45	.72		.68	.35	.47	.48	.65	

Note. C = Conscientiousness; OR = Organization; DI = Diligence; PF = Perfectionism; PR = Prudence; O = Openness; AA = Aesthetic Appreciation; IN = Inquisitiveness; CR = Creativity; UC = Unconventionality; AL = Altruism; R^2 = Adjusted R^2.
*r*s ≥ |.15| = $p \leq .01$; underlined values = $r \geq |.40|$.

Table 3
Correlations between the NEO PI-R and SRP-III

	SRP T	SRP IPM	SRP CA	SRP ELS	SRP ASB	ES
Neuroticism	.06	.11	-.05	.08	.07	.05
Anxiety	-.16*	-.07	-.25*	-.14	-.07	-.13
Angry Hostility	.33*	.34*	.34*	.20*	.16*	.26
Depression	.08	.06	.01	.11	.08	.07
Self-Consciousness	-.12	-.06	-.13	-.15*	-.02	-.09
Impulsiveness	.22*	.18*	.00	.35*	.14	.17
Vulnerability	-.11	-.03	-.23*	-.06	-.01	-.08
Extraversion	-.04	-.02	-.17*	.09	-.07	-.04
Warmth	-.34*	-.27*	-.47*	-.16*	-.18*	-.28
Gregariousness	-.06	-.02	-.15	.04	-.08	-.05
Assertiveness	.19*	.18*	.17*	.22*	.03	.15
Activity	.11	.12	.07	.16*	.00	.09
Excite Seeking	.26*	.20*	.16*	.34*	.12	.21
Pos Emotions	-.37*	-.28*	-.51*	-.20*	-.20*	-.30
Openness	-.08	-.07	-.29*	.11	-.01	-.07
Fantasy	.00	.06	-.17*	.09	.00	-.01
Aesthetics	-.15*	-.15	-.29*	-.07	.03	-.12
Feelings	-.16*	-.06	-.39*	.00	-.10	-.14
Actions	-.05	-.13	-.16*	.13	.00	-.04
Ideas	.13	.10	.07	.20*	.03	.10
Values	-.07	-.11	-.25*	.14	-.01	-.06
Agreeableness	-.66*	-.72*	-.64*	-.48*	-.27*	-.55
Trust	-.38*	-.47*	-.41*	-.19*	-.13	-.31
Straightforwardness	-.60*	-.75*	-.41*	-.43*	-.32*	-.50
Altruism	-.56*	-.53*	-.57*	-.41*	-.26*	-.45
Compliance	-.52*	-.49*	-.49*	-.47*	-.21*	-.42
Modesty	-.39*	-.49*	-.35*	-.29*	-.10	-.31
Tendermindedness	-.43*	-.41*	-.56*	-.27*	-.14	-.36
Conscientiousness	-.34*	-.25*	-.15	-.47*	-.20*	-.27
Competence	-.22*	-.14	-.09	-.27*	-.22*	-.18
Order	-.17*	-.09	-.07	-.29*	-.06	-.13
Dutifulness	-.38*	-.37*	-.17*	-.42*	-.23*	-.30
Ach. Striving	-.12	-.08	-.05	-.20*	-.04	-.09
Self-Discipline	-.24*	-.19*	-.11	-.33*	-.13	-.19
Deliberation	-.41*	-.30*	-.18*	-.57*	-.24*	-.33

Similarity Analyses	IPM	CA	ELS	ASB
CA	.81*			
ELS	.82*	.57*		
ASB	.63*	.46*	.69*	

Note. T = Total; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Life Style; ASB = Antisocial Behavior. ES = Effect size.
*$p \leq .01$.

