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AFFECTIVE PROCESSING OF VIOLENT PSYCHOPATHS

by

DARYL G. KRONER, B.A., M.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

Department of Psychology

Carleton University

Ottawa, Ontario

January 13, 1999

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the Faculty of Graduate Studies and Research
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submitted by

DARYL G. KRONER, M.A.

in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

Chair, Department of Psychology

Thesis Supervisor

External Examiner

Carleton University

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Abstract

The present study investigated the relation between affect and psychopathy in a violent offender sample. Participants ($n = 110$) were administered the Psychopathy Checklist - Revised and completed the Basic Personality Inventory. Psychopathy was analyzed both as a categorical and dimensional variable. In contrast with past research, affective self-report measures were found to differ among low, medium, and high psychopathy scores. Psychopaths were more likely than nonpsychopaths endorse negative affect using "True" responses. There were no statistical differences between psychopaths and nonpsychopaths using "False" responses to affective items. When psychopaths responded "False" to affective items the reaction time data indicated that these responses were incongruent with their self-schema. Psychopaths were more likely to use affective situations to disclose their affect than nonpsychopaths. With situational affective responses, the reaction time data indicated that these responses were incongruent with their self-schema. Overall, the behavioral dimension of psychopathy (Factor 2) was positively related to the various affective measures, but not the personality dimension (Factor 1). Responses to cognitive and affective measures differed suggesting that these two areas make unique contributions to psychopathy. The reaction time data with affective measures showed that nonpsychopaths' responses were congruent with their self-schema. In contrast, the

reaction time data with cognitive measures among nonpsychopaths did not show a pattern of congruence.

Discussion included a consideration of the implications of psychopath's affective deficits for understanding the etiology and resulting behaviors of psychopathy. A model incorporating affective content, processing, and congruence was proposed. It was suggested that the affective deficits of psychopaths could best be described via the affective congruence mechanism.

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Introduction

Psychopathy is a personality disorder defined by a constellation of affective, interpersonal, and behavioral characteristics that include lack of empathy, callousness, egocentricity, and impulsivity. The manifestations of psychopathy are costly for interpersonal relations and society. Within the criminal justice system, psychopaths engage in more problematic behaviors than do their nonpsychopathic counterparts. The negative impact of problematic behaviors committed by psychopaths is far reaching for both the individual offender (i.e., longer incarcerations) and the management of the criminal justice system (i.e., disproportional amount of crime and institutional misconducts). Researching psychopaths and developing a causal explanation is necessary to reduce these problematic behaviors and associated costs (Quinsey, 1995). Central to psychopathy is the deficient processing of emotions. Thus, investigating the affective processing of psychopathy will potentially lead to an understanding of the etiologic mechanisms and elements that maintain this disorder (Porter, 1996).

Psychopathy was first described in a medical context by a French psychiatrist, Phillippe Pinel (1806\1962). Pinel used the term "manie sans delire" (mania without delirium) to describe a male patient with severe temper outbursts that resulted in throwing a woman into a well because of her abusive language. This patient was not suffering from other

illnesses and was aware of his violent and impulsive behavior. For Pinel, the aggressive behavior of this disorder was motivated not by cognitive deficiencies, but by "the audacity of a savage" and desires "to reign by force" (p. 151). Prichard (1835), an English psychiatrist, used the term "moral insanity" to characterize those who had disorders "in the state of the feelings, temper, or habits" (p. 15). Although affective deficits were referenced in both Pinel's and Prichard's description of psychopathy, the emotional component of the disorder has not been a favored subject of study. This has been, in part, due to the early psychological theories which viewed affect as primitive, noncognitive states and not as having a legitimate role in mental life (Armon-Jones, 1992). For example, James (1884) viewed emotions as only visceral processes, a view which early behaviorists (i.e., Watson) continued to endorse. In a similar vein, Cannon (1931) proposed that emotion is the result of arousal in the central nervous system, where bodily changes and the experience of emotion occur simultaneously. When early scientific study of emotions emerged by psychologists such as Titchener, affect was narrowly defined and based on the "primitive nature of adjustment" (Chaplin & Krawiec, 1979, p. 426).

Current views of emotion are now more broader and subject to empirical investigation. In various theoretical views (Hebb, 1946; Isen, 1987; Lazarus, 1991; Leventhal, 1984), affect has a central role in the generation and

maintenance of behavior. In addition to examining the normal range of emotional functioning, researchers also suggest that deficits in affective processes contribute to the personality disorder of psychopathy (Cleckley, 1976; Patrick, 1994; Williamson, Harpur, & Hare, 1991). The overall focus of the present study is to examine how psychopaths process affect.

Before addressing affective processing of psychopaths, different perspectives of the structure and generation of emotion within the discrete and dimensional models of affect will be discussed, followed by a discussion of the physiological bases of emotion. Next, the construct of psychopathy is discussed in greater detail followed by a discussion of past problematic assessment issues and the development and psychometric characteristics of Hare's Psychopathy Checklist - Revised (PCL-R; Hare, 1991). Dysfunctional areas associated with psychopathy are presented, with a focus on affective processing. Various methods of assessing the affective processing of psychopaths are covered. Of these methods, self-report is expanded in conjunction with item reaction latencies because of the importance of this method to understanding affective processing of respondents. The advantages over other methods of assessing affective processing is discussed. Then the purpose of the present study and hypotheses are presented.

General Affective Theories¹

For the most part, affective theories can be classified into two categories: discrete and dimensional (Izard, 1971; Levenson, 1988). Discrete models define emotions as a small set of singular units among which differentiation can occur (James, 1884). For example, the emotion of contempt is different than grief (Dawes & Kramer, 1966). In addition, there is the evidence that the number of affective categories can be quite large (Smith & Ellsworth, 1985). The use of affective categories is common and central to several emotional theories (Charland, 1995). In contrast, dimensional models describe all affective states along a few dimensions such as valence and intensity.

Discrete Models

Within discrete models of affect it is assumed that basic emotions constrain attention and have a distinctive repertoire of actions (Oatley, 1996). Two related, but separate models of affective functioning are the objectual and rational views.

Objectual View.

This view of affect proposes that affective states correspond with the concept of an object. For example, to be

¹ In this presentation, the terms affect and emotion are used interchangeably. It is acknowledged that affect generally is a broader term than emotion (Armon-Jones, 1992; Reisenzein, 1994). All emotions fall within affect, but there are preferences and attitudes that can be affective, but are not emotions (Clore et al., in press).

fearful is to have a fear about something. Lyons (1980) states, "emotional state is about something rather than nothing" (p. 105).

Rationality View.

The rationality view conceptualizes affect as logically related to certain beliefs or knowledge. For example, one cannot feel sad unless there is a relevant belief that contributes to the affective state of sadness. Oatley (1988) states, "It is ideas that are stored, not affect" (p. 15). Central to the rationality view is how meaning is generated and the role of perception. According to Lazarus (1991), cognition has a causal role in the generation of emotion. In other words, cognition is a necessary and a sufficient condition for generating affect.

The generation of emotions requires a minimal reason or rationale, even with those generated automatically and without deliberate control. For fear or anxiety to be experienced, there needs to be the appraisal of danger or a threat. This appraisal of a situation is guided by motivational relevance and congruence (Smith & Lazarus, 1993). Relevance refers to the extent that one cares about an encounter and congruence to the extent that the encounter is consistent with ones' desires or goals. In addition, core relational themes also contribute to emotion. A core relational theme is the central harm or benefit that is involved with negative and positive emotions. For anger to be experienced, there has to be a core relational theme of

other-blame present. For the most part, both relational themes and appraisal components equally predict their respective emotions (Smith & Lazarus, 1993).

Discrete models tend to emphasize the cognitive processes in the explanation of affect. Thus, affect cannot be explained by a single mechanism, requiring other constructs to explain its occurrence and maintenance.

Dimensional Models

Originating with the work of Wundt (1896), the dimensional model of affect views emotional states along one (Dawes & Kramer, 1966) or a few dimensions (Block, 1957; Schlosberg, 1954). In contrast to the James-Lange position, Cannon (1927, 1931) argued for similar and overlapping physiological responses among various emotions.

Affective Continuum View.

With this view, affective states can be represented along a continuum according to the relation with an object (Armon-Jones, 1992). The emotion is not defined by content, but by the degree of independence from an object. An object is the focus of emotional attention that determines one's experience. At the one end of the continuum are emotions that necessarily have an object. To be angry is to be angry about something, like someone cutting one off in traffic. All instances of these types of affect have an object.

Next on the continuum are instances in which affect has an association with an object. The affect can occur when there is a sense of an object, but without a link between

the affect and an object, the affect would gradually lose its meaning. Examples include fear and dread, which usually have an object, but can be objectless.

The third and middle position on the continuum encompasses a variety of affect, such as anxiety, euphoria, elation, joy, distress, happiness, and depression. These affective types can have an object, but do not need an object. In either case, the affect is equally meaningful. This point of the continuum entails both emotions and moods, where emotions often have an object and moods lack an object.

Further along the continuum are emotions without an object, associated with an ongoing experience of a particular quality, rather than affect with an object. For example, a cheerful person looks on the bright side of things and derives pleasure from many activities, as opposed to a depressed person. Typically, descriptions of this affect are more naturally followed by "because" clauses than by object-oriented "about" or "with" clauses. "Sam was sullen because he was..." compared to "Sam was sullen about his being..." Examples of affect at this point in the continuum include melancholy, cheerfulness, dolefulness, despondency, contentment, and listlessness.

The last point along the continuum includes the range of affect that are necessarily objectless. Examples include peacefulness, joviality, mellowness, and buoyancy. Causes can be assigned to these affective types, but they cannot be

assigned objects. The necessarily objectless affect are exemplars of what is understood to be "mood" (Clore, Schwarz, & Conway, in press; Frijda, 1986).

The continuum view of affect has many similarities with conceptualizing affect as prototypical events. The prototypical approach suggests a hierarchy of affect with all affect at the top, or superordinate position, and then at the middle level a subset of basic emotions such as fear, anger, sadness, etc. (Russell, 1991). These emotions can be further divided into another subordinate level. For example, sadness may be further divided into blues or hopelessness. The top to bottom hierarchy is connected by an approximation of category membership. At the different levels, categories are not mutually exclusive, but overlapping. A category is defined by prototypical exemplars, those objects or events that have a significant resemblance to other exemplars.

Two-Dimensional Pleasure-Arousal Model.

In the two-dimensional model of affect, affective states are viewed in terms of pleasant-unpleasantness (valence) and level of intensity from arousal to sleep. Each dimension is continuous, bipolar, and orthogonal to each other (Reisenzein, 1994) and for some, all emotions can be conceptualized within these two dimensions (Lang, 1995). The notion of the affective domain along these two dimensions has been substantiated with different populations (Russell, 1983), in within-subject designs (Feldman, 1995) and with various assessment procedures (Lang, Greenwald, Bradley, &

Hamm, 1993). The most common method of measuring the dimensional model is the use of psychometric methods. Some type of scaling or factor analytic techniques are used to determine the structure of emotion, focusing on a reaction to the experience of emotion (i.e., Block, 1957; Frijda, Kuipers, & ter Schure, 1989).

In an emphasis on the pleasure emotions of the valence dimension, Isen and her colleagues (Isen, 1987; Isen et al., 1987) have presented evidence that positive affect can influence individuals to integrate more information and be more flexible in the way ideas are related. To investigate the influence of positive affect on social categorization, Isen, Niedenthal, and Cantor (1992) had subjects rate how well written descriptions of specific types of people exemplified more general categories of people. To create a positive-affect condition, the subjects were presented with decorated bag of candies. The control condition received no candy. Subjects in the positive affect condition rated weak prototypical examples of the positive traits as better members of those categories than did the control subjects. Negative traits were not perceived as better members of the general category. Thus, the effect of positive affect in social categorization was not due to a response bias or motivation to think systematically. The authors conclude that people who experience pleasurable emotions are more likely to integrate their categories of people and use more global unifying social categories. In addition, this study

suggests that a positive emotion has positive cognitive benefits by forcing respondents to rely on a simpler judgmental strategy (Clore et al., in press). In a non experimental study, the experience of positive affect was related to a welcomed social activity of time spent with a friend (Watson, Clark, & Tellegen, 1988).

Both Reisenzein (1994) and Lang (1995) offer further developments of the valence-arousal model. They differ with respect to how the quality (the affective core of emotion) and intensity of emotion are related to the pleasure and arousal dimensions. Conversely, Reisenzein (1994) proposes that emotional quality and intensity are determined by both pleasure and arousal. In other words, each emotion has a constant proportion of pleasure and arousal, and as these proportions increase, so does the intensity of the emotion. Lang (1995) suggests that the valence dimension can be accounted for by two motivation systems based in the brain. The appetitive system is indicated by consummatory, sexual, nurturant behaviors, and associated with approach behaviors. The aversive systems includes protective, defensive, withdrawal, and is associated with escape and avoidance. Arousal, though, is not a separate dimension, but is seen as, "reflecting variations in the activation" (p. 374) in either the appetitive or aversive system, or both. Within the pleasure dimension, arousal without an affective dimension (i.e., exercise) may have very little impact on experiencing pleasurable emotions (Isen, Daubman, & Nowicki,

1987). Once either the appetitive or aversive system is activated, certain associations, representations and mental events have a higher probability of access.

The major deficit in many of the dimensional models is that the generation (Lang is an exception) and the maintenance of emotions are not addressed. The advantage, though, is that a simple structure can account for a wide range of emotional experience.

In the next section, two models of affect that integrate environmental stimuli into the generation and maintenance of emotions are covered. These two theories incorporate a cognitive component to the structure of emotion and argue that various emotions can have separate motor programs or action tendencies.

Specific Models of Emotion

Leventhal's Perceptual-Motor Theory

Leventhal (1984) suggests that hierarchical processing is basic to the generation of emotions. The central nervous system has three levels of hierarchical processing. The expressive motor level is innate, occurring in the central nervous system, and generates a distinctive set of expressions in response to stimuli in a newborn. The schematic level is an automatic process that combines the subjective feelings with the expressive-motor reactions and contains a record of conditioned (learned) emotional reactions. At the conceptual level, there is a set of abstract rules or codes that guide the interpretation of

emotions and emotional reactions. These rules are easy to verbalize. The description, "Being on the edge really scared me" is an example of observing and commenting on an emotional reaction. Two major components contribute to the abstract rules: verbal and performance conceptualizations of emotion. The verbal conceptual system is defined by the way emotions are represented in a particular culture and communicated by its members. These representations of an emotion may not accurately reflect the generation of emotion by the expressive-motor and schematic processing systems. Because the expressive-motor and schematic processing are strongly tied to contextual cues, post hoc discussion by the person experiencing the affect will often focus on a source and attribute little to the context. For example, in a dark room, one may attribute being startled to an unexpected noise, while not recognizing that the darkness played an equal role. Consequently, a respondent's view of an emotion may be quite discrepant from what happened objectively in the situation, utilizing only the salient issues (i.e., unexpected noise) when abstracting and discussing the felt emotion. From a prototypical perspective, examining emotion at the exclusion of the context and situations leading to affect will result in poorly defined affect (Russell, 1991).

Leventhal refers to performance codes as abstract representations of the perceptual and motor responses organized in emotional schemata. They are developed by active participation. When the performance system is

present, deliberate action can be generated quickly and can anticipate emotional behaviors through self-instruction. These conceptual performance codes connect perception with deliberate self-representation that allows control over otherwise automatic affective behavior.

The advantages of Leventhal's theory is that (a) it accounts for how contextual situations are involved in the development of emotions, and (b) addresses how specific emotions are recalled. A disadvantage of this formulation is it's inability to differentiate between emotional valence and intensity.

Frijda's Action Readiness Theory

Frijda (1986) defines emotion as "modes of relational action readiness either in the form of tendencies to establish, maintain, or disrupt a relationship with the environment or in the form of mode of readiness as such" (p. 71). Like Armon-Jones (1991), Frijda suggests that affect is dependent on an object. Thus, emotional action tendencies are "states of readiness to achieve or maintain a given relationship with the environment" (p. 75). These action tendencies are central in the control of action and in the processing of information. Emotions will result from stimuli that are of meaningful concern. Meaningful concern is elicited by the match or mismatch of stimuli with concern satisfaction. For emotion to occur, specific conditions of match or mismatchness need to be present. These specific conditions involve pleasure and pain sensations. Thus, the

experience of emotion is perceptual and its purpose is to derive concern satisfaction. In differentiating emotions from mood, Frijda argues that emotions have a specific focus and moods are nonspecific in their focus.

One drawback to Frijda's theory is the lack of a set of criterion for what constitutes readiness (Clore et al., in press). The question of how are action tendencies different from feelings, appraisals, and expressions of affect is not addressed. Central to Frijda's definition of emotion is intentionality. Kupperman (1995) has argued that intentionality is not necessary for an emotion. If intentionality is absent, then more is needed to describe the emotion.

Emotions and Physiological Arousal

Although there may be disagreement as to the exact role of physiological mechanisms in generating affect, the majority of theories on emotion assumes physical arousal is critical. This section will briefly review the research relating affect to physiological arousal, focusing on autonomic arousal. There are two general lines of thought on how emotions relate to the body. First, there is the view, following the James-Lange theory (James, 1884) that suggests emotions are sensations in bodily changes (i.e., skeleton muscles, viscera) and that specific physiological patterns are associated with certain emotions.

The second view holds that general physiological arousal is part of all emotions. Cannon (1931), in a

response to the James-Lange theory of emotion, suggested that the viscera are relatively insensitive to sudden environmental changes. He postulated that the same visceral changes occur in different emotional states (Cannon, 1927). In other words, arousal indices such as skin conductance and heart rate cannot determine whether an emotional reaction is positive or negative (Patrick, 1994) and therefore cannot determine the operative mechanism (Howard, 1986). Because emotional arousal is general and undifferentiated, other information is then needed to interpret emotion (Schacter & Singer, 1962).

The James-Lange position can be further discussed in the context of discrete vs. dimensional models. The discrete view that emotions are tied to specific physiological changes has received some support. Feeling mistreated and helpless results in changed skin temperature (Graham, Kabler, & Graham, 1962). Fear has repeatedly been associated with increased heart rate (Vrana, Cuthbert, & Lang, 1989). With facial muscle activity, viewing happy faces is associated with an increase in zygomatic activity (elevated cheeks to a smile) and sad faces with small corrugator responses (pulling of the eyebrows together; Voglmaier & Hakerem, 1989). In addition, electromyographic (EMG) results can differentiate anger from disgust and fear (Vrana, 1993). Distinctive physiological responses are present with different facial expressions. Anger and fear have similar increases in heart rate, but differ in skin temperature

change. Colder temperatures occurred with fear (Ekman, Levenson, & Friesen, 1983). Some investigators (Clore et al., in press) believe that the view that various emotions have distinctive physiology is held by many because of the varied personal experience of a thumping heart rate when fearful as compared to a pit in one's stomach when anxious.

In contrast to the discrete position, other researchers suggest that the data supports a dimensional model of affect (Forth, 1992). The emotions of extreme pleasantness are associated with high values of both skin conductance and heart rate, but for extreme unpleasantness a high skin conductance and a low heart rate were present (Winton, Putman, & Kraus, 1984). Similarly, others have found that skin conductance increases with arousal, regardless of whether the affect is pleasant or unpleasant (Bradley, Cuthbert, & Lang, 1990; Cook, Hawk, Davis, & Stevenson, 1991). Heart rate will covary with arousal (Cuthbert, Bradley, York, & Lang, 1990) but affective valence may be associated with either an increased rate (pleasantness) or a decrease rate (unpleasantness) (Bradley et al., 1990; Greenwald, Cook, & Lang, 1989; Hare, Wood, Britain, & Shadman, 1970).

Methodologically, the above research examining the relationship between emotions and physiological arousal has dealt with induced emotions (i.e., Ekman et al., 1983). This is typically done by asking respondents to imagine an emotionally laden scene, or visually present emotional

scenes of faces. But more importantly, and central to the present study, Voglmaier and Hakerem (1989) present evidence that physiological responses can be differentiated by the self-report of positive and negative trait affect. Those with positive affect had increased corrugator activity to sad faces. Respondents with negative affect responded with less zygomatic activity to happy faces. In this view, only general emotional dimensions are differentiated by physiological patterns and indices.

