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# Experimental Investigations of Information Processing Deficiencies in Psychopathic Individuals

*Implications for Diagnosis and Treatment*[1]

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Psychopathy is a prominent construct in the field of criminal justice. Its importance is due largely to the development and use of the Psychopathy Checklist (PCL; Hare, 1980) and the Psychopathy Checklist—Revised (PCL-R; Hare, 1991), which afforded clinicians and researchers highly reliable and valid methods of assessing psychopathy (e.g., Hare, 1996). Although their numbers in the general population are small, psychopathic individuals contribute disproportionately to the prison population—on the order of 15–25 percent (Hare, 1996). Moreover, psychopathic offenders (i.e., those who attain high PCL or PCL-R scores) commit more than twice as many crimes and, compared with non-psychopaths, are two to five times more likely to reoffend (e.g., Hare, 1996; Hemphill, Templeman, Wong, & Hare, 1998).

Psychopathic individuals' propensity for both violent and nonviolent offending has contributed considerably to interest in the construct. However, investigators have sometimes disagreed as to whether psychopathy is primarily a predisposition to commit antisocial acts or reflects a more general affective or cognitive deficit. The latter view is epitomized by the writings of Hervey Cleckley (1976), which have contributed greatly to the modern conceptualization of psychopathy. Cleckley proposed that antisocial behavior does not constitute an essential feature of psychopathy, and, indeed, that psychopathic individuals are not particularly prone to strong impulses of any sort. Rather, given even a relatively modest impulse (i.e., a response set or behavioral goal), psychopathic individuals are unlikely to exercise restraint.

It was also proposed by Cleckley (1976) that the behavioral manifestations of psychopathy result from a profound psychological (i.e., affective and/or information processing) deficit that acts as a

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predisposition to behave in ways that are harmful both to the psychopathic individual and to society. He acknowledged that psychopathic individuals present a convincing "mask of sanity" that includes superficial charm, good intelligence, and the absence of irrational thinking. Nonetheless, they typically are unreliable, insincere, impulsive, egocentric, afflicted by poor judgment, and relatively incapable of shame or remorse (Cleckley, 1976).

Cleckley (1976, p. 346) observed that:

> in complex matters of judgment involving ethical, emotional, and other evaluational factors
> . . . [the psychopath] shows no evidence of a defect. So long as the test is verbal or otherwise
> abstract, so long as he is not a direct participant, he shows that he knows his way about.

Nevertheless, "when the test of action comes to him we soon find ample evidence of his deficiency" (p. 346). That is, psychopathic individuals have the capacity for sound judgment and genuine affect, but the information required for these activities is less accessible when they are engaged in goal-directed behavior. As one psychopathic individual describes it:

> I always know damn well I shouldn't do these things, that they're the same as what brought
> me to grief before. I haven't forgotten anything. It's just that when the time comes I don't
> think of anything else. I don't think of anything but what I want now.

<div align="right">(Grant, 1977, p. 60)</div>

### Information Processing Deficiencies in Psychopaths

According to the response modulation hypothesis (RMH; Newman, 1998; Newman & Lorenz, 2003), attention plays a crucial role in moderating the affective and self-regulatory deficits associated with psychopathy. Response modulation entails brief and relatively automatic shifts of attention, from the organization and implementation of goal-directed behavior to the evaluation of ongoing behavior (see also, Newman & Wallace, 1993). This type of attentional shift is described as a relatively *automatic* information processing activity in that it involves a fast, fairly effortless process that can occur in parallel with other information processing activities (e.g., Schneider, Dumais, & Shiffrin, 1984).[2] Such processes do not require conscious control or attention in order to function properly.

One important function of response modulation is the initiation of *self-regulatory processes*. Self-regulation entails three conceptually distinct phases: (1.) self-monitoring, or carefully observing one's own behavior; (2.) self-evaluation, or comparing one's observed performance with one's performance standards; and (3) self-reinforcement, or one's positive or negative reactions to the self-evaluation (Kanfer & Gaelick, 1986). Each of these phases entails *controlled* information processing (Kanfer & Gaelick, 1986), which is a relatively slow processing mode that requires effort and conscious attention (e.g., Schneider et al., 1984). When self-regulatory processes are functioning properly, behavior that is judged to be appropriate is continued. If, on the other hand, available information indicates that a modification is necessary, then the appropriate adjustments are made in the ongoing behavior, or the behavior is inhibited and replaced with another response strategy.