Table 4
Correlations between the HEXACO-PI-R and the SRP-III

	SRP T	SRP IPM	SRP CA	SRP ELS	SRP ASB	ES
Honesty-Humility	-.58*	-.66*	-.47*	-.42*	-.31*	-.48
Sincerity	-.39*	-.53*	-.26*	-.25*	-.20*	-.32
Fairness	-.66*	-.65*	-.48*	-.55*	-.44*	-.54
Greed Avoidance	-.28*	-.37*	-.26*	-.16*	-.11	-.23
Modesty	-.48*	-.51*	-.44*	-.36*	-.21*	-.39
Emotionality	-.51*	-.33*	-.64*	-.42*	-.23*	-.42
Fearfulness	-.49*	-.28*	-.47*	-.53*	-.27*	-.39
Anxiety	-.20*	-.13	-.26*	-.16*	-.07	-.16
Dependence	-.33*	-.22*	-.48*	-.23*	-.12	-.27
Sentimentality	-.50*	-.37*	-.68*	-.32*	-.23*	-.42
eXtraversion	.00	.01	-.09	.10	-.05	-.01
Social Self-Esteem	-.09	-.04	-.12	-.02	-.13	-.08
Social Boldness	.22*	.19*	.14	.27*	.11	.18
Sociability	.00	.02	-.12	.08	-.01	-.01
Liveliness	-.20*	-.17*	-.24*	-.08	-.16*	-.16
Agreeableness	-.36*	-.39*	-.34*	-.27*	-.12	-.28
Forgiveness	-.13	-.22*	-.12	-.06	-.01	-.10
Gentleness	-.37*	-.41*	-.34*	-.30*	-.10	-.29
Flexibility	-.34*	-.36*	-.34*	-.28*	-.10	-.27
Patience	-.29*	-.25*	-.29*	-.22*	-.16*	-.23
Conscientiousness	-.37*	-.28*	-.22*	-.48*	-.18*	-.30
Organization	-.18*	-.12	-.13	-.27*	-.05	-.14
Diligence	-.19*	-.16*	-.08	-.26*	-.10	-.15
Perfectionism	-.30*	-.23*	-.20*	-.35*	-.18*	-.24
Prudence	-.45*	-.35*	-.25*	-.58*	-.21*	-.36
Openness	.02	-.02	-.10	.11	.07	.02
Aesthetic Appreciation	-.15	-.13	-.26*	-.07	.00	-.12
Inquisitiveness	.09	.01	.06	.14	.09	.08
Creativity	.08	.07	-.02	.14	.05	.06
Unconventionality	.09	.05	-.05	.19*	.09	.07
Altruism	-.63*	-.57*	-.74*	-.40*	-.30*	-.52

Similarity Analyses	IPM	CA	ELS	ASB
CA	.79*			
ELS	.81*	.69*		
ASB	.58*	.46*	.69*	

Note. T = Total; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Life Style; ASB = Antisocial Behavior; ES = Effect Size.
*$p \leq .01$.

Table 5
Predictive and Incremental Validity of the NEO PI-R and HEXACO-PI-R Domains

	SRP T	SRP IPM	SRP CA	SRP ELS	SRP ASB	Mean R^2
Step 1						
A. *NEO PI-R domains*						
Neuroticism	-.15*	-.08	-.26*	-.08	-.04	
Extraversion	.01	.03	-.15*	.16*	-.04	
Openness	.04	.06	-.12*	.13*	.04	
Agreeableness	-.66*	-.73*	-.64*	-.45*	-.25*	
Conscientiousness	-.24*	-.13*	-.06	-.42*	-.14	
R^2	.50*	.55*	.49*	.43*	.10*	.41
Adjusted R^2	.49	.54	.49	.42	.08	.40
B. *HEXACO-PI-R domains*						
Honesty-Humility	-.48*	-.58*	-.34*	-.31*	-.31*	
Emotionality	-.44*	-.27	-.63*	-.32*	-.20*	
eXtraversion	-.06	-.05	-.16*	.08	-.10	
Agreeableness	-.17*	-.16	-.21*	-.14*	-.01	
Conscientiousness	-.19*	-.12*	-.01	-.36*	-.08	
Openness	.12*	.10	.00	.15*	.12	
R^2	.64*	.57*	.65*	.50*	.17*	.51
Adjusted R^2	.63	.56	.64	.49	.15	.49
Step 2						
A. *HEXACO-PI-R domains*						
Honesty-Humility	-.31*	-.35*	-.19*	-.17*	-.29*	
Emotionality	-.47*	-.17*	-.57*	-.50*	-.26*	
eXtraversion	-.06	-.08	-.13	.03	-.02	
Agreeableness	.01	.09	-.04	-.02	.01	
Conscientiousness	-.10	-.09	-.14	-.12	.04	
Openness	.12	.08	.15	.04	.14	
ΔR^2	.17*	.09*	.20*	.14*	.08*	.14
Adjusted ΔR^2	.16	.08	.20	.13	.07	.13
B. *NEO PI-R domains*						
Neuroticism	.16	.00	.10	.27*	.11	
Extraversion	.10	.06	.05	.21	-.02	
Openness	-.02	.03	-.21*	.13	-.04	
Agreeableness	-.29*	-.50*	-.29*	-.13	.02	
Conscientiousness	-.07	.00	.15	-.22*	-.13	
ΔR^2	.04*	.07*	.05*	.07*	.01	.05
Adjusted ΔR^2	.03	.06	.04	.06	.00	.04