In an attempt to resolve differences between the Cannon and James-Lange positions, Pennebaker (1980) suggests that emotions are deduced in the perceptual process by attending to specific bodily sensations to the exclusion of other sensations. The process of attending to specific bodily sites verifies the emotion. During arousal, there is a physiological basis to indicate the interpretation of several emotions. But in an attempt to verify a specific emotion, it is the attention to specific bodily locations that verifies the emotion. According to Pennebaker, physiological changes, such as heart rate are associated with specific emotions.

Affective research conducted within either a dimensional or discrete model demonstrates a robust relationship between affect and physiological arousal (Frijda, 1986) and that individual differences occur in this relationship (Cook et al., 1991). With psychopaths, this relationship between affect and physiological arousal often

differs as compared with nonpsychopaths (Hare, 1965), suggesting an affective dysfunction with psychopaths. The next section covers the definition and assessment of psychopathy, followed by a discussion of the affective processing in psychopaths.

Definition and Assessment of Psychopathy

Psychopathy is defined as a personality disorder that includes interpersonal, affective, and behavioral characteristics with little evidence of the classical psychiatric symptomatology (i.e., delusions, hallucinations, catonic behavior; Hart & Hare, 1989). The overlap with less severe psychopathology, such as schizotypal disorders, is also negligible (Raine, 1986). In addition, neuropsychological evidence suggests that psychopaths do not suffer from gross cerebral impairment (Hart, Forth, & Hare, 1990; Smith, Arnett, & Newman, 1992). More specifically, psychopathy includes predatory, exploitative, and impulsive traits (Quinsey, 1995). Typically, such people have difficulty controlling their antisocial impulses (Lykken, 1995). Psychopathy has an early onset and relatively stable features throughout the life-span (Robbins, 1966). By adolescence, the core features of psychopathy can be detected and reliably measured (Forth, Hart, & Hare, 1990).

The development of the Psychopathy Checklist (PCL; Hare, 1980) and its revision (PCL-R; Hare, 1991) overcame many of the conceptual and psychometric problems that previously characterized the assessment of psychopathy.

Other instruments, such as the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; American Psychiatric Association, 1994) category of Antisocial Personality Disorder (APD) used predominantly behavioral criteria and did not include a range of personality variables that are believed to be an essential feature of psychopathy (Hart & Hare, 1995; Nussbaum & Lynett, 1993; Rogers et al., 1994). The APD classification does not include characteristics such as grandiosity, shallow affect, and glibness. Focusing on a limited number of behaviors (largely of a criminal nature) increases the reliability of making a diagnosis, but results in a more narrowly defined construct with reduced construct validity. Furthermore, there is considerable overlap between APD and those who engage in persistent antisocial behavior (Hart & Hare, 1989; Hart, Hare, & Harpur, 1992). Thus, the ability of the APD diagnosis to differentiate among criminal populations is severely curtailed. In addition, the number of separate judgments needed to make an APD diagnosis is large (i.e., deceitfulness, impulsivity, irritability) and most of these judgments rely heavily on the respondent's memories and self-report of past behavior (Hare, Hart, & Harpur, 1991).

The PCL-R is an instrument that requires clinical judgement. Criteria for these judgements are presented in the PCL-R manual (Hare, 1991), but there exists the possibility that raters will vary in their judgements. Thus, training on the criteria and interrater reliability are of

importance to ensure the same construct is being measured among different raters.

In general, self-report measures are also problematic. An elevated score on the Pd scale of the Minnesota Multiphasic Personality Inventory (MMPI) can occur solely due to a dysfunctional family of origin (Helmes & Reddon, 1993). In addition, the scale is multifactorial, usually consisting of four or five factors, thus not allowing for a straight forward interpretation of the scale.

The Socialization scale of the California Personality Inventory (CPI; Gough, 1967), developed from a role-taking theory of psychopathy, is another frequently used measure of psychopathy. Role playing theory argues that a psychopath's ability to perceive and evaluate one's behavior similarly to others in the same culture will be deficit (Gough, 1960). This scale can be problematic for three reasons. First, Gough's focus on role-taking in psychopathy can be questioned. Psychopaths can tell others what they want to hear (Raine, 1986, 1988) and manage their impressions (Kroner & Weekes, 1996). Second, only a few of the items in the scale measure role taking; the majority are indicators of social deviance. Third, based on the role-taking theory, it can be expected that psychopaths will be less able to fake the Socialization scale. Empirically, this does not occur. The Socialization scale is fakable and a sizable proportion of psychopaths are able to fake-good (O'Mahoney & Murphy, 1991). Overall, the correlations between the

PCL/PCL-R and the self-report of psychopathy scales only are in the low to moderate range, with the stronger correlations measuring the social deviance component of psychopathy (.30 to .45; Hare, 1985, 1991; Hart, Forth, & Hare, 1991; Hart, Hare, & Forth, 1994). Despite these problems, others have continued to argue that only self-report is necessary for the assessment of psychopathy (Howard, 1988; Thomas-Peter, 1992). Howard argues that the Socialization scale is a good global measure of psychopathy because it encompasses both the personality and social deviance dimensions of psychopathy better than the PCL-R.

PCL-R

In contrast to self-report and behavior measures, the development of the PCL and PCL-R used ratings of characteristics describing the prototypical psychopath (Cleckley, 1976). The definition and content of Cleckley's criteria were refined (Hare, 1980), resulting in a 20-item rating scale (PCL-R; Hare, 1991)². Development of the PCL-R included factor analysis of scale items, which represents an internal approach to test construction as compared to a criterion method. This approach ensures a high degree of scale homogeneity and scale independence (Reddon, Marceau, &

² Others have argued that there is a considerable departure of the PCL-R from the original conceptualization as presented by Cleckley (Salekin, Rogers, & Sewell, 1996). These authors argue that the PCL-R is an atheoretical measure of psychopathy.

Jackson, 1982). Stable factors contribute to greater generalization of results to other samples.

Psychometrically, the PCL-R has been shown to have reliable scores in assessing male offenders. Cronbach's coefficient alpha, a measure of internal consistency, range from .81 to .89 (Brown & Forth, 1997; Folsom, 1993; Hart & Hare, 1989). In addition, the PCL-R has demonstrated temporal stability. With a 1-month test-retest time frame, a reliability coefficient of .89 was obtained (Alterman, Cacciola, & Rutherford, 1993).

With the PCL-R utilizing judgments for the scoring of items, it is essential that the instrument be capable of a high degree of interrater reliability. Interrater reliability coefficients range from .74 to .97 (Hare et al., 1990; Smith & Newman, 1990; Wong, 1988).

Several studies (Hare et al., 1990; Harpur, Hakstian, & Hare, 1988; Harris, Rice, & Quinsey, 1994; Templeman & Wong, 1994) have examined the factor structure of the PCL-R and confirmed it measures two-factors (Table 1). Because this is essential to the conceptualization of psychopathy, research pertaining to the PCL and PCL-R's factor structure is reviewed.

Using congruent coefficients across six samples, the two-factor comparisons among the samples resulted in highly congruent factors for 5 of the 6 samples (Harpur et al., 1988). Factor 1 was defined as a selfish, callous, and

Table 1

PCL-R Items Loading on Factor 1 and Factor 2

Factor 1
Glibness/superficial charm
Grandiose sense of self-worth
Pathological lying
Conning/manipulative
Lack of remorse or guilt
Shallow affect
Callous/lack of empathy
Failure to accept responsibility for own actions

Factor 2
Need for stimulation/proneness to boredom
Parasitic lifestyle
Poor behavioral controls
Early behavior problems
Lack of realistic long-term goals
Impulsivity
Irresponsibility
Juvenile delinquency
Revocation of conditional release

remorseless use of others and included items dealing with glibness, deception, remorse, affect, and empathy. Factor 2 was labeled as a chronically unstable and antisocial lifestyle. These items dealt with boredom, lifestyle, past behaviors, and past offending. Factors 1 and 2 have an average correlation of .56 in general prison samples (Hare et al., 1991).

In a comprehensive review on the potential number of factors to extract on the PCL, Templeman and Wong (1994) concluded that two factors yielded an optimal solution. Initially, they proposed that the number of factors should be somewhere between two and five. Two procedures (Scree and MAP tests) suggested a two-factor solution and the Norm Fit Index a three-factor solution. The three factor solution had only two items load highly on one factor. Due to the two items having similar content (i.e., early behavioral problems, juvenile delinquency) and the factor having poor reliability, a two-factor solution was retained. With an inmate sample similar to the present study, Folsom (1993) used a confirmatory procedure which also suggested a two-factor solution. This two-factor solution also replicates using only file information (i.e., not interview) to score the PCL-R with a forensic psychiatric population (Harris et al., 1994).

External Support for the Two-Factor Conceptualization

Support for a two-factor solution also comes from the differential relationships that Factor 1 and Factor 2 have

with content related ratings, APD, age, demographic variables, and self-report measures. Cleckley's (1976) egocentric, lack of remorse, affective deficits, and superficial charm dimensions have stronger loadings on Factor 1 than Factor 2. Ratings of unstable lifestyle and antisocial behavior loaded more strongly on Factor 2 (Harpur, Hare, & Hakstian, 1989). Comparisons between APD, which focuses on behaviors, and the two factors indicate that APD is more strongly related with Factor 2 than with Factor 1 (Harpur et al., 1989). Using a cross-sectional design, Factor 1 was unrelated with age, whereas Factor 2 scores declined with age (Harpur & Hare, 1994). A potential conclusion is that the personality structure of psychopathy is stable throughout the life span (Hare, Forth, & Strachan, 1992).

With demographic variables of social class, quality of family life, and educational achievement, there was no relationship with Factor 1. These variables were significantly related to Factor 2 and the differences between Factor 1 and Factor 2 correlations were also significant. Factor 1 relates to self-report measures of machiavellianism and narcissism whereas Factor 2 correlates with measures of socialization and antisocial behavior (Hare, 1991; Harpur et al., 1989).

Item Response Theory analysis of the PCL-R items indicated that Factor 1 items are more discriminant and provide more information about the psychopathy construct

than did Factor 2 items (Cooke & Michie, 1997). With regard to recidivism, Factor 1 has greater efficacy in predicting violent reoffending than does Factor 2 (Serin, 1996). Using Criminal Career Profile analysis, differential correlations occurred between Factor 1 and Factor 2. Criminal Career Profile analysis characterizes criminal failure by a slope with incarcerated time on the y axis and time not incarcerated on the x axis. The greater the slope, the stronger the presence of a criminal career. This procedure accounts for multiple criminal incarcerations and measures criminal behaviors as a continuous variable. Hemphill, Templeman, Wong, and Hare (1998) found this slope to correlate .17 with Factor 1 and .45 with Factor 2 scores.

Dimensional Versus Categorical Nature of Psychopathy

There is some debate as to whether psychopathy should be viewed as a dimensional construct ranging from the absence to high saturation of psychopathic characteristics or as a discrete, prototypical category, indicating the presence/absence of the disorder. The conceptualization of psychopathy either as a dimensional or as a categorical construct has implications for (a) which etiological mechanisms are studied, (b) the type of possible questions that can be asked, (c) the nature of the data analysis, and (d) the utility of the construct. A dimensional model allows for identifying underlying personality dimensions, whereas a discrete model allows for identifying biological markers (Lilienfeld, 1994). With a dimensional model, regression and

correlational type of statistics are used. This model also lends itself to more precise measures of reliability (Rutherford, Cacciola, Alterman, & McKay, 1996). A categorical model necessitates group comparison type of statistics, such as ANOVA.

The different models will determine the utility of the construct. Categorical models may facilitate communication and decision-making in hospitals and criminal justice institutions whereas dimensional models have the potential for greater reliability and precision because of the presence of more variance. The scoring of the PCL-R is based on a cumulative model (i.e., higher scores indicate greater presence of a characteristic) which assumes a dimensional view. In addition, the wide range of cut-off scores presented in the literature suggests overlap among the different categories (Salekin et al., 1996). Yet, interpreting high scores as matching the "prototypical" psychopath (Hare, 1991) suggests a categorical interpretation. Furthermore, Harris et al. (1994) presented evidence for conceptualizing psychopathy as a categorical taxon.

Although the categorical model may lend itself to easier communication for decision makers, the benefit of accounting for a greater amount of the variance with a dimensional model better serves the long term goal of explanation and prediction of behavior. Methodologists have argued that dichotomizing predictor variables and then using

multiple predictors can lead to spurious statistical significance (Maxwell & Delaney, 1993). A dimensional model, emphasizing salient symptoms, facilitates the development of theoretical mechanisms. The defining characteristics of psychopathy become the focus of investigation as compared to the category of "psychopathy." This approach may also lead to improvements in the defining characteristics of the disorder (Persons, 1986).

Behaviors of Psychopaths

The behavioral manifestations of psychopathy are varied, resulting in considerable cost to interpersonal relationships, administration of law and corrections, and finally, society.

Within the criminal justice arena, psychopaths start their criminal careers at a relatively young age (Hare, 1991; Forth et al., 1990; Wong, 1984), although Brown and Forth (1997) did not find a significant correlation between age of onset for sexual or other offences and psychopathy in a sample of incarcerated rapists. Also, psychopaths commit more crimes over their lifetime (Hare, McPherson, & Forth, 1988; Hart, Knopp, Hare, 1988; Kosson, Smith, & Newman, 1990; Serin, Peters, & Barbaree, 1990) and more violent crimes than their nonpsychopathic criminal counterparts (Hare & McPherson, 1984; Serin, 1996; 1991). Moreover, in their criminal activities, psychopaths are more likely to use a weapon (Hare & McPherson, 1984) and offend against strangers (Williamson, Hare, & Wong, 1987). Their violence

is more likely to be of an instrumental nature, defined by a clearly identifiable purpose other than responding to provocation or frustration (Cornell et al., 1996). Alcohol abuse among psychopaths is greater than their nonpsychopaths counterparts (Hemphill, Hart, & Hare, 1994; Smith & Newman, 1990).

Psychopaths are more likely to have institutional difficulties as indicated by lower occupation level within the prison, more segregation time away from the regular living units, fewer day parole plans (Serin et al., 1990), and more displays of aggressive behaviors (Hare & McPherson, 1984). With maximum security forensic patients, those with high PCL-R scores were more likely to have an escape than a control group matched on commitment status, ethnicity, and age (Gacono, Meloy, Speth, & Roske, 1997). In a sample of child molesters, psychopathy scores were associated with indicators of deviant sexual arousal (Serin, Malcolm, Khanna, & Barbaree, 1994), suggesting that a broad range of behavioral disorders may be associated with psychopathy.

The behavior of psychopaths is only one component that makes psychopathy a unique disorder. Another major component is deficient interpersonal relationships.

Interpersonal Relationships of Psychopaths

Interpersonally, psychopaths habitually use others for their own gain, are dominant, and manipulative. Within the framework of the interpersonal circumplex, elevated psychopathy scores are associated with arrogant and

calculating behavior (Harpur et al., 1989). While on release, psychopaths are less likely to have stable relationships (Hart et al., 1988). Using the personality dimensions described in Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980), psychopathy is positively related to narcissistic (i.e., grandiose sense of uniqueness) and histrionic (i.e., drawing attention to themselves) personality disorders (Hart & Hare, 1989). Cluster analysis suggests that psychopaths are more likely to have an interpersonal style characterized by hostility towards others, easily aroused anger, and direct expressions of anger (Blackburn, 1986). In addition, there is a tendency for interpersonal conflict and hostility which often involves the mistrust of others (Blackburn, 1987).

Contrasts among psychopaths' interpersonal relations are clearly noted between Blackburn's primary and secondary psychopaths (Blackburn, 1994). Primary psychopath refers to those with impulsive, aggressive, hostile, and extroverted traits. Secondary psychopaths have the same impulsive, aggressive, and hostile traits, but are socially anxious and withdrawn. Blackburn argues that interpersonal relations are central to psychopathy and suggests that the construct of psychopathy could be conceptualized along interpersonal dimensions (Blackburn & Maybury, 1985). Thus, psychopaths have deficits in behavioral and interpersonal areas.

Affect in Psychopaths

Central to the affective deficit in psychopaths is the inability to experience strong affective arousal to situations that would normally evoke an emotional response (Patrick, 1994). A well stated description of the affect of psychopaths is that they, "know the words but not the music" (Johns & Quay, 1962, p. 217). That is, they may be able to describe their emotions but have a deficiency in the experience of emotions. Psychopaths also have affective deficits characterized by their displays of shallow affect, lack of strong, long-term emotional bonds, and a lack of remorse. Cleckley (1976) suggests that the affective deficit in psychopaths reflects a failure to process the emotional meaning of language, suggesting a dissociation between affect and cognition domains. The psychopath is not aware of the significance of emotion and does not experience the affective flavor of emotion (Ansevics & Doweiko, 1983). From a psychophysiological perspective, this affective deficit in psychopaths is interpreted as a general deficiency in fear (Patrick, Cuthbert, & Lang, 1994).

Measurement of affective responses range from basic physiological indices (Iacono, 1991) to verbal responses on vague pictorial configurations (Exner, 1974). This affective deficit in psychopaths will be briefly examined from the perspectives of verbal processing, visual processing, autonomic responses, aversive countdown, passive-avoidance, startle response, and self-report.

Verbal Processing

Using various methodologies, Hare and his colleagues have presented evidence suggesting that psychopaths use and process language differently from nonpsychopaths (Gillstrom & Hare, 1988). They assume that language reflects psychopaths' insensitivity to affective valence. Some research suggests that the language deficits involve abnormal processing of affective content. In this type of inquiry, it is proposed that the presentation of linguistic cues (i.e., affectively positive, negative, or neutral words) will result in a physiological response and reaction time difference between the affective and neutral words in nonpsychopaths, but no differences in psychopaths.

Williamson et al. (1991) presented incarcerated offenders with either a positive (e.g., warm), negative (e.g., scar), or neutral (e.g., gate) word or a pronounceable non-word. Each word and non-word appeared three times in the left and right visual fields. The task was to identify if the stimuli was a word. The reaction times of nonpsychopaths were faster to affective words than to neutral words, whereas psychopaths responded similarly to affective and to neutral words (cf. Kiehl, 1996). In addition, nonpsychopaths had a larger amplitude event-related brain potential difference between affective and neutral words. The wave form patterns of the nonpsychopaths were similar to that found in studies with non-criminals. Psychopaths failed to show this differentiation between

affective and neutral words suggesting that the affective words of psychopaths do not have the same emotional or motivational significance as compared to nonpsychopaths. Three explanations were offered for this conclusion. First, for psychopaths it is possible that similar amounts of information are extracted from affective and neutral words. Second, psychopaths and nonpsychopaths may differ in the relationship between the repetitive presentation of a word and its emotional valence. There could be group differences in the responses to repetitive words which may account for the difference. Third, the use of a divided visual field paradigm may accounted for psychopaths having difficulties in processing affective words. If affective words are processed in the right hemisphere, a divided visual field may emphasize the difficulty of psychopaths processing affective words. Day and Wong (1996) used a divided visual field presenting affective and neutral words in either the right or left visual fields. They found psychopaths were less able to process affective words in the left visual field suggesting right hemisphere and affective decoding deficiencies.

Intrator et al. (1997) used single photon computed tomography (SPECT) to examine differences in brain functioning between psychopaths and nonpsychopaths. Two blocks of stimuli were presented. The neutral block consisted on 96 words (i.e., carpet, coach) interspersed with 96 pronounceable non words (i.e., kinner, sepper). The

emotional block consisted of 96 words (i.e., maggot, corpse) interspersed with 96 pronounceable non words. Participants were tested in two sessions, one week apart. Presentation of the blocks were counter-balanced with either the neutral or emotional block being presented at each session. The task was to indicate if the stimulus was a real word. Psychopaths showed greater relative activation of the right and left frontal temporal cortical regions in the emotional condition. The authors concluded that the processing of affective information with nonpsychopaths are overlearned and efficient, with minimal metabolic requirements. In contrast, the greater activation among psychopaths suggest affective functional anomalies in certain areas of the brain.