The relatively automatic attentional process involved in response modulation can be understood as the initial link in a causal chain that culminates in the initiation of higher-order (i.e., controlled)

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2.    Although definitions of automatic versus controlled processing and the techniques used to evaluate them continue to evolve, the primary features of the constructs have remained fairly constant. Nevertheless, it is now recognized that this distinction is relative or continuous, rather than discrete. That is, relative to controlled processes, automatic processes are associated with less awareness, less intentionality, less susceptibility to regulation, and less cognitive load (i.e., less tax on mental resources; see Driver, 2001 for an historical review).

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cognitive processes that are fundamental to adaptive self-regulation (see Patterson & Newman, 1993). If there are abnormalities in the relevant attention process, then normal response modulation is precluded. Specifically, in the case of psychopathic individuals, it is proposed that an impairment in the adaptive deployment of attention results in a response modulation deficit that impairs their ability to use crucial contextual information to evaluate their behavior and to exercise adaptive self-regulation (MacCoon, Wallace, & Newman, 2004; Newman, 1998).

### Experimental Evidence for the RMH

In the following section, we review research that is relevant to the assertion that information that is not salient with respect to an immediate behavioral goal is less likely to attract the attention of psychopathic individuals, is less likely to be evaluated, and is less likely to be used to guide ongoing, goal-directed behavior.[3] First, we describe evidence that psychopathic individuals' ability to modify ongoing, goal-directed behavior in response to peripheral, non-salient information is impaired relative to nonpsychopaths. Second, we provide evidence that this failure to modify behavior occurs because the relatively automatic (i.e., mostly effortless) redirection of attention to information that is peripheral to goal-directed behavior occurs less readily in psychopathic individuals.

### Evidence for Impaired Response Modulation

Numerous experiments have examined the extent to which psychopathic individuals are able to use peripheral or non-salient information to alter their ongoing, goal-directed behavior or response set. To illustrate the deficit more clearly, we will describe three studies in detail.

In one of the earliest demonstrations of this deficit, Newman, Patterson, and Kosson (1987) utilized a computerized card game that afforded participants the opportunity to win money. On each trial, participants had to choose either to "play" a card (and either win or lose money) or quit the game. By making the initial probability of winning quite high, a response set to play cards was established. However, as the game progressed, the probability of winning versus losing shifted steadily. Hence, to maximize their gains, the participants had to alter their response set (i.e., stop playing cards). As predicted, psychopathic individuals played more cards and lost more money than did non-psychopathic individuals, a finding that has since been replicated in children who exhibit high levels of psychopathic characteristics (e.g., O'Brien & Frick, 1996). In other words, psychopathic individuals were less likely to alter their response set in light of the changing probabilities of the game, even though it clearly is in their best interests to do so.

Newman and Kosson (1986) tested psychopathic individuals' ability to alter a response set using a go/no-go task during which participants were instructed to press a button when designated target numbers appeared on a computer monitor, and not to press when nontarget numbers appeared. There were two conditions: In one condition, participants won money for correct responses (button presses), which established a response set to press the button. In the other condition, participants lost money for incorrect responses, but did not win money for correct responses. Hence, a strong response set to press the button was established in the first condition, but not the second. Consistent with the RMH, in the condition in which a strong response set to press the button was established, psychopathic individuals made more incorrect responses (i.e., they failed to inhibit the button-press response when a nontarget number was present). In the condition involving punishment only, however, psychopathic individuals and non-psychopathic individuals did not differ in their task performance.

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3. Unless otherwise indicated, participants in the experiments described were male prison inmates who were diagnosed using the Psychopathy Checklist (PCL; Hare, 1980) or Psychopathy Checklist—Revised (PCL-R, Hare, 1991, 2003; see Chapter 3). Following the usual procedure (Hare, 1991), psychopaths were those with PCL-R scores greater than or equal to 30.