Note. Step 1 provides the variance accounted for in each psychopathy score by each model alone. Step 2 gives the increment in variance accounted for by each model over and above the other model. A = NEO PI-R entered at first step; B = HEXACO-PI-R entered at first step. T = Total; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Life Style; ASB = Antisocial Behavior.
*$p \leq .01$.

Table 6
Incremental Validity of the HEXACO-PI-R Domains Using Step-Wise Regression

	SRP T	SRP IPM	SRP CA	SRP ELS	SRP ASB	Mean R^2
Step 1						
NEO PI-R domains						
R^2	.50*	.55*	.49*	.43*	.10*	.41
Adjusted R^2	.49	.54	.49	.42	.08	.40
A.						
Step 2						
Honesty-Humility						
ΔR^2		.06*			.04*	
Adjusted ΔR^2		.06			.04	
Step 3						
Emotionality						
ΔR^2		.02*			.04*	
Adjusted ΔR^2		.02			.03	
B.						
Step 2						
Emotionality						
ΔR^2	.12*		.17*	.12*		
Adjusted ΔR^2	.12		.17	.13		
Step 3						
Honesty-Humility						
ΔR^2	.04*		.01*	.01*		
Adjusted ΔR^2	.04		.01	.01		

Note. Step 1 provides the variance accounted for in each psychopathy score by the domains of the NEO PI-R entered simultaneously. A and B give the increment in variance accounted for by the HEXACO-PI-R over and above the NEO PI-R when the domains are allowed to enter in a step-wise manner. T = Total; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Life Style; ASB = Antisocial Behavior.
*$p \leq .01$.

Table 7
Incremental Validity of the HEXACO-PI-R Emotionality Facets

	SRP T	SRP IPM	SRP CA	SRP ELS	SRP ASB	Mean R^2
Step 1						
NEO PI-R domains						
R^2	.50*	.55*	.49*	.43*	.10*	.41
Adjusted R^2	.49	.54	.49	.42	.08	.40
Step 2						
Emotionality facets						
Fearfulness	-.31*	-.09	-.24*	-.41*	-.24*	
Anxiety	-.06	-.09	-.01	-.07	-.01	
Dependence	-.07	-.06	-.15*	-.05	.03	
Sentimentality	-.18*	-.01	-.35*	-.11	-.12	
ΔR^2	.13*	.02	.19*	.17*	.06*	.11
Adjusted ΔR^2	.13	.01	.19	.17	.05	.11

Note. Step 1 provides the variance accounted for in each psychopathy score by the NEO PI-R domains. Step 2 gives the increment in variance accounted for by the HEXACO-PI-R Emotionality facets over and above the NEO PI-R. T = Total; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Life Style; ASB = Antisocial Behavior.
*$p \leq .01$.