The denotative and connotative meaning of words also distinguishes psychopaths from nonpsychopaths (Williamson, Harpur, & Hare, 1990). Denotative refers to the literal or dictionary meaning of a word and connotative refers to the aspects of a word's meaning that are not explicit, such as emotional significance. Word triads ($n = 56$) from eight words (foolish, hateful, shallow, cold, warm, loving, deep, wise) were presented to psychopaths and nonpsychopaths. The task was to select the two words that best go together. These triads (e.g., foolish, shallow, deep) were classified into six categories based on the relationship among the words: Antonym (e.g., deep-shallow); Domain (e.g., loving-foolish, both referring to the domain of humans); Metaphor

(e.g., deep-wise); Polarity (e.g., loving-wise, both have positive tone); Domain and Polarity (e.g., loving-wise, both positively tone and pertain to humans); No Relation (e.g., warm-foolish). Psychopaths used emotional polarity less, indicating a failure to notice emotional significance.

Visual Processing

To assess the generalizability of various paradigms as an indicator of affective deficits with psychopaths, Forth (1992) showed photographic slides depicting pleasant, unpleasant, and neutral objects or scenes to criminal psychopaths and nonpsychopaths. In contrast to the results for linguistic cues described in the preceding section, there were no differences between psychopaths and nonpsychopaths on physiological and behavior measures of affective responses to these nonverbal stimuli. In addition, the psychopaths did not differ from the nonpsychopaths in reaction times to the second viewing of slides or to making a decision of whether or not the slide was presented (recognition errors). Although the total inmate sample produced a similar pleasant/nonpleasant rank for the slides as college students, it remains possible that the range of situations depicted in these non-verbal stimuli were not sufficient to elicit affective responses with criminals. In a second study, films were used to evoke a variety of positive and negative emotions. In concert with the slide study, the film study did not produce differences on physiological and behavioral measures of affect. A potential

problem with both studies was the low rate of physiological responses and the lack of codable responses, resulting in unusable data. Thus, there may have been actual psychopath\nonpsychopath group differences that were masked by the unusable data.

The lack of a relationship between visual stimuli and psychopathy was also noted by Williamson et al. (1990). They found that the errors made on pictorial tasks eliciting emotional polarity did not differ between psychopaths and nonpsychopaths. Using visual stimuli with physiological, behavioral, or emotional polarity errors as outcome measures suggests that psychopaths do not have a visual deficit in the processing of affect.

Day and Wong (1996) compared psychopaths and nonpsychopaths on affective facial expressions presented in both the left and right visual fields by a tachistoscope. Negative affective expression (sad, anger, fearful, disgusted) was presented in either the left or right visual field and a neutral expression in the other field. Each of the 40 bilateral pairs were presented for 200 ms. Respondents were instructed to determine which visual field contained the affective face. Similar to the Forth (1992) and Williamson et al. (1990) studies there were no group differences in recognition errors. In addition, the reaction times did not differ between the psychopathy and nonpsychopaths. Because Day and Wong found linguistic, but not facial differences between psychopathy groups, they

argued that affective deficits of psychopaths occurred in the linguistic domain.

Using a presentation of either a neutral or negative emotional slide, criminal psychopaths recall equally well details that are central to the slide theme and details peripheral to the slide theme. In contrast, nonpsychopaths recall central details better than peripheral details suggesting that psychopaths lack a differential processing of emotional information (Christianson, Forth, Hare, Strachan, Lidberg, & Thorell, 1996). Again, as with Forth's (1992) study there was no difference between psychopaths and nonpsychopaths on the ratings of whether or not content was of an emotional nature.

Autonomic Response

A study conducted by Patrick et al. (1994) used imagined fearful and neutral scenes presented to incarcerated offenders. Based on PCL-R scores, offenders were classified into three groups. The "simple antisocial" group had scores above the midpoint on Factor 2 and low on Factor 1. The "detached-antisocial" group had scores above the midpoint on Factor 2 and high on Factor 1. The third group of offenders ("socialized") consisted of low scores on Factor 1 and Factor 2. The "simple-antisocial" and "detached-antisocial" groups showed more similar physiological responses (heart rate, skin conductance) during fear and neutral imagery presentations than the "socialized" group. These authors interpreted the results as

an impairment of normal associative processes which would normally illicit affect.

If a continuum of pleasant to unpleasant stimuli are presented to the participants, skin conductance and heart rate do not show differences on the continuum of pleasantness (Patrick, Bradley, & Lang, 1993). However, when a special procedure is used (the "countdown paradigm" described below) psychopaths have repeatedly been shown to have a lack of anticipatory electrodermal activity in aversive classical conditioning (Hare, 1965; Hare & Quinn, 1971). These results have been interpreted as psychopaths lacking in a conditioned fear response. Passive-avoidance and startle blink paradigms have also demonstrated autonomic differences between psychopaths and nonpsychopaths. The research using these paradigms are covered next followed by affective self-report responses of psychopaths.

Aversive Countdown Paradigm

This procedure has the respondent wait for a predictable but strong and unpleasant stimulus (i.e., fast rising 120 dB tone for one second). The numbers from 9 to 0 are to be recited in a slow order (i.e., over 30 seconds) with the knowledge that the aversive stimulus will be presented after a specified digit (i.e., "5"). Heart rates increase with the anticipation of the aversive stimulus for psychopaths and decrease for nonpsychopaths. This heart rate increase in psychopaths is interpreted as better adaptation to an impending aversive stimulus. With nonpsychopaths the

heart rate decrease suggests a fear response. There is less skin conductance activity (less palm sweating) for psychopaths as compared to nonpsychopaths (Hare, Frazelle, & Cox, 1978) which has been interpreted as evidence for a lack of fear among psychopaths (Hare, 1965).

Using this paradigm, Ogloff and Wong (1990) replicated earlier findings of lower skin conductance levels and larger heart-rate change for psychopaths under aversive stimuli. In a further extension of the paradigm, the subjects were allowed to prevent the unpleasant stimulus by depressing a button. Under this preventive condition, there was less heart rate increase than during the condition where the unpleasant stimulus could not be prevented for the psychopaths. For the nonpsychopaths, no heart rate differences were present between the preventive and mandatory stimulus conditions. The authors concluded that psychopaths have lower anxiety levels for aversive situations, therefore a more successful coping response. Two alternative explanations are possible. First, lower anxiety may reflect psychopaths' ability to selectively ignore punishment. Second, the lower skin conductance levels may represent less response uncertainty, controlling the aversive event through instrumental action (Patterson & Newman, 1993).

Passive Avoidance Learning

Passive avoidance learning refers to learning to inhibit behaviors that lead to punishment. An example of

this paradigm involves presenting respondents with successive go/no go discrimination choices with contingent reward or punishment feedback on a computer screen. For a correct response, positive feedback consists of a nonaversive high tone, the word "CORRECT" presented on the screen, and 10 cents worth of poker chips. For an incorrect response, the subjects were presented with a low tone, the word "WRONG", and 10 cents worth of chips removed. Arnett, Howland, Smith, and Newman (1993) used this procedure and reported that psychopaths had lower heart rate and fewer galvanic skin conductance responses (responses greater than or equal to 0.05 uS were identified as a response) suggesting that they were less reactive to punishment. This reduced reaction to punishment may be due to the psychopath's tendency to rigidly overfocus on reward cues, thereby not allowing for the consideration needed to avoid making the same mistakes in the future (Newman & Wallace, 1993).

Startle response

The startle response involves presenting an inherently aversive and intense stimulus (e.g., a sudden noise) under different emotionally induced situations (e.g., while viewing unpleasant, pleasant, or neutral slides). In research with humans, rapid eye closure is the most common measure of the startle response. The blink reflex to the stimulus is then measured by electrodes positioned at the orbicularis oculi muscle just below the eye. This allows

measurement of both the magnitude and latency of the blink. According to a general matching principle, the typical response has a corresponding increase of blink magnitude and latency with increases of negative emotion (Vrana, 1995). This matching principle occurs with both visual (Jansen & Frijda, 1994) and auditory modalities (Bradley et al., 1990). Because the eyeblink response is a reflex it can be invoked with minimal instructions or explanations, and requires minimal cooperation from the respondent (Iacono, 1991). The startle response occurs in less than 50ms, a range believed to preclude voluntary control (Patrick et al., 1993). In addition, the startle response can occur independently of specific task demands (i.e., participants have control vs. no control over the aversive event) whereas heart rate is influenced by the demands of a specific task (Patrick & Berthot, 1995).

Using the startle response paradigm, Patrick (1994) further demonstrated the putative emotional deficit in psychopaths. Incarcerated offenders were divided into two groups of nonpsychopaths and psychopaths. The scores were further divided into high scores on Factor 1 and high scores on Factor 2. A simple visual cue was presented intermittently for 6 seconds. Subjects were told that upon cue presentation a loud, noxious blast of noise would occur. Eye blink, skin conductance, and heart rate responses were recorded. Results indicated that the psychopath and Factor 1 groups had diminished blink magnitude scores relative to

nonpsychopathic and Factor 2 groups. There were no differences among the groups on the skin conductance and heart rate measures. Based on the assumption that the startle response is an index of fear, Patrick concluded that psychopaths have a general deficit in the fear response.

Using stimulus material of pleasant, neutral, and unpleasant color slides, a linear relationship occurs between the type of slide and eyeblink magnitude with sexual offenders (Patrick et al., 1993). When the offenders were divided into three groups of low, moderate, and high psychopaths, the low and moderate groups maintained a linear relationship between magnitude of eyeblink and valence of emotional stimuli. But for the psychopaths, a quadratic function was observed in their responses to different types of slides, indicating blink magnitude was largest for the neutral slides and low for both the pleasant and unpleasant slides. Further analysis indicated that even after removing Factor 2 scores, Factor 1 scores maintained a quadratic function. The authors suggest that psychopaths may find both positive and aversive affect to be appetitive, thereby suggesting a deficit in Lang's (1995) aversive system. It is possible that psychopaths also have a deficit in the appetitive system, but this may only be shown when an extreme nurturant stimuli is competing with the aversive system (i.e., situations with babies eliciting pity).

Verbal, visual, countdown, passive-avoidance, and startle blink paradigms have demonstrated utility in the

measurement of deficit affective processing in psychopaths. The majority of affective studies have used negative affect for stimuli (Christianson et al., 1996; Day & Wong, 1996; Intrator et al., 1997; Patrick et al., 1994). Building upon this, negative affect and related variables are the main dependent measures in the present study. To date, though, there has not been a comprehensive comparison of the different paradigms and their efficiency in measuring affective deficits among psychopaths. Another method of assessing affect, which is the focus of the present study, is self-report.

Self-Report

The relationship between self-report measures of affect and psychopathy has typically yielded inconsistent results. In addition, some researchers only use PCL-R total scores, while others use Factor 1 and 2 scores. This limits comparability among different samples and studies.

Affective dimensions such as self-reported anger have a moderate relationship with the total PCL-R score (Patrick, 1994). Attributing guilt to others has also differentiated psychopaths and nonpsychopaths (Blair et al., 1995). Williamson et al. (1990) used an emotional polarity task and found that psychopaths had difficulties identifying the correct affective valence. Respondents were presented with an emotional phase and then asked to pick one of the four phrases which were similar. Psychopaths made more errors in choosing similar emotional tone phrases than did the

nonpsychopaths. In contrast, researchers have found that affective dimensions of empathy, emotional stability, and anxiety are not related to psychopathy (Blair et al., 1995; Fedora & Reddon, 1993; Folsom, 1993; Hare, 1980; Harpur et al., 1989; Serin et al., 1990). Forth (1992) compared psychopaths and nonpsychopaths on the Interpersonal Reactivity Inventory (IRI; Davis, 1983) which has four subscales measuring the tendency (a) to take the point of view of others (Perspective Taking), (b) to experience feelings of warmth, compassion, and concern for others (Empathic Concern), (c) to imagine oneself as a character in fictitious settings (Fantasy), and (d) to feel unease and discomfort in tense interpersonal settings (Personal Distress). No scale score differences occurred between the two groups. In contrast, a statistically significant inverse relationship was found for an independent sample of methadone users. For this sample psychopathy scores were correlated with Perspective Taking and Empathic Concern, but not with Fantasy and Personal Distress (Rutherford et al., 1996).

Elevated Factor 1 scores (personality) appear to be associated with an increased experience of positive affect and less fear and distress (Patrick, 1994). Harpur et al. (1989) summarized several samples, finding a negative and weak, yet consistent relationship between anxiety and Factor 1. These relationships between anxiety and Factor 1 were stronger than anxiety and the total PCL-R score. Others,

though, have found no relationship between emotional indices and Factor 1 (Folsom, 1993).

Factor 2 scores (antisocial lifestyle) covary positively with levels of distress, fear, anger, and negative affect (Patrick, 1994). Folsom (1993), however found no relationship between emotional measures and Factor 2. To further examine the relationship between psychopathy and affect, alexithymia and how it relates to psychopathy is covered in some detail below.

Alexithymia is a personality disorder that refers to a diminished ability to identify and/or communicate feelings. This construct has been shown to be different from repression, anxiety (Martin & Pihl, 1986), and depression (Parker, Bagby, & Taylor, 1991). Those with elevated scores on alexithymia scales respond poorly to insight oriented therapy (Bagby et al., 1986). In examining the relationship between alexithymia and psychopathy, Kroner and Forth (1995) hypothesized that this relationship would be significant and positive. On the contrary, a negative relationship occurred between the total score of the Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994) and the PCL-R, indicating that individuals with more psychopathic traits can readily identify and communicate their feelings. Given their grandiosity, glibness, and deceitfulness, it is unlikely that they would endorse items such as, "It is difficult for me to find the right words for my feelings" or "I find it hard to describe how I feel about people." The

minimization of problems and an inflated self-image is likely a major contributor to the denial of difficulties in understanding their emotions. Psychopaths' unrealistic perception of understanding their emotions may explain Patrick's (1994) finding's of an inverse relationship between self-reported fear, distress and Factor 1, and a positive relationship between positive affect and Factor 1. If Factor 1 offenders perceive themselves as comprehending and understanding the nuances of their emotions, then elevated scores on positive affective measures can be expected. This perception is not due to Factor 1 offenders viewing emotion as having personal utility in their psyche. There is no attempt or effort to foster the utility of affect. The relationship between affect and Factor 1 offenders is due to how they attend to their affect, which reflects their perception and understanding of affect (Pennebaker, 1980). In contrast, Patrick (1994) concludes that psychopaths are not deficient in the area of positive affect, but in specific defensive motivational tendencies. If Factor 1 offenders have minimal inclinations to reporting affect and are truly not deficient in the affective domain, then a nonsignificant relationship between the Factor 1 and affective scales would be expected (Blair et al., 1995). Psychopaths know the "words" very well.

In contrast to Factor 1 offenders, Factor 2 offenders exhibited a positive relationship with the TAS-20 scale of Importance of Emotions. Factor 2 offenders, with

characteristics of impulsivity, poor behavioral controls, and proneness to boredom have an awareness of their affect and view their affect as having utility. In other words, it is not how they attend to affect or the valence of affect, but the increased attention on affect that may be associated with problematic behaviors in this group.

To capture this attention on affect, Feldman (1995) uses the terms valence focus and arousal focus. Valence focus refers to the degree to which individuals report and attend to the pleasant or unpleasant qualities of emotion. Arousal focus refers to the degree which individuals report the physiological aspects of affect. Within this framework, focus is a powerful mechanism for explaining individual differences in the labeling and describing of affect. For example, although many depressed people are also anxious, a strong relationship between anxiety and depression does not occur for everyone. Feldman observed that an increased focus on valence was associated with stronger positive correlations between anxiety and depression in her sample of students. Leventhal (1984) suggests that conceptual processes are responsible for increasing the focus on emotional schemata. Therefore, for psychopaths, who focus on the positive valence of emotions, it can be expected that a positive endorsement of affective content will occur more than negative endorsement of affective content.

The research cited above supports the contention that some form of affective deficit is central to psychopathy.

This deficit may explain a wide range of characteristics observed in psychopaths, although at this point such a conjecture has not been fully researched. It is likely that affective symptoms of psychopathy such as callousness, remorseless use of others, lack of empathy are more strongly tied to affective deficits than are the more social symptoms of irresponsibility and poor behavioral controls.

As noted above, self-report items can be categorized into content areas of distress, fear, and anger. Items can also be categorized by whether or not there is a reference to a specific situation. To further examine the nature of affective deficits in psychopaths, the presentation of emotional stimuli in situational vs. nonsituational contexts is discussed.

Situational vs. Nonsituational Stimuli

Using situational stimuli is central to various assessment strategies (Buss & Craik, 1985; Jackson, 1971). This use of situational stimuli also applies to emotional stimuli. Without a situational context, stimuli may have little relation to the action set or motivation eliciting the emotion. Thus, when an emotion such as disgust is evoked without a situational context, other emotions such as situational anger may produce a stronger arousal. But when presented with a situational context, disgust will have stronger arousal than other emotions such as anger, joy, and pleasure (Vrana, 1993).

Patterson and Newman (1993) postulate that a major contributor to the impulsivity of psychopathy is a situationally specific poor response modulation. Once psychopaths engage in an action which can result in a reward, they have difficulty in processing other environmental stimuli (i.e., new contingencies) which warrant a response change. From this perspective, psychopaths are unable to regulate changes in self-regulatory behavior when they need to focus on less dominant information that is important for guiding their behavior. It is plausible that psychopaths need a situational issue (i.e., instrumental action) to demonstrate a problematic area of functioning. Also, Gillstrom and Hare (1988) suggest that psychopaths process language in relatively smaller units than nonpsychopaths. These units were defined by beats, which refer to small, rapid hand movements that occur during speech or pauses in speech, but are not related to the content. Psychopath's greater use of beats indicates a need to verbally function with smaller units as compared to longer and more encompassing units of language. From these two paradigms of response modulation and hand movements, it follows that psychopaths may have difficulty integrating or interpreting broadly defined, nonsituationally specified stimuli.

In a discussion of lie detection among psychopaths, Lykken (1978) argues that arousal deficits in psychopaths are specific to fearful, real life conditions (i.e.,

possibility of serious harm). This supports the idea that the context or situation is an important aspect of assessing the affective processing of psychopaths. Similarly, Newman and Wallace (1993) argue that for groups characterized by disinhibition, including psychopaths, emotionally based impulsivity is situation-specific. Self-report items can be classified according to reference to a specific situation or a general context. Items can also indicate self-schema which is discussed in the next section.

Measuring Schema via Self-Report

Schema

Schema is a construct developed in information processing paradigms that has been applied to personality assessment. As a knowledge structure, schemas refer to the nature and structure of incoming information and also provide information on how to guide and apply this knowledge (Fekken & Holden, 1992; Markus, 1980). It is postulated that schemas are responsible for what one searches for, attends to, and remembers. The content of these activities are consistent with past experiences, acquired beliefs and knowledge (Markus, Crane, Bernstein, & Siladi, 1982). Schemas facilitate a streamlined interpretation of complex sequences of events and have a dynamic interdependence with the environment. Schemas are always changing and continually updated for judgments, decisions, inferences, and predictions (Markus, 1980).

Self-schemas are cognitive generalizations about the self developed to understand, integrate, or explain one's own behavior (Markus, 1977). Being interdependent with input from the environment, the context of self-schema can represent the continuum of specific events and situations to very general traits. In contrast to the cumulative model of measuring personality dimensions, schema are not defined as bipolar (Markus & Wurf, 1987). For example, there are separate schema for "independent" and "dependent". With scale measurement, an "independent" scale implicitly covers a bipolar continuum of dependent to independent. The present study uses the structure of a schema and applies it to affect domains. Other perspectives, such as the prototypical approach to emotions suggests that the concept of affect has an internal structure (Russell, 1991).

Much of the research on schemas has used memory as the dependent variable. Better memory occurs for people of similar sex, age, and race (Bem, 1981; Markus et al., 1982). Other research indicates that this consistency does not always occur (Levy, Lynse, & Underwood, 1995) possibly because of the presence of conflicting schemas (Dijksterhuis & VanKnippenberg, 1995). In addition to memory, response latencies are another indicator of schema. Evidence of this is described below.

Response Latencies as a Measure of Schema

Response latencies to content areas, such as affective domains, can be used to measure self-schema. Psychophysics

research has demonstrated that responses which are meaningful to a respondent will have a linear relationship between response latency and the probability of endorsement (Petrusic & Jamieson, 1978). Such a relationship does not hold for less meaningful material. For schema theory, if a particular characteristic is part of the self-schema, the respondent's endorsement decision indicates congruence and will be relatively quick. But if a characteristic is inconsistent or contradicts one's self-schema, an endorsement can still occur, but this decision will be relatively slower (Markus, 1980; Markus et al., 1982). Endorsing the item "I am happy" in a relatively short time will indicate a stronger association with one's self-schema than if the reaction time is longer. In other words, response latencies are a measure of psychological space (Ashby, Boynton, & Lee, 1994).

Although response latencies are simple to measure, they can be difficult data to analyze and interpret (Fazio, 1990). "Noise" can come from several sources; individual differences (i.e., variability in the processing of stimuli), wandering attention, and confusion in matching implicit response to the motor response (Smith, 1986). Perhaps as a result of this, studies using raw reaction times have not demonstrated a relationship between response latencies and personality variables (Dobson & Shaw, 1987; Krug, Keefe, & Ahadi, 1986). These noise-making variables can be partially controlled via instructions, practice

items, and statistical controls (Holden & Kroner, 1992; Petrusic & Jamieson, 1978; Popham & Holden, 1990). A variety of stimuli can be used to measure reaction times, but for the present study psychological inventory items are used as stimuli. The endorsement of test items is covered in the next section.

Item Endorsement

Psychometric theory defines a test item as a sample of behavior (Anastasi, 1988). For this study, the test item definition is broadened to include the item as a psychological event (i.e., including the process of responding, Gordon & Holden, 1996), the understanding of which can be measured by response latencies. In addition, it is assumed that emotions differ on how they are felt and that this can be assessed via self-report.

The cumulative measurement model sums up the number of items endorsed and then infers the presence of a construct along a continuous dimension. With this model, dimensions are assumed to be bipolar. For example, an extreme score at one end of the continuum can be defined as depression and an extreme score at the other end of the continuum can be defined as joy. A distinction needs to be made between item endorsement and rejection and between responding true or false. The endorsement of items can occur either via a "true" or a "false" response. A positive-keyed endorsement is when the "true of me" response is given and this response is counted towards the content area score. For example,

responding true to "I am sad" would count towards a depression scale score. A negative-keyed endorsement is when a "false of me" response is given and this response is counted toward the content area score. Continuing with the depression example, responding false to the item "I am happy" would count towards a depression scale score.

The present study focuses on the endorsement of negative affect. Thus, only two out of a possible four responses are used for analysis. "True" responses to "I am sad" and "false" responses to "I am happy" are the two types of endorsements used to indicate negative affect (Table 2). Thus, for the present study item endorsement (either positive- or negative-keyed) refers to the endorsement of negative affect. Because the focus is on negative affect, the two other types of endorsement ("false" to "I am sad" and "true" to "I am happy") that indicate positive affect are not used in the present study.

Positive-keyed or negative-keyed endorsement are each associated with unique psychological processes. When endorsement of traits are coupled with affectively laden words, there is an increase in the endorsement of positive traits and decrease in the endorsement of negative traits (Paulhus & Levitt, 1987). In addition, reaction times generally increase for both positive and negative words.

Fekken and Holden (1992) investigated the relationship

Table 2

Item Endorsements

Responses to Items that are:		
Item	Used in the	Not used in
	Scale Score	the Scale Score
I am sad	True	False
I am happy	False	True

between self-schema and personality traits in an university sample. Reaction times to items were used as indicators of self-schema and item endorsement reflected the presence of a trait. In contrast to past research which utilized positively worded exemplars (Markus, 1977), they included extreme valences of a trait. It was predicted that response latencies associated with trait extremity would be faster for endorsing scale-relevant items and slower for rejecting scale-relevant items. These predictions were substantiated and, in addition, it was found that response latencies had minimal relationships with irrelevant scales, thereby suggesting discriminant validity of the response latencies. Also, the response latencies corresponded (as they predicted) with endorsement of content-relevant adjectives, suggesting that results with items can be generalized. There are two main conclusions that can be drawn from their study. First, item endorsement of a content area is predictably related to the speed of processing relevant content. Second, response latencies contain valid variance in specific content areas. They used a multimethod factor analysis to compare scales scores, self-ratings, peer ratings and composite mean latency over four testing sessions and found that the four different methods loaded together, indicating convergent and discriminant validity of the trait response latencies. In fact, the coefficient of congruence averaged .95 over the four testing sessions (Fekken & Holden, 1992).

The use of response latencies as a measure of schemas are only successful when homogenous content scales are available. If multidimensional scales are used, such as the MMPI clinical scales, no relationship between item endorsement and response latencies are present (Popham & Holden, 1990). Thus, the importance of using homogeneous content scales with response latencies.

Response latencies can provide additional information about traits. For example, an extreme group of respondents highly saturated on a characteristic (i.e., independence) may endorse items from both independent and dependent domains. Even with similar endorsement frequencies, the response latencies to content items that are more characteristic of the self are faster than to non-characteristic items (Markus, 1977). Thus, the use of response latencies may better assist in differentiating affective components between psychopaths and nonpsychopaths than the more widely employed cumulative model, which as previously noted does not readily differentiate between psychopaths and nonpsychopaths.

The relationship between reaction latencies and trait intensity has not accounted for additional variance above the reaction latency and trait level relationship (Burke, Kraut, & Dworkin, 1984). The question arises about the intensity dimension being important for the reaction time latency/affect relationship. As noted above, several researchers (Feldman, 1995; Riesenzein, 1994; Russell, 1983)

suggest that intensity is a central dimension of affect. Because the relationship between response latency and trait level can be quite strong, as noted in the Fekken and Holden (1992) and Burke et al. studies, it is likely that intensity will not contribute additional variance. To date, response latencies of self-report items have not been used to measure content areas among psychopaths. The instrument used to gather the self-report and response latency data is the Basic Personality Inventory.

Basic Personality Inventory

The Basic Personality Inventory (BPI; Jackson, 1989) is a self-report instrument measuring a broad spectrum of adjustment and psychopathology. The BPI was designed to measure similar content domains as the MMPI, but has fewer items, avoids objectionable content, attempts to suppress response bias, and eliminated item overlap among the clinical scales (Holden & Jackson, 1992). In addition, the BPI was developed using a construct-oriented measurement strategy (Jackson, 1971). This perspective of test development assumes a dimensional model of psychopathology and emphasizes the importance of psychological theory in the development of items. Items were included because they were considered to be prototypical of the domain and representative of the important facets of the construct. This measurement strategy offers an important advantage over other models, and particularly over the medical model which distinguishes only between the presence or absence of a

disease. The construct-orientated strategy allows for the differentiation of individuals both within the normal ranges and within the pathological range. Thus, scale scores can represent more than just an "all or none" categorization (Holden & Jackson, 1992).

To assess the range of psychopathology measured by the BPI and its relationship to MMPI content, Jackson and Hoffmann (1987) administered both instruments to inpatient alcoholics. A factor analysis of the scales yielded a five-factor solution accounting for 96% of the common variance, indicating that the two instruments measure similar domains. When the BPI was administered to a separate psychiatric patient sample, staff ratings of the patients representing each clinical scale related more strongly with the corresponding self-report scale than with other self-report scales (Holden, Fekken, Reddon, Helmes, & Jackson, 1988). For example, ratings of depression correlated more strongly with the self-report Depression scale than with self-report Anxiety scale. In addition, computer administration of the BPI has been shown to have similar scale properties as paper and pencil administration (Holden, Fekken, & Cotton, 1990).

Kroner, Reddon, and Beckett (1991) examined the test-retest stability of the BPI with offenders. The BPI was first administered one month after the offenders arrived in the institution with the second administration one month later. The test-retest stability coefficients range from .53 for the Anxiety scale to .77 for the Impulse Expression and

Denial scales. For the total inventory, an average of 48 items changed between the two administrations, indicating that approximately 80% of the item content is trait variance.

The factor structure of the BPI has been assessed in a sample of violent offenders (Kroner & Reddon, 1996). Using a statistical procedure called the Minimal Average Partial test (MAP; Velicer, 1976) as the criterion for retaining factors, a two-factor solution was found. The first factor was defined as General Psychopathology\Adjustment and the second as Antisocial Orientation, with the two factors together accounting for 60.3% of the common variance.

The validity of the BPI clinical scales with offenders has been established with criteria measures of self-report adjective ratings, correctional officer ratings, and institutional behaviors (Kroner, Holden, & Reddon, 1997). The self-reported ratings consisted of twenty-two 9-point rating scales (two per clinical scale) and sixty-six 5-point adjective judgment scales (six per clinical scale). These rating scales had stronger concurrent correlations with corresponding than with noncorresponding BPI scales except for the Persecutory Ideas scale. The correctional officer ratings consisted of 44 bipolar items (four per clinical scale). Ratings were completed by correctional officers who worked with the offenders but did not have access to the BPI results. The majority of the rating scales had stronger convergent than discriminant validity correlations.

Institutional behaviors of medical contacts, verbal misconduct warnings, and segregation time were predicted by the Hypochondriasis, Interpersonal Problems, and Alienation scales.

With regard to the reading level necessary to complete the inventory, Reddon and Jackson (1989) suggest that respondents with a Grade 5 to 6 reading level will be able to comprehend the inventory. For the present study, the original clinical scales are not used. As outlined below the BPI will be scored according to different criteria resulting in the creation of several affective indexes. The items scored will reflect an endorsement of negative affective content. Thus, just as with the original scales (higher depression score indicates more negative content items endorsed) a higher affective index score will reflect an endorsement of negative affective content.

Rating of Affective, Cognitive, and Behavioral Content of Items

In an analysis of item content, Werner and Pervin (1986) rated items from several personality scales according to four domains: (a) area of psychological functioning, (b) reference to situations, (c) reference to frequency, and (d) reference to time. Of these four domains, the present study incorporates the two domains of psychological functioning and reference to situations in order to address the hypotheses. These are explained below.

"Area of psychological functioning" included of five categories: (a) cognitive-self (beliefs about the self, e.g., "I am a moral person"); (b) cognitive-beliefs, values, opinions (e.g., "People have it in for me"); (c) affective preferences (likes, dislikes, wishes, e.g., "I like to read books"); (d) affective-feelings (emotions, e.g., "I feel uptight"); and (e) behaviors (reports of behavior and activities, e.g., "I often play sports"). Kroner, Black, and Reddon (1996) have applied this rating system to the BPI. Three raters completed judgments on each BPI item. Agreement statistics ($\bar{p}$) for each BPI scale ranged from poor to moderate, and specifically from .32 (Thinking Disorder) to .68 (Persecutory Ideation and Self Depreciation). In a subsequent study, each item that did not receive 100% consensus was reconsidered by an original rater and new rater until consensus was reached (Kroner & Forth, 1995).

Rating of Situational and Nonsituational Items

In Werner and Pervin's (1986) study, they rated each item using three categories: (a) no reference to situation, (b) general setting/description, and (c) specific situation. In both the Werner and Pervin and the Kroner et al. (1996) studies the distinction between general settings/descriptions and specific situation could not be made reliably. Consequently, these two categories were collapsed. Items were then rated according to reference to a situation or no reference to a situation. These ratings did not have 100% consensus in the Kroner et al study.

Consequently, for the present study, two raters rated the items and reached agreement on the items that did not have 100% consensus.

Purpose of the Study

Past research suggests that psychopaths have poor affective processing in response to verbal, aversive, imagery, and auditory stimuli. The present study extends these findings to using standardized self-report items as stimuli.

The lack of scale differences in self-reported emotional content between psychopaths and nonpsychopaths is a fairly robust finding. Consequently, the usage of self-report in the assessment of antecedent and etiologic factors of psychopathy has not been favored in recent research (cf. Porter, 1996). However, affective self-report items can make contributions to our understanding of affective processing by (a) using alternative scoring procedures, (b) obtaining more information from the administration of items, and (c) having more control over the administration of items. Computerized administration of a large number of items allow reaction times to be calculated and offers greater control over the presentation of items, consequently a more standardized administration. In addition, computers are viewed as more objective and reliable in assessment than paper-and-pencil procedures (Gummow, 1991). The focus of the study is to use this methodology to demonstrate affective processing deficits in psychopaths.

The use of self-report scales and response latency data can overcome various limitations associated with of other methods. First, when a scale is composed of similar items, but not identical items, the potential confound of repetitive stimuli presentation (cf. Williamson et al., 1991) eliminated. Second, the use of single adjectives as stimuli may cue respondents to process information in relation to others based on cultural stereotypes (Lewicki, 1984) and not according to features of the self (Fekken & Holden, 1992). In other words, adjectives may or may not be characteristic of the respondent. Third, the commonly used cumulative measurement model allows an investigator to group individual items to produce a continuum of content areas, thus having two end points that have well organized structures (i.e., depressed vs. not depressed). Fourth, when multiple items are used to define a scale or content area, this allows for items to be rated according to various continuums. For example, affective items can be rated along a situation vs. nonsituational dimension. Finally, this method requires is a response to each item, thereby eliminating potential base rate problems (cf. Forth, 1992).

Gathering data via self-report does have limitations. It is widely accepted that responses may have many motives. Although this problem cannot be totally eliminated, techniques can be used to reduce its impact. For example, to limit a bias to one type of response, a portion of the items can be true-keyed and the others false-keyed.

The use of a computer to administer self-report items allows for the gathering of additional information. Endorsement of self-report items provide a sample of behavior. Summing of the items to produce a scale score could indicate a psychological process, such as self-depreciation, but when a process is inferred from the total scale score, it will be of a general nature (tallying of many samples of behavior) and not linked to a specific situation. However, when the reaction times to these samples of behavior are obtained, they can be used to give an indication of how the item is perceived. For example, two respondents may give a "true" response to an item, but their response times to the item may be at the opposite ends of the response time continuum. Using response times can not only demonstrate that affective processing is different between psychopaths and nonpsychopaths, but also that there are differences in self-schema (i.e., how affective content is organized) between these two populations. This assessment strategy not only allows for the testing of propositions regarding the affective processing of psychopaths, but has potential clinical utility.

Hypotheses

Based on the previous research on affective dimensionality, the relationship between self-schema and reaction times, the role of situations in affective processing, and differences between psychopaths and nonpsychopaths, four main hypotheses are put forward. The

first hypothesis addresses affective content, the second and third hypotheses examine affective processing, and the fourth hypothesis compares affective and cognitive content. Each hypothesis contains two sub-hypotheses, accounting for the categorical/dimensional classification of psychopathy. The first sub-hypothesis (a) will be formulated according to a categorical classification of psychopathy. This will allow comparisons with past research which has used the psychopath/nonpsychopath dichotomy. The second sub-hypothesis (b) will be presented within a dimensional view of psychopathy. This will assist in determining if Factor 1 or Factor 2 components of psychopathy are central to affective deficits. The hypotheses are:

1. (a) Mean scores on self-report of negative affect will not differ among low, medium, and high psychopaths. This is because psychopaths will know the "words" of their emotions.

(b) Mean scores on affective content will have a negative relationship with Factor 1 scores and a positive relationship with Factor 2 scale scores. This will show a greater willingness of Factor 2 offenders to disclose affective processes. A nonsignificant relationship is predicted for the Total PCL-R scores.

2. (a) When affective endorsement does occur the number of negatively keyed items (a "false" or "not true of me" response to endorse a content area) and positively keyed items (a "true" response to endorse a content area) will

differ among low, medium, and high psychopath groups. Psychopaths, having an inflated self-image, and espousing (mistakenly) emotional understanding (Kroner & Forth, 1995), will use fewer negatively-keyed items to endorse a content area than nonpsychopaths. The endorsement of affective content will occur via positive endorsement of items for psychopaths. It follows, then, that negatively-keyed items endorsed by psychopaths will not be part of their self-schema. Therefore, the reaction times of negatively-keyed items endorsed by psychopaths will be slower than negatively-keyed items endorsed by nonpsychopaths.

(b) PCL-R total and Factor 1 scores will have a stronger positive relationship with positive-keyed items than negative-keyed items. There will be a positive relationship between PCL-R total scores, Factor 1 and the reaction times of negative-keyed items that are endorsed. The relationship between reaction times and Factor 2 scale scores will be in the same direction, but not as strong.

3. (a) Psychopaths and nonpsychopaths will differ with their endorsement of situations vs. nonsituational affective items. Psychopaths will endorse more situational affective items relative to nonpsychopaths. Also, psychopaths will endorse fewer nonsituational items than nonpsychopaths. The reaction times for endorsed nonsituational items will also be slower for psychopaths than for nonpsychopaths, indicating that psychopath's schema are less likely to incorporate nonsituational item stimuli.

(b) The relationship between total PCL-R and Factor 1 scores with situational affective items will be positive. The relationship with Factor 2 scores will also be positive, but weaker. The relationship between nonsituational affective items and reaction times will not be as correlated with total PCL-R or Factor 1 scores. The relationship of nonsituational items with Factor 2 scores will be weaker.

4. (a) To demonstrate that psychopaths are deficient in responding to affective content and not deficient in other content areas, a comparison will be made between cognitive and affective items. It is anticipated that cognitive indexes will differ among the three psychopathy groups. Also, the reaction times for the endorsed affective items will be slower for the psychopaths than the nonpsychopaths. Cognitive item's reaction times will not differ across psychopathy groups. For nonpsychopaths, reaction times for both cognitive and affective items will decrease as endorsed items increase, indicating a congruence between item endorsement and content processing. An analysis of reaction times will demonstrate this congruence for psychopaths and across domains for cognitive items, but not for affective items.

(b) There will be a positive correlation between Total and Factor 1 scores and the reaction times of endorsed affective items. This positive relationship will be weaker for the Factor 2 scores. The relationship of total PCL-R, Factor 1 and 2 scores with endorsed cognitive items will be

similar to the relationship between Factor 2 and affective item reaction times.

Method

Participants

Participants were 110 incarcerated males convicted of a nonsexual violent offense (i.e., assault, manslaughter) and serving sentences between two and six years. The mean age was 30.8 ($SD = 9.5$), which is similar to other studies within federal corrections using a random sampling procedure ($M = 31.3$, $SD = 8.9$, Folsom, 1993; $M = 29.7$, $SD = 9.0$, Loza & Dhaliwal, 1997).

Instruments

Psychopathy Checklist - Revised (PCL-R)

The PCL-R (Hare, 1991) has 20 items (Table 3) that are rated on a 3-point scale ranging from 0 (does not apply) to 1 (maybe/in some respect) and 2 (does apply). The total scores can range between 0 and 40. These items are scored based on information gathered from both a semi-structured interview and official file records. As such, the ratings generated involved some degree of subjective judgment on the part of the interviewer. Detailed criterion for the judgments are provided in the manual and the raters received formal PCL-R training. A suggested cutoff score for psychopathy is 30 (Hare, 1991). Considerable research examining psychopathy has used an earlier version of the PCL-R. The relationship between the earlier PCL and the PCL-R is quite strong ($r = .88$; Hare et al., 1990). In the present study, only PCL-R scores are used.

Table 3

Items on the Psychopathy Checklist - Revised

-
1. Glibness/superficial charm
 2. Grandiose sense of self-worth
 3. Need for stimulation/proneness to boredom
 4. Pathological lying
 5. Conning/manipulative
 6. Lack of remorse or guilt
 7. Shallow affect
 8. Callous/lack of empathy
 9. Parasitic lifestyle
 10. Poor behavioral controls
 11. Promiscuous sexual behavior
 12. Early behavior problems
 13. Lack of realistic long-term goals
 14. Impulsivity
 15. Irresponsibility
 16. Failure to accept responsibility for own actions
 17. Many short-term marital relationships
 18. Juvenile delinquency
 19. Revocation of conditional release
 20. Criminal versatility
-

Basic Personality Inventory (BPI)

The BPI has 240 items originally comprising 12 scales; Hypochondriasis, Depression, Anxiety, Interpersonal Problems, Alienation, Impulse Expression, Persecutory Ideation, Thinking Disorder, Self-Depreciation, Social Introversion, Denial, and Deviation. The 11 clinical scales (excluding Deviation) have balanced keying (i.e., equal number of true-keyed and false-keyed items). Appendix A indicates which items are true-keyed and false-keyed. That is, each scale has 10 true-keyed items and 10 false-keyed items. The structure of the question booklet has an item from each of the 12 scales presented in the same scale sequence throughout the inventory resulting in 20 similar sequences. The Deviation scale is a critical item scale and does not measure a homogeneous domain; therefore all its items are true-keyed.