Table 8
Predictive and Incremental Validity of the NEO PI-R and HEXACO-PI-R Facets

	SRP T	SRP IPM	SRP CA	SRP ELS	SRP ASB	Mean R^2
Step 1						
A. *NEO PI-R facets*						
R^2	.62*	.66*	.66*	.58*	.16*	.54
Adjusted R^2	.60	.64	.64	.54	.13	.51
B. *HEXACO-PI-R facets*						
R^2	.71*	.61*	.72*	.64*	.25*	.59
Adjusted R^2	.69	.59	.71	.61	.22	.56
Step 2						
A. *HEXACO-PI-R facets*						
ΔR^2	.15*	.07*	.12*	.12*	.11*	.11
Adjusted ΔR^2	.14	.06	.11	.11	.08	.10
B. *NEO PI-R facets*						
ΔR^2	.06*	.12*	.06*	.06*	.02	.06
Adjusted ΔR^2	.04	.11	.05	.04	.00	.05

Note. Step 1 provides the variance accounted for in each psychopathy score by each model alone. Step 2 gives the increment in variance accounted for by each model over and above the other model. A = NEO PI-R entered at first step; B = HEXACO-PI-R entered at first step. T = Total; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Life Style; ASB = Antisocial Behavior.
*$p \leq .01$.

Table 9
Correlations between the NEO PI-R and Externalizing Behavior

	ASB	SU	IPV	# Sex Partners
Neuroticism	.01	.04	.09	.01
Anxiety	-.14	-.07	.07	-.10
Angry Hostility	.14	.04	.04	-.01
Depression	.03	.06	-.05	-.01
Self-Consciousness	-.09	-.08	-.03	-.05
Impulsiveness	.19*	.26*	.23*	.15
Vulnerability	-.08	-.03	.14	.05
Extraversion	-.05	.06	.15*	.07
Warmth	-.21*	-.06	.06	-.04
Gregariousness	-.06	.05	.09	.09
Assertiveness	.08	.00	.12	.09
Activity	-.03	.06	.17*	-.01
Excite Seeking	.15	.25*	.11	.15
Pos Emotions	-.17*	-.04	.11	-.02
Openness	.08	.20*	.15*	.12
Fantasy	.06	.06	.05	.07
Aesthetics	.04	.02	.10	-.02
Feelings	-.04	.16*	.16*	.10
Actions	.03	.19*	.14	.11
Ideas	.17*	.13	.03	.09
Values	.06	.30*	.16*	.18*
Agreeableness	-.30*	-.11	-.20*	-.18*
Trust	-.11	.05	-.13	-.06
Straightforwardness	-.32*	-.14	-.21*	-.20*
Altruism	-.28*	-.12	-.06	-.15
Compliance	-.29*	-.17*	-.18*	-.11
Modesty	-.17*	-.08	-.20*	-.17
Tendermindedness	-.11	-.05	-.06	-.11
Conscientiousness	-.27*	-.23*	-.08	-.15
Competence	-.15*	-.15	-.05	-.10
Order	-.17*	-.12	-.04	-.07
Dutifulness	-.23*	-.18*	-.15*	-.16
Ach. Striving	-.10	-.10	.07	-.05
Self-Discipline	-.18*	-.14	-.06	-.08
Deliberation	-.36*	-.35*	-.15	-.20*

Note. ASB = antisocial behavior; SU = substance use; IPV = intimate partner violence.
*$p \leq .01$.