The dependent variables (indexes) were derived from the affective and cognitive items contained in the BPI (AFL & CSL items, Appendix A). Indexes fell into three categories: Total, Antisocial Adjustment, and General Adjustment (Kroner & Reddon, 1996). The BPI scales which were used to derive the indexes are listed under their respective categories in Table 4. The affective Antisocial Orientation Index measures negative affect which included the domains of difficulties in relating to others, antisocial attitudes, and impulse expression. If an item was not endorsed to indicate negative affect, that item was not included in the analysis. For

Table 4

BPI Scales used to Derive Indexes under the Antisocial
Orientation and General Adjustment Categories

Antisocial Orientation	General Adjustment
Interpersonal Problems	Hypochondriasis
Alienation	Depression
Impulse Expression	Anxiety
	Persecutory Ideation
	Thinking Disorder
	Self-Depreciation
	Social Introversion

example, a "false" answer to the item, "I feel like smashing things" was not included in the analysis. Similarly, the affective General Adjustment items measure negative affect which covers a broad range of personal and social functioning. It is not solely difficulty in adjustment that was measured. There are beliefs and attitudes regarding adjustment which are excluded from the present indexes. Thus, the affective indexes were a measure of negative affect.

Within each category items were classified according to positive/negative keyed and situational/nonsituational dimensions. For example, the positive keyed index was presented three times; Total ($n = 37$ items), Antisocial Orientation ($n = 4$), and General Adjustment ($n = 28$). The Antisocial Orientation and General Adjustment indexes are derived from the Total index. The number of items for the Antisocial Orientation and General Adjustment indexes did not sum up to the number of items in the Total index. The principal component analysis of the BPI scales (Kroner & Reddon, 1996) had the Denial scale negatively loaded on the Antisocial Orientation factor and consequently its items were not included in the Antisocial Orientation index³.

³The only other study to examine the scale factor structure of the BPI was conducted with young offenders. A 3-factor solution emerged of Antisocial Orientation, Depression, and Psychiatric Symptomatology (Austin, Leschield, Jaffe, & Sas, 1986).

Wide Range Achievement Test - Revised (WRAT-R)

The WRAT-R (Jastak & Wilkinson, 1984) measures academic achievement in three areas (reading, spelling, and arithmetic). Only the reading subtest was administered. The reading score was determined by the respondent's ability to read single words aloud. The reading subtest has demonstrated a strong relationship with other measures of reading and has a test-retest reliability coefficient of .92 (Jastak & Wilkinson, 1984).

Procedure

Assessment Process

All participants completed an intake assessment battery in the fourth week of arrival at the Millhaven Assessment Unit (MAU). These offenders come from a catchment area with population of approximately 10 million and typically receive their sentence one to three weeks prior to arriving at the MAU. The intake process included orientation, placement to a parent institution from the MAU, educational assessment, and sometimes psychological assessment. The referral criteria for a psychological assessment were mandated by correctional policy and consisted of: (a) sentence for a violent offense (robbery was not included, but robbery with violence or with a weapon are referred), and (b) sentence between two and six years for the referred offense. Approximately 160 offenders per year met this requirement.

Prior to the commencement of testing, a standardized explanation of the purpose of the psychological assessment

was presented individually to each offender by psychology staff. Specifically, they were told that their criminogenic needs (i.e., reasons for committing their offence which are amenable to treatment) and their risk to reoffend will be determined. After the explanation, offenders completed two consent forms. One involved completing the intake assessment for correctional administrative purposes. The other consent form was for the present study and is presented in Appendix B.

Offenders completed a reading test (WRAT-R) to assess the required grade 5 reading level. Those who did not meet the reading (approximately 10%) were not included in the present sample.

The administration of the computerized BPI occurred after the regular assessment, which was not changed for the present study. The PCL-R was part of the regular assessment and the computerized BPI was completed solely for the present study. After a variety of personality, attitude, and intelligent tests were administered, each offender was interviewed by a psychologist and later receive written and possibly verbal feedback in the form of a Psychological Report. All raters received formal PCL-R training. The author completed approximately 60% of the ratings. The Psychological Report was written by the psychologist and included a summary of the PCL-R results. There may be concern that a clinically derived PCL-R score (i.e., score obtained from a administrative or personal request to make a

judgment regarding an individuals case) will be different than scores derived for research purposes. Almost all the research reviewed on the PCL-R has been conducted in a research context. Serin (1992) found no differences with respect to correlations among PCL-R factors, coefficient alphas, and total scale scores between clinical and research samples. His study, though, used independent clinical and research samples. Other researchers suggest that the use of the PCL-R in a clinical setting results in lower scores, possibly due to taking a conservative view in the light of potential legal cross-examination (Brown, personal communication, 1996). Completing the PCL-R's at intake also results in less collateral information being present as compared to during or at the end of the sentence. For this reason, offenders with total PCL-R scores of 28 and above will be comprise the psychopathic group (Serin, DeV.Peters, & Barbaree, 1990). Scores from 20 to 27 will comprise the moderate group, and scores from 0 to 19 will be the low group.

Analysis

PCL-R

The PCL-R data will be analyzed two ways: categorically and dimensionally (Lilienfeld, 1994).

Reaction Times

The items from the BPI were presented on a microcomputer. Depression of either T or F keys clears the screen and causes the next item to be presented. A potential

problem with outlier response latencies exists. The respondent can hold the key down, resulting in response latencies of .02 s. If the respondent becomes distracted, this will be indicated by very long response latencies (i.e., 40+ s). To reduce the influence of outliers, latencies shorter than 0.5 or longer than 30.0s were deleted at the time of data analysis.

Another potential problem with the use of raw response latencies is unwanted person variance (perhaps reflecting different reading speeds of respondents) and item variance (reflecting differences in item length, order of presentation, etc.). To control for irrelevant person variance, the response latencies will be standardized across the items for each respondent (i.e., a z score will be calculated for each response latency by subtracting the individual's mean latency across all the items from the latency score for the target item and dividing the standard deviation). To control for irrelevant item variance, response latencies will be standardized for each item across respondents. For example, the response latency of all the respondents for item #2 will be transformed into z scores. This double standardization procedure has proven to increase the utility of response latencies (Holden & Kroner, 1992).

In making choices to stimuli, psychophysics research show that reaction time decreases with subsequent presentation (Petrusic & Jamieson, 1978). Consequently, 30 "filler" items from another test were presented prior to the

presentation of the BPI. This will allow familiarization with the screen and keyboard. The filler items were not included in the present analysis.

Reaction times need to be associated with an item endorsement in order to measure schema. This will involve creating a variable by multiplying the reaction time with the number of endorsed items in the index. For the categorical analysis this term is correlated with the affective indexes within each level of psychopathy. For the dimensional analysis, this term is correlated with Total, Factor 1, and Factor 2 scores.

Results

Descriptive PCL-R and BPI Data

The descriptive data for the PCL-R and BPI are presented in Table 5. As expected, the mean scores for the PCL-R are lower than past data collected solely for research purposes (i.e., $M = 23.3$, $SD = 7.9$, Total; $M = 8.7$, $SD = 3.9$, Factor 1; $M = 11.6$, $SD = 3.9$, Factor 2, Hare, 1991).

To assess the reliability of the ratings, a subsample of 10 inmates received two independent ratings. The intraclass correlation coefficient of interrater reliability for the averaged ratings was .98 (Bartko, 1976).

Internal consistency was assessed by Cronbach's coefficient alpha. For the total scale, Factor 1, and Factor 2, coefficients alphas were .90, .80, and .86, respectively. The obtained alphas are similar to those recorded elsewhere (Total = .87, Factor 1 = .81, Factor 2 = .82; Hare, 1991).

The factor structure of the PCL-R has previously been determined with other samples (Harpur et al., 1989). A confirmatory procedure of Procrustes was performed on the data (Baird, 1987; Muliak, 1987). PROCRUS (Version 2.4; Reddon, 1993) can evaluate if the original factor structure fits the present data (Nunnally & Bernstein, 1994). PROCRUS is a program that takes an obtained correlation matrix and performs a principal component analysis followed by an orthogonal procrustes rotation to the least-squares best fit with a target or hypothesis matrix (Cliff, 1966; Schönemann,

Table 5

Descriptive Statistics for the PCL-R and BPI Indexes

Measure	Number of Items	Mean	SD	Range	Coefficient Alpha
PCL-R					
Factor 1	8	7.6	3.6	0-15	.80
Factor 2	9	8.9	4.9	0-18	.86
Total	20	19.17	8.91	1-34	.90
Basic Personality Inventory					
Affective Items (AFL)					
Total	59	14.2	7.9	2-38	.87
Positive-Keyed	37	9.1	5.5	1-24	.84
Negative-Keyed	22	5.5	3.4	0-15	.72
Situation	34	7.6	4.4	1-21	.77
Nonsituation	25	7.4	3.5	1-17	.75
Antisocial Orientation					
Total	8	2.1	1.6	0-7	.57
Positive-Keyed	4	1.6	1.1	0-4	.45
Negative-Keyed	4	.5	.8	0-3	.43
Situation	4	1.2	.9	0-4	.47
Nonsituation	4	.9	1.0	0-3	.40
General Adjustment					
Total	43	10.8	6.7	1-31	.87
Positive-Keyed	28	6.5	4.4	1-19	.81
Negative-Keyed	15	4.3	3.0	0-13	.76

Situation	25	5.7	3.7	0-17	.75
Nonsituation	18	5.4	2.9	1-13	.78
Cognitive Items (CSL)					
Total	80	18.7	7.6	7-40	.81
Antisocial Orientation					
	14	3.6	2.1	0-11	.54
General Adjustment					
	51	11.1	5.7	3-28	.79

Note. AFL = Affective Feelings, CSL = Cognitive Self. See page 62 for examples.

1966). Entries in the target matrix representing the two PCL-R factors were +1.00 (keyed items) or 0.00 (nonkeyed items). Each column of the hypothesis matrix corresponded to one of the two PCL-R factors. The sum of squared errors, a measure of overall fit, and the congruences, degree of fit for each factor, between rotated and target components are used to assess the goodness-of-fit between the rotated loadings and the target matrix. Due to the fact that the sampling distributions of these goodness-of-fit indices are not obtained analytically, random permutations of the target matrix are generated and a procrustes rotation performed for each permutation of the target matrix. The random permutations (10,000) of the target matrix are used to determine the optimality of the target matrix with respect to all the other target matrices of the same form (i.e., same number of factors and salient/nonsalient loadings). The procrustes results indicate congruence coefficients (Harman, 1976) of .83 ($p < .0007$) and .84 ($p < .0002$) for Factors 1 and 2, respectively. Past research obtained congruence coefficients ranging between .82 to .84 (Hare et al., 1990; Harpur et al., 1988). The sum of squared errors was 5.29 ($p < .0001$). Both of these statistics indicate a strong fit between the original PCL-R factor structure and the present data.

With regard to the BPI reliability results, the coefficient alphas were of moderate strength, ranging from .87 to .40. The antisocial indexes had relatively weaker

coefficient alphas due to the fewer number of items in each of these measures. Using the Spearman-Brown prophecy formula (Nunnally & Bernstein, 1994) it can be estimated how much the reliability would increase if the number of items were increased. For example, if the four item antisocial positive-keyed index ($\alpha = .45$) had 24 items, the estimated coefficient alpha will be .64.

The affective indexes are comprised of the AFL items listed in Appendix A. The cognitive indexes include the CSL items which are also listed in Appendix A.

Relationship Between Psychopathy and the Total, Antisocial Orientation, and General Adjustment Affective Indexes

The differences among the three PCL-R groups on affective content indexes (total affective items, antisocial affective items, and general adjustment affective items) are presented in Table 6. The PCL-R group means were: low ($M = 11.5$, $SD = 5.9$), medium ($M = 23.3$, $SD = 2.3$), and high ($M = 30.7$, $SD = 1.9$). ANOVAs indicate significant differences occurred among the three PCL-R groups for the total number of affective items $F(2, 107) = 4.81$, $p < .01$, the antisocial items, $F(2, 107) = 5.44$, $p < .01$, and the general adjustment items $F(2, 107) = 4.23$, $p < .05$. For all three indexes psychopaths received the highest scores and nonpsychopaths the lowest scores. Using Tukey's HSD, there were statistically significant differences ($p < .05$) between the low and high groups.

The correlations between scores on the Total, Antisocial Orientation, and General Adjustment indexes and the PCL-R scores are shown in Table 7. The total PCL-R correlations with the affective indexes range from .27 to .29 ($p < .01$). The correlations between Factor 1 and the affective indexes were statistically nonsignificant. With Factor 2 the affective index correlations ranged from .34 to .37 ($p < .01$). All three Factor 1 indexes' (Total, Antisocial Adjustment, and General Adjustment) correlations were outside the 90% confidence interval of the Factor 2 correlations ($r = .34$; 90% CI = .19 to .47).

Because of the correlation between Factor 1 and Factor 2 ($r = .62$) partial correlations were computed controlling for either Factor 1 or Factor 2. The partial correlations were very similar to the zero-order correlations, not changing the confidence interval results.

Endorsement of Affective Content via Positive- and Negative- Keyed Indexes

ANOVAs indicated item endorsement differences among the low, medium, and high psychopath groups for the positive-keyed items (Table 8). There were differences among the three groups for the total number of affective items $F(2,107) = 4.07$, $p < .05$, affective antisocial items $F(2,107) = 4.75$, $p < .05$, and affective general adjustment items $F(2,107) = 3.53$, $p < .05$. Using Tukey's HSD, there statistically significant differences ($p < .05$) between the low and high groups. The means on the general adjustment

Table 6

Mean Scores (SD in brackets) on Affective Content Indexes
Among Low, Medium, and High Psychopathy Groups

Affective Content Indexes	PCL-R			$F(2,107)$
	Low ($\underline{n} = 52$)	Medium ($\underline{n} = 36$)	High ($\underline{n} = 22$)	
Total	12.46 ^c (6.45)	15.52 (7.47)	18.22 (10.07)	4.81**
Antisocial Orientation	1.63 ^c (1.16)	2.30 (1.62)	2.82 (1.92)	5.45**
General Adjustment	9.06 ^c (5.67)	11.64 (6.25)	13.59 (8.38)	4.23*

Note. * $p < .05$, ** $p < .01$.^c difference between low and high means, Tukey HSD, $p < .05$.

Table 7

Correlations Between PCL-R Scores and Self-Report Indexes

Self-Report	PCL-R		
	Total	Factor 1	Factor 2
Affective Total	.29*	.10	.37*
Antisocial Orientation	.28*	.14	.34*
General Adjustment	.27*	.10	.34*

Note. * $p < .01$.

negative-keyed items were also different among the psychopathy groups $F(2,107) = 3.36, p < .05$. The item endorsement differences for the negative-keyed total and antisocial orientation items among the low, medium, and high psychopath groups were not significant at the $p < .01$ level.

The mean standardized reaction times for the positive-keyed and negative-keyed items are found in Table 9. There were no statistically significant differences among the low, medium, and high psychopath groups for either positive- or negative-keyed items across all the emotional content indexes.

Calculating the mean reaction times, by themselves, may not be a good indicator of a respondent's schema. In this situation, the reaction times is not associated with the number of items endorsed. Consequently, the reaction times were correlated with the number of endorsed items (responding "true" to positive-keyed items and "false" to negative-keyed items, see page 54) within low, medium, and high psychopathy groups. A positive correlation indicates that the more items endorsed the longer reaction time was for each of the endorsed items. A negative correlation indicates that the more items endorsed the shorter the reaction time was for each of the endorsed items. As shown in Table 10, there was a statistically significant negative correlation between the total and general adjustment positive-keyed items and reaction times for the low psychopathy groups ($r = -.45$ & $-.48, p < .01$). A similar

Table 8

Mean Scores (SD in brackets) on Positive- and Negative-Keyed
Indexes Among Low, Medium, and High Psychopathy Groups

	PCL-R			
	Low	Medium	High	F(2,107)
Affective				
Content Indexes	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)	
<hr/>				
Total				
Positive-Keyed	7.77 ^c	9.61	11.55	4.07*
	(4.62)	(4.97)	(7.28)	
Negative-Keyed	4.69	5.92	6.68	3.29
	(2.53)	(3.67)	(4.11)	
Antisocial Orientation				
Positive-Keyed	1.25 ^c	1.75	1.95	4.75*
	(.88)	(.94)	(1.36)	
Negative-Keyed	.38	.56	.86	2.65
	(.69)	(.8)	(1.04)	
General Adjustment				
Positive-Keyed	5.48 ^c	6.81	8.32	3.53*
	(3.74)	(4.16)	(5.57)	
Negative-Keyed	3.58	4.83	5.27	3.36*
	(2.42)	(3.14)	(3.67)	

Note. * $p < .05$. ^c difference between low and high means,
Tukey HSD, $p < .05$.

Table 9

Mean Scores (SD brackets) on Positive- and Negative-Keyed
Reaction Time Indexes Among Psychopathy Groups

	PCL-R			F
	Low	Medium	High	
Affective Content Indexes	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)	
<hr/>				
Total				
Positive-Keyed	-.01	1.03	.33	1.41
	(2.81)	(2.72)	(3.30)	F(2,106)
Negative-Keyed	.03	-.03	.86	1.05
	(2.35)	(2.39)	(2.85)	F(2,103)
Antisocial Orientation				
Positive-Keyed	.12	-.19	-.05	.45
	(1.26)	(1.36)	(1.72)	F(2,85)
Negative-Keyed	-.15	-.29	.02	.17
	(1.32)	(.97)	(1.65)	F(2,36)
General Adjustment				
Positive-Keyed	.01	.93	-.06	2.03
	(2.25)	(2.36)	(2.38)	F(2,104)
Negative-Keyed	.07	.08	.89	.91
	(2.08)	(2.27)	(2.20)	F(2,100)

Note. Reaction times are standardized, thus allowing for negative values

Table 10

Correlations Between Item Reaction Times and Number of Items
Endorsed for Affective Content Indexes in Low, Medium, and
High Psychopathy Groups

	PCL-R		
	Low	Medium	High
Affective Content Indexes	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)
Total			
Positive-Keyed	-.45*	.19	-.33
	(<u>n</u> = 51)	(<u>n</u> = 36)	(<u>n</u> = 22)
Negative-Keyed	-.17	.18	.30
	(<u>n</u> = 48)	(<u>n</u> = 36)	(<u>n</u> = 22)
Antisocial Orientation			
Positive-Keyed	.07	.08	.26
	(<u>n</u> = 39)	(<u>n</u> = 32)	(<u>n</u> = 17)
Negative-Keyed	-.64*	.08	-.43
	(<u>n</u> = 15)	(<u>n</u> = 13)	(<u>n</u> = 11)
General Adjustment			
Positive-Keyed	-.48*	.18	-.52*
	(<u>n</u> = 49)	(<u>n</u> = 36)	(<u>n</u> = 22)
Negative-Keyed	-.07	.13	.43
	(<u>n</u> = 47)	(<u>n</u> = 35)	(<u>n</u> = 21)

Note. * $p < .01$.

correlation also occurred for the high psychopathy group ($r = -.52$, $p < .01$) with the general adjustment positive-keyed items.

Confidence intervals were used to compare the high and low psychopathy group correlations. Only the negative-keyed correlations for the Total (90% confidence interval for the high psychopathy group is $r = -.06$ to $.59$) and General Adjustment (90% confidence interval for the high psychopathy group is $r = .07$ to $.69$) indexes were different than the low psychopathy group's correlations. For these comparisons, the high psychopathy group had relatively stronger positive correlations between reaction times and number of negative-keyed items endorsed, indicating that the negative-keyed items are not part of the psychopath's schema.

The correlations between total PCL-R scores and endorsement of positive-keyed and negative-keyed items are presented in Table 11. For the three affective indexes, the positive-keyed items reached statistical significance for six correlations, whereas four correlations reached significance for the negative-keyed items.

Comparing the positive-keyed and negative-keyed correlations, only the Antisocial correlations with the PCL-R Total and Factor 2 scores were significantly different. The correlation of $.14$ was outside the 90% CI for $r = .30$ (PCL-R Total scores). With Factor 2 scores, $r = .19$ was outside the 90% CI for $r = .36$ (Factor 2 scores). Overall, the positive-keyed indexes were more strongly related to

psychopathy than the negative-keyed indexes, but only statistically significant for the Antisocial index.

From Table 11 we see that there were no statistically significant correlations between Factor 1 and the affective indexes. In contrast, all of the Factor 2 correlations were statistically significant.

The correlations between PCL-R scores and reaction times to positive- and negative-keyed indexes are found in Table 12. There were no statistically significant correlations among the Total, Factor 1, and Factor 2 scores.

Endorsement of Affective Content for Situational and Nonsituational Indexes

Using ANOVAs, there were differences in the endorsement of affective content for the situational and nonsituational indexes, with the high psychopath group endorsing more items than the low psychopathy group (General Adjustment index was an exception). These differences were statistically significant for Total $F(2,107) = 5.04$, $p < .01$, Antisocial Orientation $F(2,107) = 3.72$, $p < .05$, and General Adjustment indexes $F(2,107) = 4.72$, $p < .01$ (Table 13). For the nonsituational items, more items were endorsed for the Total $F(2,107) = 3.29$, $p < .05$ and Antisocial Orientation indexes $F(2,107) = 3.52$, $p < .05$, but no statistical differences occurred for the General Adjustment index. Using Tukey's HSD, there were statistically significant differences ($p < .05$) between the low and high groups.

Table 11

Correlations Between PCL-R Scores and Positive- and
Negative-Keyed Indexes

Self-Report	PCL-R		
	Total	Factor 1	Factor 2
Total			
Positive-Keyed	.29**	.11	.38**
Negative-Keyed	.20	.06	.26**
Antisocial Orientation			
Positive-Keyed	.30**	.16	.36**
Negative-Keyed	.14	.06	.19*
General Adjustment			
Positive-Keyed	.27**	.10	.34**
Negative-Keyed	.21*	.07	.27**

Note. * $p < .05$, ** $p < .01$.

Table 12

Correlations Between PCL-R Scores and Reaction Times of
Positive- and Negative-Keyed Indexes

Self-Report	PCL-R		
	Total	Factor 1	Factor 2
Total			
Positive-Keyed (<u>n</u> = 109)	.09	.15	.03
Negative-Keyed (<u>n</u> = 106)	.11	.07	.17
Antisocial Orientation			
Positive-Keyed (<u>n</u> = 88)	-.04	-.03	-.08
Negative-Keyed (<u>n</u> = 39)	.06	.14	.08
General Adjustment			
Positive-Keyed (<u>n</u> = 107)	.05	.11	-.01
Negative-Keyed (<u>n</u> = 103)	.12	.05	.19

Note. N indicates the number of respondents that endorsed one or more items.

The mean reaction times for the situational and nonsituational items are found in Table 14. There were no statistically significant differences among the low, medium, and high psychopathy groups for either situational or nonsituational items across all the affective content indexes.

Table 15 contains the correlations between the reaction times and the number of endorsed items within the low, medium, and high psychopathy groups. For the Total affective index, the situational item correlation of the low psychopathy group ($r = -.32$) is out of range of the 90% confidence interval range ($r = -.28$ to $.55$) for the high psychopathy group ($r = .16$). The negative correlation for the low psychopathy group indicates schema congruence in that the response is part of the respondent's self-schema. The correlations between the Antisocial Orientation situational items for the low psychopathy group ($r = -.18$) is out of the 90% confidence interval range ($r = -.07$ to $.63$) for the high psychopathy group ($r = .32$). The positive correlations for the high psychopathy group indicates a lack of schema congruence in the respondent's test item answers. All the other low and high psychopath group comparisons were within the 90% confidence interval. Although the difference between the high and low psychopathy groups were within the 90% confidence interval for the General Adjustment index, the low psychopathy group correlation was statistically

Table 13

Mean Scores (SD brackets) on Situational and Nonsituational Indexes Among Low, Medium, and High Psychopathy Groups

	PCL-R			F(2,107)
	Low	Medium	High	
Affective Content Indexes	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)	
<hr/>				
Total				
Situational	6.29 ^c	8.33	9.41	5.04**
	(3.30)	(4.50)	(5.57)	
Nonsituational	6.60 ^c	7.53	8.81	3.29*
	(3.18)	(3.24)	(4.28)	
Antisocial Orientation				
Situational	.98 ^c	1.28	1.59	3.72*
	(.70)	(1.03)	(1.10)	
Nonsituational	.65 ^c	1.03	1.22	3.52*
	(.83)	(1.03)	(.97)	
General Adjustment				
Situational	4.64 ^c	6.39	7.09	4.72**
	(2.90)	(3.70)	(4.58)	
Nonsituational	4.84	5.58	6.50	2.61
	(2.76)	(2.67)	(3.50)	

Note. * $p < .05$, ** $p < .01$. ^c difference between low and high means, Tukey HSD, $p < .05$.

Table 14

Mean Scores (SD brackets) on Reaction Times for Situational
and Nonsituational Indexes Among Psychopathy Groups

PCL-R				
Affective	Low	Medium	High	F
Content Indexes	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)	
<hr/>				
Total				
Situational	.19	.11	.71	.41
	(2.66)	(2.18)	(3.11)	F(2,107)
Nonsituational	-.18	.89	.48	2.01
	(2.27)	(2.54)	(2.93)	F(2,105)
Antisocial Orientation				
Situational	.02	-.41	-.02	1.26
	(1.17)	(.79)	(1.54)	F(2,83)
Nonsituational	.07	.07	-.01	.03
	(1.31)	(1.24)	(1.35)	F(2,59)
General Adjustment				
Situational	.05	.33	.45	.31
	(2.34)	(2.06)	(2.13)	F(2,104)
Nonsituational	.01	.69	.27	1.01
	(1.98)	(2.16)	(2.18)	F(2,95)

Note. Reaction times are standardized, thus allowing for negative values.

Table 15

Correlations Between Item Reaction Times and Number of Items
Endorsed for Affective Content Indexes (Situation vs.
Nonsituation) in Low, Medium, and High Psychopathy Groups

PCL-R			
Affective Content Indexes	Low (<u>n</u> = 52)	Medium (<u>n</u> = 36)	High (<u>n</u> = 22)
Total			
Situational	-.32* (<u>n</u> = 52)	.13 (<u>n</u> = 36)	.16 (<u>n</u> = 16)
Nonsituational	-.20 (<u>n</u> = 50)	.06 (<u>n</u> = 36)	-.18 (<u>n</u> = 22)
Antisocial Orientation			
Situational	-.18 (<u>n</u> = 39)	.07 (<u>n</u> = 28)	.32 (<u>n</u> = 19)
Nonsituational	.08 (<u>n</u> = 22)	-.30 (<u>n</u> = 23)	-.02 (<u>n</u> = 17)
General Adjustment			
Situational	-.29* (<u>n</u> = 49)	.01 (<u>n</u> = 36)	-.14 (<u>n</u> = 22)
Nonsituational	-.13 (<u>n</u> = 43)	.08 (<u>n</u> = 35)	-.10 (<u>n</u> = 20)

Note. * $p < .05$.

significant ($r = -.29$). The high group's correlation did not reach significance ($r = -.14$).

The situational and nonsituational items for the three emotional content indexes (total items, antisocial items, general adjustment items) were correlated with the PCL-R total score and the two factor scale scores. As seen in Table 16, there were statistically significant correlations for both situational and nonsituational items across Factor 2 PCL-R scores. For the most part, the statistically significant situational correlations were stronger than the nonsituational correlations. None of these situational correlations were statistically different from the nonsituational correlations (90% CI). The correlations between the indexes and Factor 1 were statistically nonsignificant.

The correlations between PCL-R scores and reaction times to situational and nonsituational indexes are found in Table 17. There were no statistically significant correlations among the Total, Factor 1, and Factor 2 scores.

Comparison of Endorsed Cognitive and Affective Indexes

Similar to the endorsement of affective items (Table 6), a comparison of cognitive items was made among the low, medium, and high psychopathy groups. Statically significant differences occurred with the Total, $F(2,107) = 4.79$, $p < .01$ and Antisocial Orientation $F(2,107) = 7.90$, $p < .01$ cognitive items (Table 18). Using Tukey's HSD, there

Table 16

Correlations Between PCL-R Scores and Situational and
Nonsituational Indexes

		PCL-R		
Self-Report		Total	Factor 1	Factor 2
Total				
Situational	(<u>n</u> = 110)	.31**	.14	.39**
Nonsituational	(<u>n</u> = 108)	.24*	.04	.33**
Antisocial Orientation				
Situational	(<u>n</u> = 86)	.23*	.10	.31**
Nonsituational	(<u>n</u> = 62)	.22*	.13	.26*
General Adjustment				
Situational	(<u>n</u> = 107)	.30**	.16	.26**
Nonsituational	(<u>n</u> = 86)	.22*	.01	.30**

Note. * $p < .05$, ** $p < .01$.

Table 17

Correlations Between PCL-R Scores and Reaction Times to
Situational and Nonsituational Indexes

		PCL-R		
Self-Report		Total	Factor 1	Factor 2
Total				
Situational	(<u>n</u> = 110)	.07	.11	.04
Nonsituational	(<u>n</u> = 108)	.14	.13	.16
Antisocial Orientation				
Situational	(<u>n</u> = 86)	-.06	-.02	-.06
Nonsituational	(<u>n</u> = 62)	.03	.06	-.01
General Adjustment				
Situational	(<u>n</u> = 107)	.09	.14	.02
Nonsituational	(<u>n</u> = 86)	.07	.03	.13

Table 18

Mean Scores (SD in brackets) on Cognitive Indexes Among Low, Medium, and High Psychopathy Groups

Cognitive Content Indexes	PCL-R			F (2,107)
	Low (<u>n</u> = 52)	Medium (<u>n</u> = 36)	High (<u>n</u> = 22)	
Total	16.79 ^c (5.34)	19.14 (7.96)	22.59 (9.84)	4.79**
Antisocial Orientation	2.81 ^{cd} (1.65)	3.92 (1.85)	4.73 (2.87)	7.90**
General Adjustment	10.04 (4.21)	11.36 (6.22)	13.31 (7.13)	2.72

Note. ** $p < .01$. ^c difference between low and high means,
^d difference between low and medium means, Tukey HSD, $p < .05$.

statistically significant differences ($p < .05$) between the low and high groups. For the affective items, all three indexes were statically significant among the psychopathy groups (Table 6), whereas with the cognitive items, the General Adjustment index was not statistically significant.

The mean reaction times for the affective and cognitive items are found in Table 19. There were no statistically significant differences among the low, medium, and high psychopathy groups for either affective or cognitive items.

Table 20 contains the correlations between the reaction times and the number of endorsed items within the low, medium, and high psychopathy groups. For the Total affective index, the correlation of the low psychopathy group ($r = -.39$) was out of the 90% confidence interval range ($r = -.35$ to $.37$) for the high psychopathy correlation ($r = .01$). For the Cognitive items, the correlation of $-.14$ for the Antisocial items was beyond the 90% confidence interval ($r = .13$ to $.71$) for the high psychopathy group correlation ($r = .47$). Thus, for the Total affective index there were differences between the high and low psychopathy groups. Such differences were not present for the Total cognitive index. These results suggest that schema deficiencies distinguish low and high psychopathy groups along affective, but not necessarily cognitive dimensions.

The correlations between PCL-R scores and the cognitive self-report indexes are found in Table 21. For the three

Table 19

Mean Scores (SD in brackets) on Reaction Times for Affective and Cognitive Indexes Among Low, Medium, and High Psychopathy Groups

	PCL-R			
Indexes	Low	Medium	High	F
	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)	
<hr/>				
Affective				
Total	.01	1.01	1.19	1.25
	(3.74)	(3.15)	(3.75)	F(2,107)
Antisocial	.07	-.35	-.01	.71
	(1.50)	(1.53)	(1.73)	F(2,92)
Adjustment	.05	1.00	.69	1.22
	(2.95)	(2.88)	(2.43)	F(2,105)
Cognitive				
Total	.15	.91	1.49	.53
	(5.37)	(5.02)	(6.11)	F(2,107)
Antisocial	.15	.37	1.08	1.25
	(1.79)	(2.56)	(2.56)	F(2,100)
Adjustment	.01	-.06	.42	.19
	(3.01)	(2.63)	(4.06)	F(2,104)

Note. Reaction times are standardized, thus allowing for negative values.

Table 20

Correlations Between Item Reaction Times and Number of Items
Endorsed for Affective and Cognitive Domains in Low, Medium,
and High Psychopathy Groups

	PCL-R		
	Low	Medium	High
Content Endorsement	(<u>n</u> = 52)	(<u>n</u> = 36)	(<u>n</u> = 22)
Affective			
Total	-.39**	.13	.01
Antisocial Orientation	-.21	-.10	.15
General Adjustment	-.37**	.02	-.12
Cognitive			
Total	.05	-.14	.10
Antisocial Orientation	-.14	-.19	.47*
General Adjustment	.12	-.09	.07

Note. * $p < .05$, ** $p < .01$.

Table 21

Correlations Between PCL-R scores and Cognitive Self-Report
Indexes

Self-Report	PCL-R		
	Total	Factor 1	Factor 2
Cognitive Total	.31**	.13	.38**
Antisocial Orientation	.38**	.20*	.44**
General Adjustment	.23*	.07	.30**

Note. * $p < .05$, ** $p < .01$.

cognitive indexes of Cognitive Total, Antisocial Orientation, and General Adjustment there were statistically significant correlations with the PCL-R Total and Factor 2 scores. No correlations with Factor 1 were statistically significant except for the Antisocial Orientation index. This pattern of significance was similar to the Affective indexes presented in Table 7.

Table 22 shows the correlations between the PCL-R scores and reaction time to the affective and cognitive indexes. There were no statistically significant correlations among the Total, Factor 1, and Factor 2 scores.

Table 22

Correlations Between PCL-R Scores and Indexes' Reaction Times

Self-Report	PCL-R		
	Total	Factor 1	Factor 2
Affective			
Total	.15	.17	.14
Antisocial Orientation	-.02	.02	-.05
General Adjustment	.11	.13	.11
Cognitive			
Total	.04	.04	.07
Antisocial Orientation	.09	.09	.10
General Adjustment	-.03	-.07	.01

General Discussion

Investigations into the affective deficits among psychopathic offenders have typically focused on content deficits, such as fear. In addition to examining content deficits, the purpose of the present study was to look at several methods of measuring affective processing which included reaction times, positive/negative endorsements, and contextual responses. The outcome variables included self-report scores, reaction times, and interactions between self-report scores and reaction times. The self-report affective scores were broken down into two categories of general adjustment and antisocial orientation. Psychopathy was analyzed as a categorical and a dimensional variable. The present results lend support to the view that psychopathy is associated with an affective deficit.

As expected, the mean PCL-R total scores for the present sample were lower than reported in the manual (Hare, 1991). Completing the PCL-R for a formal clinical assessment may result in more conservative ratings given the potential for legal proceedings contesting the assessment. Also, as offenders are entering the criminal justice system, there is less information available than at the middle or end of the sentence. Thus, some items that should be scored as a "2" may have received a "1" rating. This lower mean, though, is virtually identical to previously gathered random samples at: (a) Millhaven Institution (Folsom, 1993), and (b) Joyceville Institution (Serin et al., 1990). The PCL-R

reliability and factor structure were similar to that of other studies conducted in a variety of settings. As such, the defining characteristics of the psychopathy construct are similar to that described by Hare and his colleagues.

Affective Self-Report and Psychopathy (Hypothesis 1)

For psychopaths to "know the words" of their affect assumes that they have sufficient affective knowledge to present their affect within a normal range. With this knowledge, the presence of negative affect would go undetected using self-report. This lack of an affective difference between psychopaths and nonpsychopaths with self-report instruments is a robust finding in the literature (Blair et al., 1995; Christianson et al., 1996; Fedora & Reddon, 1993; Folsom, 1993; Forth, 1992; Harpur et al., 1989; Newman & Kosson, 1986; Patrick et al., 1994; Serin et al., 1990; Thornquist & Zuckerman, 1995). In contrast, this study found psychopaths experiencing more negative affect than nonpsychopaths. This was contrary to the hypothesis that no self-report differences would occur. As previously noted, psychopaths experience considerable interpersonal and behavioral difficulties. The long history of negative events contributes to the increased likelihood of the psychopath experiencing associated outcomes, one of which is negative affect. The psychopath perceptually acknowledges these events and their outcomes, one of which is negative affect. Or, the psychopath may be predisposed to negative affective

reactions which is reflected in their greater endorsement of negative affect.

Is the experiencing of negative affect similar to the idea of an affective deficit proposed by Cleckley, Hare, Patrick, etc.? The experiencing of negative affect implies that there is too much of something whereas an affective deficit suggests that something is lacking. Hart (1998) argues that the negative affective symptoms of a psychopath occur because of a deficit or characteristics that are pathological by their absence. The present results dispute Hart's position. The notion of experiencing negative affect brings with it two pieces of information; (a) number of endorsed responses, and (b) how responses are endorsed. The research concluding affective deficits focuses on the reactions to stimuli without accounting for the self-perceptions of the respondent (i.e., Patrick et al., 1993). Thus, addressing the experience of affect may garner a broader picture of affective functioning.

It was also hypothesized that a positive relation with behavioral psychopathic traits (Factor 2) and a negative relation with personality psychopathic traits (Factor 1) would occur. This would suggest that offenders with elevated Factor 1 scores would not experience or disclose negative affect. As hypothesized, endorsement of negative affect as positively correlated with Factor 2 scores, but the anticipated negative relationship with Factor 1 scores did not occur (cf. Patrick, 1994).

Although a negative relationship with Factor 1 did not occur, there were statistical differences between the Factor 1 and Factor 2 correlations. The stronger relationship between Factor 2 and the endorsement of negative affective items suggests that self-report endorsement of negative affect is salient to the Factor 2 component of psychopathy, but not to Factor 1 (cf. Harpur et al., 1989; Patrick, 1994). Those with elevated Factor 2 scores have greater awareness of their affect and consider it to be more important (Kroner & Forth, 1995). Such a relationship did not occur with Factor 1 scores. Others have found an association between Factor 2 scores and measures relating to negative affect. Patrick (1994), after partialling out Factor 1 scores, found a significant positive relationship between Factor 2 scores and measures of distress, fear, and anger. Distress and fear did not correlate with the total psychopathy scores. Similarly, measures of positive and negative affect did not correlate with total psychopathy scores, but positive affect correlated with Factor 1 scores and negative affect with Factor 2 scores. In explaining the Factor 2 correlations, Patrick argued that the anger measure has a behavioral component and the negative affect scores are not associated with deficits in defensive motivational tendencies which reside with the Factor 1 dimension.

Elevated Factor 1 scores could not be confidently attributed to an affective deficit. The lack of a relationship could be due to egocentric based responding

(Kroner & Forth, 1995). Offenders with elevated Factor 1 scores are characterized by grandiosity and glibness and thus may not perceive themselves as possessing negative affect. They could also be accurately indicating the presence of no negative affect or unable to give a straightforward report.

As previously noted, the present study did not measure positive affect. Others suggest that positive and negative affective dimensions are not orthogonal (Isen, 1984). Thus, it may be possible that those with high Factor 1 scores have deficiencies in positive affect (i.e., responding "True" to "I am happy") (Patrick, 1994). The possibility of positive affect deficiencies may be a fruitful area of research in understanding the affective functioning of psychopaths.

Psychopaths are able to describe their emotions. They have some degree of affective awareness and do report negative affect. In other words, psychopaths can articulate an affective dimension, contrary to the view that psychopaths may be poor observers or reporters of their affect (Hart & Hare, 1997). It must be recognized that this study examined a very specific area of affective functioning, that is, the endorsement of negative affect.

Why are the self-report results of psychopaths disclosing their negative affect in this study contrary to much of the literature? First, the self-report items used in this study are of a high psychometric quality. The BPI went through many stages of development which was theoretically

and empirically driven (Jackson, 1989). Theoretically, personality constructs, content sampling, response styles, and multivariate analysis of structure guided test development (Jackson, 1971). Empirically, there were six decision points of item retention (Jackson, 1989). Other affective self-report instruments have not been subjected to such developmental rigor. Second, administration items via a computer offers a standardization of presentation that does not occur with paper-and-pencil administration. All respondents received the same item presentation. Respondents, therefore, were not able to skip questions, refer back to previous responses, or read future items. Third, items involving careless responding or undue response time were not included in the analysis. These items were deleted from the index scores if the reaction times were less than 0.5 or greater than 30.0s. Thus, some error variance normally included in affective self-report instruments was removed from the index scores.