Table 10
Correlations between the HEXACO-PI-R and Externalizing Behavior

	ASB	SU	IPV	# Sex Partners
Honesty-Humility	-.26*	-.19*	-.12	-.24*
Sincerity	-.17*	-.09	-.13	-.14
Fairness	-.41*	-.33*	-.14	-.26*
Greed Avoidance	-.04	-.04	-.04	-.12
Modesty	-.20*	-.13	-.09	-.24*
Emotionality	-.35*	-.19*	.10	-.16
Fearfulness	-.40*	-.33*	.03	-.24*
Anxiety	-.17*	-.06	.07	-.10
Dependence	-.19*	-.11	.10	.01
Sentimentality	-.29*	-.08	.10	-.16
eXtraversion	.00	.05	.13	.07
Social Self-Esteem	-.08	.02	.11	.01
Social Boldness	.15	.10	.07	.17
Sociability	.00	.03	.14	.01
Liveliness	-.12	-.02	.12	-.01
Agreeableness	-.16*	-.10	-.17*	-.14
Forgiveness	-.02	.03	-.09	-.08
Gentleness	-.18*	-.16*	-.21*	-.19*
Flexibility	-.16*	-.08	-.10	-.06
Patience	-.14	-.12	-.13	-.10
Conscientiousness	-.29*	-.26*	-.08	-.17
Organization	-.16*	-.09	-.02	-.04
Diligence	-.14	-.16*	.00	-.08
Perfectionism	-.27*	-.23*	-.10	-.17
Prudence	-.30*	-.33*	-.14	-.25*
Openness	.17*	.12	.06	.11
Aesthetic Appreciation	.05	.06	.09	.04
Inquisitiveness	.20*	.12	-.08	.14
Creativity	.14	.05	.08	.09
Unconventionality	.17*	.14	.12	.09
Altruism	-.30*	-.17*	-.05	-.15

Note. ASB = antisocial behavior; SU = substance use; IPV = intimate partner violence.
*$p \leq .01$.

Table 11
Predictive and Incremental Validity of the NEO PI-R and HEXACO-PI-R Domains for Externalizing Behaviors

	AU	BD	MJ	SU	ASB	# Sex Partners	Mean R^2
Step 1							
Time 1 behavior							
R^2	.63*	.41*	.58*	.33*	.26*	.36*	.43
Adjusted R^2	.63	.41	.57	.33	.25	.35	.42
Step 2 (Step 1)							
A. *NEO PI-R*							
ΔR^2	.01 (.05)	.03 (.12*)	.01 (.10)	.05 (.13*)	.06 (.16*)	.07 (.16*)	.04 (.12)
Adjusted ΔR^2	.00 (.01)	.01 (.08)	.00 (.06)	.03 (.09)	.03 (.13)	.04 (.13)	.02 (.08)
B. *HEXACO-PI-R*							
ΔR^2	.03 (.16*)	.06 (.20*)	.03 (.07)	.06 (.15*)	.10*(.24*)	.10 (.18*)	.06 (.17)
Adjusted ΔR^2	.01 (.12)	.03 (.16)	.00 (.02)	.03 (.11)	.07 (.20)	.06 (.14)	.03 (.13)
Step 3 (Step 2)							
A. *HEXACO-PI-R*							
ΔR^2	.03 (.16*)	.04 (.15*)	.03 (.06)	.05 (.10)	.05 (.09)	.05 (.06)	.04 (.10)
Adjusted ΔR^2	.02 (.13)	.01 (.11)	.00 (.02)	.02 (.06)	.02 (.05)	.02 (.02)	.02 (.07)
B. *NEO PI-R*							
ΔR^2	.01 (.06)	.01 (.06)	.01 (.09)	.04 (.08)	.01 (.02)	.03 (.04)	.02 (.06)
Adjusted ΔR^2	.00 (.02)	.00 (.03)	.00 (.05)	.02 (.04)	.00 (.00)	.00 (.01)	.00 (.03)

Note. Step 1 provides the variance accounted for in each time 2 behavior by the related time 1 behavior. Step 2 provides the variance accounted for in each behavior by each model alone. Step 3 gives the increment in variance accounted for by each model over and above the other model. (Step 1) provides the variance accounted for in each time 2 behavior by personality traits assessed at time 1, without controlling for time 1 behavior. (Step 2) then provides the variance accounted for by each model over and above the other model. A = NEO PI-R entered at first step; B = HEXACO-PI-R entered at first step. AU = alcohol use; BD = binge drinking; MJ = marijuana use; SU = substance use; ASB = antisocial behavior.
*$p \leq .01$.