There is the possibility that the nature of the BPI affective items differ from those used in previous studies. Patrick (1994) suggests that the poor relationship between affective self-report and psychopathy is due to the nature of the affective measures. Using emotional state instruments consistently relates poorly to psychopathy (Forth, 1992, Patrick et al., 1993; Williamson et al., 1991). The argument is that state measures are more susceptible to demand characteristics and contextual cues. The BPI items have been

rated according to time reference (Kroner et al., 1991). The majority of the items (78.8%) referred to the present state of the respondent. Scales with high reference to the present (Hypochondriasis, 95.0%) have shown similar test-retest stability coefficients ($r = .71$) as the scales which make less reference to the present ($r = .71$, Alienation, 46.7%). Thus, using state-related measures may not explain the lack of a relation between self-report affect and psychopathy.

In Folsom's (1993) study, the Eysenck Personality Questionnaire (EPQ) was used to measure affective functioning. This inventory included the Neuroticism scale which measures affective dimensions such as emotional overreactivity. The EPQ and the BPI were both developed using rational and empirical strategies. Both instruments measure various aspects of social and psychological adjustment. In many respects, both instruments are quite similar, yet different results were obtained. Folsom did not find the Neuroticism scale to covary with psychopathy. Of note, Folsom's study and the present study were conducted at the same institution.

Affective Processing: Positive and Negative-Keyed Endorsements (Hypothesis 2)

Affective processing can also be indicated by how responses are made to affective content. Elevated negative affect can occur via two modes of endorsement: positive-keyed (a "True" response to "I am sad") or negative-keyed (a "False" response to "I am happy") endorsements. Positive-

keyed and negative-keyed responding can thus be viewed as positive and negative valence responding. The presence of negative affect for psychopaths is predominantly endorsed via positive-keyed items. Negative affect was less likely to be endorsed via negative-keyed items. Psychopaths view and endorse negative affect (index scores) through a positive lens. It does not appear that these results are due to the personality structure of psychopathy. A relationship did not occur between Factor 1 scores and the positive-keyed indexes.

Studies on psychopathy have robustly demonstrated affective deficiencies with psychopaths using negative stimuli (Day & Wong, 1996; Intrator et al., 1997; Mills, 1995). The present study suggests that the affective deficiencies of the psychopath may not solely be with negative affect per se. Psychopaths had difficulty using negative valence processes (false of me) to indicate the presence of negative content. With this type of responding, the items are of a positive affective content (e.g., "I am happy"). Such a response would indicate the nonendorsement of positive affect ("False" to "I am happy"). Ideally the nonendorsement of positive affect should equally contribute to the presence of negative affect as does the endorsement of negative affect. For example, if one is depressed, this state will be acknowledged by both endorsing the presence of negative affect and nonendorsement (i.e., responding "False") of positive affect. The differences between low and

high psychopathy groups for positive-keyed endorsements were not present for the negative-keyed endorsements (Table 8). Although it has been suggested that psychopaths are not deficient in positive affect (Patrick, 1994), positive affective stimuli (i.e., "I am happy") has utility in further articulating affective deficient processes among psychopaths. It may be that deficiencies in negative affect interfere or inhibit psychopath's nonendorsement of positive affective content.

Further support comes from the correlations between the reaction time data and number of endorsements. As the number of nonendorsements of positive affect increased, psychopaths spent relatively more time endorsing "False" than nonpsychopaths. For the nonpsychopaths, as the number of nonendorsements of positive affect increases, reaction times became quicker indicating a congruence between responding "False" and the process of responding. It is expected that as the presence of a content area increases, the strength will increase, reflected in shorter reaction times. In terms of matching content (i.e., number of "False" responses) and affective processes (i.e., reaction times), psychopaths' nonendorsement of positive affect is incongruent.

Affective Processing: Reaction Times

Reaction times to items, by themselves did not covary with psychopathy. The result of no difference in the reaction times of psychopaths' responses to affective content was contrary to the hypotheses. Previous research

using reaction times with psychopaths has found mixed results. Some researchers have found reaction time differences to affective stimuli between psychopaths and nonpsychopaths (Williamson et al., 1990) while others have not found such differences (Forth, 1992; Kiehl, 1996).

Fazio (1990) has stated, "latency data can be extraordinarily messy" (p. 75). Even with a double standardized procedure and removing outliers, reaction time data, by themselves did not differentiate among the different levels of psychopathy. In psychophysics research where the task is to categorize a stimulus into prototypical categories, the separation of two categories is called a decision bound. According to the reaction time-distance hypothesis, reaction times decrease as the stimulus (i.e., octagon) is further away from the decision bound which separates categories (i.e., square and circle; Ashby et al., 1994). The assumption is that a stimulus near the decision bound is ambiguous, resulting in a slow reaction time. A stimulus that is far from the decision bound is easy to classify, consequently a relatively shorter reaction time. Within the context of schema theory, there is somewhat a different picture of reaction times. If a response is closer to the person's cognitive structure (i.e., female student responding that she is a student), a relatively faster response will occur. Below, it is argued that relative to the number of endorsements, psychopaths' slower reaction times indicate that affective categories are not clearly

defined resulting in vague affective boundaries. Supporting evidence of such an interpretation comes from two recent studies.

In a SPECT study, Intrator et al. (1997) found nonpsychopaths to have minimal metabolic requirements in the processing of affective information. Psychopaths, though, had greater metabolic activity within certain parts of the brain. This increased metabolic activity suggests that psychopaths require additional resources to complete the emotional task. Thus, the reduced ease in which they process affect will elicit affective responses that are salient to the psychopath. Nonpsychopaths, who require minimal resources will have relatively faster reaction times to affective stimuli. Because of the necessity of additional resources with psychopaths in certain areas of the brain, consistent response times to affective may not be possible.

The second study is a cerebral asymmetry investigation among psychopaths. Mills (1995) used event-related potentials (ERP's) during affective tasks. Compared to nonpsychopaths, psychopaths did not use as many right frontal resources to process affective information even though psychopaths had no deficits in performance. Also, psychopaths were less lateralized in reaction times to an affective task indicating that both hemispheres are able to process affective content. Because of the pattern of frontal, temporal, and parietal site responses, affective tasks were processed in perceptually unelaborate ways. Mills

argued that the psychopath has a "diffuse" cerebral organization with odd inter-and intra-hemispheric communication.

For the present study, the nonsignificant correlations between reaction times and number of endorsements indicates the psychopaths' poorly defined affective boundaries. Both the reduced ease in affective processing and a diffuse cerebral organization interpretations are functionally represented by poorly defined affective boundaries. When the psychopath endorses negative affect, the process of responding does not have a systematic pattern. Thus, the affective response does not vary according to the felt closeness of the affect.

The utility of reaction times with single personality items may be limited under standard test administration instructions. With most research using reaction times, instructions for the respondents are important. For example, a respondent can have arrived at a decision regarding the item, but further contemplate the item to ensure a high level of confidence. Such variability in reaction times can be reduced by providing specific instructions to the respondents. Psychophysics research usually has the respondent under some type of instruction to respond quickly or accurately. A simple instruction of keeping one index finger above each of the two response keys will help to reduce response variability (Fazio, 1990). Specialized instructions were not incorporated in the present study.

Changing the instructions may result in different psychometric qualities of the BPI and result in a poor link with past offender research.

Another potential problem with using reaction times is that the relationship between reaction times and index scores often is not linear. Psychophysics research on reaction times find that distributions are positively skewed and there is a positive relation between the mean of a response time distribution and its variability (Maris, 1993). In other research using the BPI and reaction times, the relationship between reaction times and ranked social desirability values was described by a nonlinear mathematical function (MacLennan, 1989). The ranked social desirability values were transformed using squared deviation scores. The nonlinear function increased the simple correlation from .27 (raw scores and reaction times) to .81 (transformed scores and reaction times).

In an attempt to reduce unwanted variability, psychophysics research may repeat the same or similar stimulus 400 times in a single session (Ashby et al., 1994). This is unrealistic for using affective items as stimuli. With affective items, other strategies may be useful. Presenting the items with limited inspection time may assist to reduce unwanted response time variance. Varying the reflectivity of the computer screen may also be helpful.

In the present study, once associated (i.e., correlated) with self-report scores, reaction times

demonstrated greater differentiation between the high and low psychopathy groups. Handling reaction times this way also gives a representation of the relationship between content and processes. If there are a greater number of content endorsements, then it is expected that the reaction times would be shorter, suggesting that the process of responding is congruent with the number of endorsements. For the low psychopathy groups, the relation between total affective index scores and reaction times was of a direction (i.e., negative correlations) that would be expected for a normal sample. These negative correlations for the low psychopathy groups tells us that this paradigm will measure a normal affective response pattern (i.e., affective responses have defined boundaries). It is expected that the greater the presence of a trait (i.e., more endorsements) will be associated with shorter reaction times within a normal samples (Fekken & Holden, 1994). This also suggests that the different response patterns (i.e., slower reaction times with greater number of endorsed items) which was not negatively correlated within the high psychopathy group may not be due to issues surrounding incarceration, but are likely due to the psychopaths' affective deficits. A normal affective response pattern did not occur with the psychopaths indicating that although psychopaths endorsed negative affect, these endorsements had vague affective boundaries.

Schema theory uses reaction times to indicate a cognitive structure. But if this structure is diffuse, as suggested by Mills (1995) reaction times may have limited utility. The relatively slower reaction time may or may not indicate cognitive contradictions with one's self-schema (cf. Markus, 1980; Markus et al., 1982). In fact, solely using the reaction time data of endorsed items was unable to distinguish among the psychopath groups. The use of the construct of schema with its reliance on cognitive structures is not well suited for investigating affective processes among violent and psychopathic offenders.

Similarly, interpreting reaction times (i.e., slow vs. fast) without a strong and explicit connection to content (i.e., personal endorsement) will not be fruitful. This may partially explain why reaction time results have been inconsistent in investigating psychopathy (Forth, 1992; Keihl, 1996; Williamson et al., 1990).

Affective Processing: Situational and Nonsituational Endorsements (Hypothesis 3)

The third area of affective processing is situational/nonsituational responding. Compared to nonpsychopaths, psychopaths were more likely to endorse negative affect using situationally based items than nonsituationally based items. These results were most notable with the General Adjustment index. Others have found that greater affective disclosure is associated with viewing situations as personally relevant (Frijda, 1986; Reisenzein,

1994). It may be that a contextual response allows psychopaths to disclose their affect. This finding is consistent with Newman and Wallace's (1993) view that emotionally based impulsivity among psychopaths is situation-specific. Although psychopaths disclose their negative affect, they were less likely to use broadly defined, nonsituationally based items. Similar to the situational vs. nonsituational distinction, Kiehl (1996) investigated a concrete/abstract dimension of information processing. He presented psychopaths and nonpsychopaths with concrete and abstract words. The task was to identify whether the word was concrete or abstract. Psychopaths had more difficulty categorizing the abstract words than nonpsychopaths. The reluctance of psychopaths to endorse negative affect via nonsituations may be related to difficulties in processing abstract concepts.

According to Leventhal's (1984) hierarchical theory, conceptual processing of affect can anticipate emotional behaviors (i.e., self-instruction) and govern the impact of affective situations. This level involves storage of abstract memories of affect (Leventhal, 1993). At the next lower level of emotional processing, schema codes are determined by conditioned responses and situations. These emotional schema represent prior emotional experiences. The endorsement of affect at the schema lower level is episodic and predominantly includes situations. Solely processing affect at a situational level will indicate that the

conceptual level of processing is impaired, resulting in a poor match of conceptual and schema structures. For Leventhal, this poor match will result in poor control of emotional experience. It is suggested that because psychopaths are more likely than nonpsychopaths to use situational items to endorse affect, psychopaths process their affect predominantly at this lower level, resulting in a poor match of conceptual and schema structures.

As with the positive and negative valence responding results, the Factor 1 scores were not related to either the situational or nonsituational affective responses. Nor were the reaction time data related to Factor 1 scores. It was expected that Factor 1 scores would have the strongest relation with situational items supporting elevated Factor 1 scores endorsing affect with concrete, situational items as compared to nonsituational items.

The present study concludes that the personality dimension of psychopathy is not related to negative endorsements. Two reasons for this lack of relationship include: (a) the nature of the stimulus items and (b) characteristics of respondents. One of the criteria considered in BPI item development was to reduce the impact of response styles. Thus, extreme items were not retained. As stimuli, the affective BPI items may not have high affective intensity and therefore have limited capabilities to elicit an emotional response. For example, a BPI item of, "My feelings are sometimes hurt by loved ones" would elicit

more affective intensity if the item stated, "I have been emotionally devastated by loved ones." Also, for Factor 1 offenders it may be necessary to incorporate a multi modal procedure for an affective response. For example, affective content presented simultaneously with picture and voice may be more effective in eliciting affect from Factor 1 offenders. Second, this lack of relationship may be due to offender characteristics. Forth (1992) argues it is more difficult to elicit affective reactions from offenders than nonoffenders. Minimal self-report to a fear film and very few facial expressions of sadness, anger, or fear during exposure to a variety of films supported this view. Using pictures, offenders, as compared with the general population are less likely to recall central detail of emotional pictures (Christianson et al., 1996). This lack of affective reaction may be due to the criminal subculture in which there is frequent exposure to emotional and physical abuse. Thus, these offenders may have less intense affective reactions to everyday situations (Day & Wong, 1996). In addition, Factor 1 offenders, marked by their grandiosity and glibness, will deny having difficulties in experiencing or describing their affective reactions (Kroner & Forth, 1995). Furthermore, affective underarousal of Factor 1 offenders may explain difficulty in eliciting responses.

Affective and Cognitive Indexes (Hypothesis 4)

To determine whether psychopaths are deficient with affective content and not other areas, cognitive indexes

were derived from the BPI items. The pattern of correlations with PCL-R scores was similar for the Total and Antisocial indexes of both affective and cognitive indexes. Contrary to the hypothesis, no differences among the psychopath groups were found with the cognitive General Adjustment index. There were differences on the affective General Adjustment index. Also, there were differences between affective and cognitive items and how these endorsements related to reaction times. With the categorical analysis the affective indexes indicated congruence between item endorsement and reaction times for the nonpsychopathic group. For the medium and high psychopath groups there was no relationship between affective endorsement and reaction times.

The endorsement of cognitive items for the psychopaths was not associated with longer reaction times except for the Antisocial Orientation index. Although psychopaths may endorse antisocial cognitive items more than nonpsychopaths, such endorsements are made with relatively longer reaction times suggesting that these cognitive items are not congruent with their self-schema. In contrast, the nonpsychopaths who had a normal inverse relationship between affective scores and reaction times did not show this relationship with the cognitive indexes. In terms of processing affective vs. cognitive content, it appears that reaction times can indicate normal processing for the affective domain, but not for the cognitive domain. In addition, these reaction time results suggest a difference

between affective and cognitive processes, and that there are a unique set of rules governing affective processes (Charland, 1995). Affective processes do have associations with reaction times and therefore have utility in explaining affective processing. Hart (1998) argues that there are three mechanisms that contribute to the link between psychopathy and violence; cognitive, affective, and behavioral mechanisms. Based on the present results, both affective and cognitive areas have a role in explaining psychopathy, but their roles are not equal. The cognitive domain in this study refers to beliefs, values, and opinions about the self. This area is more closely tied to antisocial orientation and is more limited in explaining psychopathy than are the affective indexes and their respective reaction times.

Affective Categories: Total, Antisocial, and General
Adjustment

The majority of the results suggesting affective differences between low and high psychopathy groups occurred with the Total and General Adjustment indexes. The Antisocial index did not routinely show the same differentiation. As noted in Table 5, there were only eight items for this index. Consequently, this index may not adequately measure affect as it relates to antisocial orientation. The psychometric issues aside, the sample for the present study consisted of only violent offenders. Antisocial domains have been associated with violence

(Harris, Rice, & Quinsey, 1993; La Taillade & Jacobson, 1997; Widiger & Trull, 1994) which may reduce the ability of the affective antisocial index to discriminate between low and high psychopathy groups. These interpretations of the antisocial affective index are only suggestive and need to be further developed with subsequent studies.

In the categorical analysis, the middle psychopathy group had minimal relation with affective items and their reaction times. The low and high psychopathy groups showed much clearer associations. It may be that the middle group, having both high and low psychopathy traits has more heterogeneity which is reflected in the lack of association with the affective measures.

There are some limitations to the present study. First, the stability of the self-report affective indexes were not clearly established. Although the BPI scales have demonstrated test-retest reliability, these results may not be applicable to the affective items. It may be that the affective items are closely related to mood and therefore may have poorer temporal stability than the other BPI items. Second, the BPI was developed using a paper-and-pencil mode of administration. Administering the BPI via a computer may alter the validity of the instrument. The statistical properties of the scale scores (mean, SD, and alpha), though, are similar between computer and paper-and-pencil administration modes. Third, the sample of offenders were incarcerated for violent offences. Previous work with the

PCL-R in offender populations have tended to include a random selection of all offenders. However, with regard to the mean age and PCL-R characteristics, the present sample appears to be comparable to other randomly selected samples.

An Affective Congruence Model

The constructs of affective content, process, and congruence can account for much of the affective deficits with psychopaths. The proposed model not only attempts to account for affective deficits, but it also specifies categories of problem behaviors that are a consequence of affective deficits (Figure 1). Affective researchers argue that affective dimensions influence behavior (Isen, 1984; Scott & Ingram, 1998). Lang et al. (1990) suggest that the dimensions of valence and arousal "differentially primes or inhibits subsequent behavior" (p. 380).

With psychopaths, Reid (1978) has argued that their affective deficits eventually lead to depression and/or decompensation. This decompensation is a result of energies becoming exhausted in fight emptiness. The psychopath's decompensation involves "deterioration into inadequacy" (p. 499), passivity and resignation. In contrast, Hare (1998) argues that the affective deficits of psychopaths are strongly associated with predatory behavior. Psychopaths, who are lacking in "feelings for others" (p. 128) have little inhibition against using violence to control others.

Patrick et al. (1993), using startle response to determine affective deficits suggests that psychopaths lack

Figure Caption

Figure 1. The relationship between affect and behavior within the Affective Congruence Model.

the "capacity of an aversive affective state to prime aversive actions" (p. 91). This, then, leads to a lack of avoidance to situations involving pain or punishment.

From Hart's (1998) perspective, the general affective deficit of psychopaths, which include a lack of empathy, guilt, and fear have a direct role in violent impulses. Psychopaths are less likely to consider their violent behavior as threatening to their own physical, psychological, and social well being. Consequently, they are more likely to participate in violent behavior.

In the section below, it is suggested that systematically linking affective content and process together will prove more helpful than examining affective content and processes independent of each other. Affective content and processing are linked and interact together via the proposed construct of affective congruence.

Affective Content

The present model postulates that affect can be assessed in two ways: affective content and affective processing. Based on Frijda's (1994) view of emotion, affect reflects a condition of action readiness. Once present, affect is associated with behavior changes or behavior readiness. Under the conditions outlined below, affective content will guide one's socially negative behavior. Defining affective content involves an item's response which is used to derive a score on that item or a combination of similar items. That is, responses to affective stimuli are

an indication of an affective content score. Contrary to those who view responding as a sample of behavior (Anastasi, 1988), the present formulation views responses to content as a representation of affective experience. These responses are not just recognition of a category, but have an evaluative component in the response. The respondent indicates if the affective stimuli is characteristic or not of themselves. The inference from these data is that they are an indication of subjective experience (Miller & Kozak, 1993). Responses to affective stimuli are guided by various constraints and variables. First, these evaluative and affective responses are frequently based on prominent features of the affective stimuli. These prominent features include unique aspects of an affective event which will receive more attention than familiar contextual factors. For example, one will attribute being fearful to a loud bang during the night rather than darkness which is typical of night time. In responding to affective stimuli, an abstraction is made and then the respondent replies using only the prominent features (Leventhal, 1984). Second, the representation of affective experience may be a result of felt affective intensity. Thirdly, responses to affective content may involve only a cognitive engagement of the content without affective intensity (Lang, 1993). In this case, an affective endorsement is made, but there is no corresponding affective physiological response.

The present definition of affective content does not include ascribed or rated affect. To ascribe an affective condition to another person involves using related behaviors. For example, to say that someone has shallow affect, relationship behaviors, such as reactions to family illness are required (Hare, 1991). One of the purposes of the present model is to predict behaviors which occur as a result of affective deficiencies. In this case, to have affective related behaviors indicate the presence of affect would be of a circular nature. Indeed, overt indicators of affect are "distinct from the inferred, hypothetical phenomena which drive them" (Miller & Kozak, 1993, p. 33).

A potential difficulty with affective content, especially dealing with psychopath's self-report, are conditions when respondents would not endorse negative affect. The presence of affect can occur even though there is no self-report of that affect. The converse can also be true. A respondent could indicate the presence of affect even though the essential qualities of that affect are not present (Dalglish, 1997).

One's perception of affect is required to understand affective deficiencies. But for the reasons outlined above, cumulative total scores of content, by itself, will present an incomplete picture of affective deficits (Kupperman, 1997). The area of how affect is being processed is necessary for a more complete understanding of affective functioning among psychopaths.

Affective Processing

The second way that affect can be assessed is measuring the process of responding. In the present context, the process of responding refers to how endorsements and responses are made to affective content. A distinction is made between content score and process of responding.

Three ways of responding to affective content are outlined: (a) salient processing, (b) valence processing, and (c) contextual processing.

Salient processing refers to how content is being processed. This processing indicates the strength of the association between affective content and the self-referent evaluation. If the processing of affective content lacks in salience, then the boundaries of affective processing will be fuzzy. This is different from other affective constructs such as intensity, arousal, valence focus, or schemas in that salient processing is measuring the response processes to a content area. By defining salient responding as a processing variable, the process by which a content score was derived is being emphasized, not a static and cumulative endorsement of a content area. In the present study salient processing is indicated by the reaction times.

For many researchers, reaction times indicate the presence of a schema or psychological space. The use of reaction times to define a schema structure may not be appropriate using affective items in assessing affective deficits. The process of responding may be guided by a

differential processing of details (Christianson et al., 1996). For example, an extreme socially desirable item will have relatively faster reaction time, suggesting a lack of attention to the item content. Respondents may not take the time with extreme socially desirably items to evaluate the item of its intended content (MacLennan, 1989). Such response processes are a potential contributor to affective responding. Thus, using reaction times as a measure of schema may be too narrow and limit the interpretation of reaction time data with affective content.

Valence processing refers to the orientation of the respondent to the content area. There are two basic orientations, positive valence and negative valence. Although "positive affect" and "negative affect" can be interpreted as content areas, valence response focuses on approach/avoidance ways of interacting with one's environment (Lang, 1995). For the present study, positive/negative endorsements were indicative of valence responding.

Contextual processing refers to the use of situations in responding to affective content. Unless situations are used to assess affective functioning, important aspects of affect will be overlooked. The role of situations in affective functioning can be captured by making a distinction between strategic and tactical motivations for behavior (Lang et al., 1990). The strategic dimension directs one's actions in terms of broad end goals which

includes valence (i.e., appetive or defensive) and arousal (amount of energy). Affective valence and arousal influences subsequent behavior. Tactics focus on specific, context-bound patterns of action. The specific incidences of affective expression are of a tactical nature. Tactics may not always reflect strategies. For example, a tactical situation may result in defensive behavior even though the strategy is to attack. Due to its variability in affective behavior (i.e., freezing and mock aggression both occurring under threat), consistent affective responses indicating either positive and negative affect can not be found in tactical expressions. Situations are necessary for the processing of affect, but the question asked in the present model is if affect can be equally processed via nonsituational stimuli?

Patrick (1994) argues that the defensive (negative valence) component of emotional responding is deficient in psychopaths. Patrick's paradigm uses reactions to various new events which contains various emotional valence or different content areas, but uses only one technique which measures a quality of ongoing emotion (i.e., eyeblink). In contrast, the present view suggests that there are three basic processing areas which are potentially associated with the psychopath's affective deficits; salient, valence, and contextual processing.

Affective congruence

Affective congruence is the mechanism that links content and process. Not only does affective congruence describe the interaction between affective content and processing, it defines how affective content should interact with affective processing. This mechanism of affective congruence increases the utility of responses to content and how these were processed. The total score of items measuring an affective content area contains more information than solely deriving a single score along a continuum. A similar argument is true for affective processing. The interpretation of affective processes, such as reaction time is somewhat limited with no or minimal reference to a content score. It is only when the reaction time is linked with a content area that we can infer a fuller meaning of a reaction time. The mechanism of affective congruence will determine the differential impact of affective content. It involves an active corresponding response to the content of a reported emotional experience (Lang, 1993; Lang et al., 1990; Leventhal, 1984). Lang suggests that physiological responses vary systematically with emotional reactions. The lack of correspondence between reported affect and experience which is defined by affective physiological response results in a nonfunctional experience of emotion. Within the present framework, for there to be an integration of affective experience there needs to be affective congruence. For example, an integration of situational and

nonsituational affective processes will not directly impact outcome behaviors.

If this affective congruence mechanism is faulty, then affective areas will influence behaviors which are central to psychopathy. Each of the three types of affective processing, salient, valence, and contextual, will be associated with specific outcome behaviors (Figure 2).

If the congruence mechanism is faulty for salient processing, then outcome behaviors will involve entitlement and predatory actions. Incongruence for salient processing will indicate fuzzy affective boundaries. This will then result in behavior which do not respect the boundaries of others or their possessions.

A faulty mechanism for valence processing is the bases of interpersonal difficulties. This faulty congruence mechanism for valence processing has similar outcomes as when there is the absence of positive affect. The lack of processing affect in positive forms restricts the development cognitively complex structures which results in reduced integration of ideas and poor interpersonal problem solving (Isen, 1987). Not being able to equally endorse positive and negative-keyed items indicates a poor integration of positive and negative valences and a lack of cognitive complex structures. This lack of being able to relate and integrate positive and negative valence responding will restrict the resources available for dealing

Figure Caption

Figure 2. Congruence mechanisms and resulting behavior of the Affective Congruence Model

with interpersonal problems.

Contextual processing is associated with impulsive behaviors. Patterson and Newman (1993) suggest that the poor response modulation of psychopathy is situation specific. The present model posits that if affective content is viewed predominantly through situations without reference to nonsituation affect, the result will be increased impulsive behavior.

Classifications of violent behavior also map onto the three outcome behaviors of entitlement, interpersonal problems, and impulsivity. Instrumental violence, defined by a clearly identifiable purpose other than a reaction to provocation or frustration falls under entitlement and predatory behaviors. Reactive violence involves reaction to dispute and interpersonal conflict. This type of violence predominantly falls within interpersonal problems category of outcome behaviors. Some forms of both instrumental and reactive violence for which impulsivity is the predominant feature would be captured by the category of impulsive behaviors. Cornell et al. (1996) found that instrumental offenders were characterized by both manipulative and impulsive behaviors.

The affective congruence mechanism will also indicate if psychopaths are amenable to various treatment efforts. For example, if salient processing is congruent with affective content, the meaning and motivation of the affective responses will be integrated with affective

processing. In such cases, the treatment of the affective deficits will reduce problematic behaviors. This position is reinforced by the treatment of fearful patients. It is when the self-report of fear covaries with heart rate elevation that patients receive the greatest benefit of treatment (Lang, Melamed, & Hart, 1970). If responding does not vary systematically with content scores, an argument can be made for responses consisting of primarily cognitive responding with minimal access to affective domains. Based on their cerebral organization, Mills (1995) suggests that psychopaths process emotional tasks using predominantly nonaffective perceptual and unelaborated methods. Although psychopaths may endorse affective content, the reaction time results indicate affective incongruence, suggesting a nonaffective, cognitive response.

This study suggests that content areas are limited in accounting for affective deficits among psychopaths. Specific knowledge of affective processes and the affective congruence of these processes with content areas are necessary for a more complete understanding of how affect works with violent psychopaths. Essentially, it is the affective incongruence between content and process that best represents the functional deficits of psychopathy.

Conclusions

There are some practical and clinical implications of this research and proposed model. With regard to assessment issues, using self-report measures can have utility

indicating affective deficits among psychopaths. Mental health professionals trained in the assessment and diagnosis of psychopathy can use self-report measures in their conceptualization of this disorder. Practically, the model suggests specific behavioral manifestations of the psychopath's affective deficits. For example, incongruence of salient processing indicates fuzzy affective boundaries and will result in outcome behaviors such as planned violence. This type of behavior involves a lack of respect for the personal space of others. With regard to treatment, the picture is not so clear. On the one hand, psychopath's affective dysfunctioning needs to be addressed. This is a major contributor to the disorder. Yet, there does not appear to be a direct way of dealing with affective functioning if affective responses are incongruent and predominantly cognitive.

Future research should consider assessment, clinical, and theoretical issues. Future use of the computer with offenders should include instructions which are specific to computerized administration. This would include motivational instructions and having respondents keep their index fingers on the response keys. Such procedures would maximize the use of the reaction times. Within clinical practice, accounting for reaction times to affective items should increase the areas of treatment responsivity among psychopaths. For example, if there is congruence between content and affective processing, then treating affective domains may be

possible (Lang et al., 1970). Researchers suggest that as the affective deficiencies of psychopaths increase the likelihood of predatory behavior increases (Gacono & Hutton, 1994; Hare, 1988). The present model suggests specific categories of behavior that are a consequence of affective deficits. Theoretically, questions regarding affective reaction times can be raised. Why do reaction times vary; is it due to motivational, biological, or functional issues? Can these affective reaction times be manipulated, thereby suggesting change?

In 1962, Johns and Quay described the affective deficits in psychopaths in that they, "know the words but not the music." The present and other recent research suggests that the affective deficits of psychopaths can be pin pointed with greater clarity than found in previous research. Based on this, a summary of psychopaths' affective functioning would be that they know the words, hear the music, but can't sing the song.

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Appendix A

Basic Personality Inventory Items According to Scale,
Endorsement, Content Ratings, and Situational Ratings

Item			Item Domain Ratings	
Number	Scale	Endorsement	Content	Situation
1.	HYP	F	BEH	N
2.	DEP	T	AFL	Y
3.	DEN	F	CSL	N
4.	INP	T	AFL	N
5.	ALN	T	APR	Y
6.	PEI	F	CBL	N
7.	ANX	T	AFL	Y
8.	THD	F	CSL	N
9.	IME	T	BEH	N
10.	SOI	F	APR	N
11.	SDP	T	AFL	N
12.	DEV	T	CSL	N
13.	HYP	T	BEH	Y
14.	DEP	F	AFL	N
15.	DEN	T	AFL	N
16.	INP	F	APR	N
17.	ALN	F	CBL	N
18.	PEI	T	CBL	N
19.	ANX	F	CSL	Y

20.	THD	T	CSL	N
21.	IME	F	BEH	N
22.	SOI	T	CSL	N
23.	SDP	F	CSL	N
24.	DEV	T	BEH	N
25.	HYP	F	AFL	N
26.	DEP	T	APR	N
27.	DEN	F	AFL	Y
28.	INP	T	CBL	Y
29.	ALN	T	BEH	Y
30.	PEI	F	AFL	Y
31.	ANX	T	AFL	N
32.	THD	F	CSL	N
33.	IME	T	BEH	N
34.	SOI	F	APR	Y
35.	SDP	T	CSL	N
36.	DEV	T	BEH	Y
37.	HYP	T	AFL	N
38.	DEP	F	CSL	N
39.	DEN	T	CSL	N
40.	INP	F	CSL	Y
41.	ALN	F	BEH	Y
42.	PEI	T	CBL	Y
43.	ANX	F	AFL	Y
44.	THD	T	CSL	N
45.	IME	F	CSL	N
46.	SOI	T	APR	N

47.	SDP	F	CSL	N
48.	DEV	T	CSL	N
49.	HYP	F	AFL	N
50.	DEP	T	CSL	N
51.	DEN	F	BEH	Y
52.	INP	T	BEH	Y
53.	ALN	T	APR	Y
54.	PEI	F	AFL	Y
55.	ANX	T	AFL	N
56.	THD	F	CSL	N
57.	IME	T	BEH	N
58.	SOI	F	APR	Y
59.	SDP	T	CSL	N
60.	DEV	T	AFL	Y
61.	HYP	T	CSL	N
62.	DEP	F	APR	N
63.	DEN	T	AFL	N
64.	INP	F	APR	N
65.	ALN	F	CSL	Y
66.	PEI	T	CBL	Y
67.	ANX	F	CBL	Y
68.	THD	T	CSL	N
69.	IME	F	CSL	N
70.	SOI	T	BEH	Y
71.	SDP	F	CBL	N
72.	DEV	T	AFL	Y
73.	HYP	F	CSL	Y

74.	DEP	T	CBL	N
75.	DEN	F	CSL	Y
76.	INP	T	CSL	Y
77.	ALN	T	CSL	Y
78.	PEI	F	CBL	N
79.	ANX	T	AFL	Y
80.	THD	F	CSL	Y
81.	IME	T	BEH	N
82.	SOI	F	CSL	N
83.	SDP	T	CSL	N
84.	DEV	T	CSL	N
85.	HYP	T	AFL	Y
86.	DEP	F	CSL	N
87.	DEN	T	CSL	N
88.	INP	F	CSL	Y
89.	ALN	F	CBL	Y
90.	PEI	T	CBL	Y
91.	ANX	F	CSL	N
92.	THD	T	CSL	N
93.	IME	F	CSL	N
94.	SOI	T	CSL	Y
95.	SDP	F	BEH	N
96.	DEV	T	CSL	N
97.	HYP	F	BEH	N
98.	DEP	T	AFL	N
99.	DEN	F	APR	Y
100.	INP	T	CBL	Y

101.	ALN	T	CBL	N
102.	PEI	F	CSL	N
103.	ANX	T	AFL	N
104.	THD	F	CSL	N
105.	IME	T	BEH	Y
106.	SOI	F	APR	Y
107.	SDP	T	CBL	N
108.	DEV	T	CSL	Y
109.	HYP	T	AFL	Y
110.	DEP	F	CSL	N
111.	DEN	T	CSL	Y
112.	INP	F	BEH	Y
113.	ALN	F	APR	Y
114.	PEI	T	AFL	N
115.	ANX	F	AFL	Y
116.	THD	T	CSL	N
117.	IME	F	CSL	N
118.	SOI	T	AFL	Y
119.	SDP	F	CBL	N
120.	DEV	T	BEH	Y
121.	HYP	F	CSL	Y
122.	DEP	T	CSL	Y
123.	DEN	F	AFL	N
124.	INP	T	APR	N
125.	ALN	T	AFL	N
126.	PEI	F	AFL	Y
127.	ANX	T	AFL	Y

128.	THD	F	CSL	N
129.	IME	T	AFL	N
130.	SOI	F	APR	Y
131.	SDP	T	CSL	N
132.	DEV	T	BEH	Y
133.	HYP	T	BEH	Y
134.	DEP	F	CSL	N
135.	DEN	T	BEH	N
136.	INP	F	CSL	N
137.	ALN	F	CSL	Y
138.	PEI	T	AFL	Y
139.	ANX	F	AFL	Y
140.	THD	T	CSL	Y
141.	IME	F	AFL	N
142.	SOI	T	AFL	Y
143.	SDP	F	APR	Y
144.	DEV	T	BEH	N
145.	HYP	F	AFL	N
146.	DEP	T	CSL	N
147.	DEN	F	BEH	Y
148.	INP	T	APR	Y
149.	ALN	T	CBL	N
150.	PEI	F	CBL	Y
151.	ANX	T	AFL	N
152.	THD	F	CSL	N
153.	IME	T	BEH	Y
154.	SOI	F	APR	Y

155.	SDP	T	CSL	N
156.	DEV	T	APR	Y
157.	HYP	T	CSL	Y
158.	DEP	F	CSL	N
159.	DEN	T	APR	N
160.	INP	F	CSL	Y
161.	ALN	F	CSL	N
162.	PEI	T	AFL	Y
163.	ANX	F	AFL	Y
164.	THD	T	AFL	N
165.	IME	F	BEH	N
166.	SOI	T	CBL	N
167.	SDP	F	CSL	N
168.	DEV	T	CSL	N
169.	HYP	F	BEH	Y
170.	DEP	T	AFL	N
171.	DEN	F	CBL	Y
172.	INP	T	BEH	Y
173.	ALN	T	CBL	N
174.	PEI	F	CBL	N
175.	ANX	T	AFL	N
176.	THD	F	BEH	Y
177.	IME	T	BEH	N
178.	SOI	F	APR	N
179.	SDP	T	CSL	N
180.	DEV	T	CSL	N
181.	HYP	T	CSL	N

182.	DEP	F	AFL	N
183.	DEN	T	CSL	Y
184.	INP	F	AFL	Y
185.	ALN	F	AFL	Y
186.	PEI	T	AFL	Y
187.	ANX	F	CSL	N
188.	THD	T	CSL	Y
189.	IME	F	BEH	N
190.	SOI	T	AFL	Y
191.	SDP	F	CSL	Y
192.	DEV	T	BEH	Y
193.	HYP	F	CSL	N
194.	DEP	T	APR	Y
195.	DEN	F	AFL	Y
196.	INP	T	APR	Y
197.	ALN	T	BEH	Y
198.	PEI	F	BEH	Y
199.	ANX	T	AFL	N
200.	THD	F	CSL	Y
201.	IME	T	BEH	Y
202.	SOI	F	AFL	Y
203.	SDP	T	CBL	N
204.	DEV	T	CSL	Y
205.	HYP	T	BEH	N
206.	DEP	F	CSL	N
207.	DEN	T	BEH	Y
208.	INP	F	AFL	N

209.	ALN	F	CBL	N
210.	PEI	T	CSL	Y
211.	ANX	F	CSL	Y
212.	THD	T	AFL	Y
213.	IME	F	CSL	N
214.	SOI	T	APR	N
215.	SDP	F	CSL	N
216.	DEV	T	CSL	N
217.	HYP	F	AFL	N
218.	DEP	T	AFL	Y
219.	DEN	F	BEH	Y
220.	INP	T	AFL	Y
221.	ALN	T	BEH	Y
222.	PEI	F	CBL	N
223.	ANX	T	AFL	Y
224.	THD	F	BEH	N
225.	IME	T	AFL	Y
226.	SOI	F	AFL	Y
227.	SDP	T	CSL	Y
228.	DEV	T	AFL	Y
229.	HYP	T	AFL	Y
230.	DEP	F	CSL	N
231.	DEN	T	BEH	N
232.	INP	F	CBL	N
233.	ALN	F	CBL	Y
234.	PEI	T	CBL	Y
235.	ANX	F	CSL	N

236.	THD	T	CSL	N
237.	IME	F	BEH	Y
238.	SOI	T	BEH	Y
239.	SDP	F	BEH	N
240.	DEV	T	BEH	Y

Note. HYP = Hypochondriasis, DEP = Depression, DEN = Denial, INP = Interpersonal Problems, ALN = Alienation, PEI = Persecutory Ideas, ANX = Anxiety, THD = Thinking Disorder, IME = Impulse Expression, SOI = Social Introversion, SDP = Self Depreciation, DEV = Deviation, BEH = Behavioural, APR = Affective Preferences, AFL = Affective-feeling, CSL = Cognitive-self, CBL = Cognitive-beliefs.

Appendix B

Consent Form

Computer Project

I, _____ have been asked to take part in a study about how offenders respond to personality and adjustment items on a computer which is being conducted by Daryl Kroner, under the supervision of Dr. Adelle Forth from the Department of Psychology, Carleton University, as part of the requirements for his Ph.D.

Participation in this study involves answering questions on a computer with a true or false response. The testing session will take between 20 to 35 minutes. You will have an opportunity for a break after every 60 items.

The information collected on the computer is solely for research and will be kept confidential. Publication of the results will not result in you being identified as a participant. Information obtained from the computer will not be put on any institutional file providing that you do not reveal anything that threatens the security of the institution.

By signing below, I consent to the disclosure of information in my institutional files to Daryl Kroner.

I understand that participation in this study will not affect any administrative decisions concerning me such as my pen placement or parole. My refusal to participate will also not affect my treatment by CSC in any way. I am free to withdraw from the study at any time for any reason without consequence or penalty to me.

I have read the above statement and freely consent to participation in this study.

(Signature of Subject)

(Signature of Witness)

Date: _____