In Newman and Howland (1987), a computerized version of the Wisconsin Card Sorting Task was used to examine psychopathic and non-psychopathic individuals' behavior following the administration of feedback. The participants' task was to sort four symbol stimulus displays on the basis of color, shape, or number of symbols. After 10 consecutive correct responses, the rule for sorting the displays was changed without warning (e.g., from sorting based on color to sorting based on shape). This required participants to revise their established sorting strategy (i.e., their response set) on the basis of feedback that was inconsistent with that set. Whereas low-anxious non-psychopathic individuals paused after rule changes, low-anxious psychopathic individuals—a subtype of psychopathy (Schmitt & Newman, 1999)—did not, a result consistent with the assertion that psychopathic individuals process less fully and make less use of information that is peripheral to the current response set.

Cleckley (1976) writes:

> Despite his excellent rational powers, the psychopath continues to show the most execrable judgment about attaining what one might presume to be his ends. He throws away excellent opportunities to make money . . . or to gain other ends that he has sometimes spent considerable effort towards gaining.
>
> (p. 345)

Similarly, in these studies, the psychopathic individual's failure to alter their response set was detrimental to no one but themselves. It is difficult, therefore, to construe the performance in these studies as arising from self-serving motivations.

Consistent with this assertion that psychopathic individuals' poor performance does not reflect lack of motivation or poor compliance, but rather a deficit in their ability to engage in response modulation, when psychopathic individuals are tested using paradigms that minimize the need to engage in response modulation, their performance does not differ from that of non-psychopathic individuals. For example, Newman, Patterson, Howland, and Nichols (1990) tested psychopathic and non-psychopathic participants using a variation on the go/no-go task described above that induced participants to process both reward and punishment contingencies at the outset of the task. This prevented reward from becoming the dominant focus and eliminated the need to alter a response set while performing the task. Under these conditions, psychopathic individuals performed as well as non-psychopathic individuals (Newman et al., 1990). Similarly, promoting the processing of peripheral information by using relatively long intertrial intervals and providing ample time to process less salient information has also resulted in psychopathic individuals showing performance indistinguishable from that of non-psychopathic individuals (for a review, see Newman & Wallace, 1993).

In summary, these early studies demonstrate that:

- Psychopathic individuals exhibit performance deficits when they must process information or task requirements that are peripheral to an established response set or behavioral goal.
- Psychopathic individuals are motivated and able to make adaptive use of information (including cues for punishment) when there is no need to alter their response set.

What is less clear, based on these results, is the extent to which this failure to process fully or utilize information that is peripheral to the current response set is mediated by abnormalities in attention processing or by impairments in other motivational and/or emotional processes. As a result, subsequent experiments have tested the RMH by assessing participants' attention processing more directly.

**Evidence for the Role of Attention**

Early evidence for abnormal attention processing in psychopathic individuals consistent with the RMH is provided by Jutai and Hare (1983). In this study, the authors examined event-related brain

potentials (ERPs) that were evoked by brief tones. The index of the extent to which attention was directed to the tones was the amplitude of the N100 ERP component, which is considered to reflect primarily the involuntary or automatic direction of attention (Näätänen, 1988). Participants heard the tones either while not engaged in any other activity or while playing video games and were told that the tones were not relevant to their task of scoring as many points as possible in the video games. Psychopathic and non-psychopathic participants did not differ in N100 amplitude when the tones were presented in the absence of a competing activity (i.e., playing a video game). Conversely, when the competing activity was introduced, the amplitude of psychopathic individuals' N100 was significantly less than that of non-psychopathic individuals. That is, relative to non-psychopathic individuals, psychopathic individuals appeared deficient in their involuntary or automatic direction of attention to the tones. Furthermore, this study demonstrated that the disparity was evident only when the eliciting stimulus was peripheral to ongoing goal-directed behavior.

Newman, Schmitt, and Voss (1997) examined attention processing among psychopathic individuals using a computerized picture–word (PW) Stroop task developed by Gernsbacher and Faust (1991, Experiment 3). In this task, participants are told to determine whether or not two sequentially presented stimuli (e.g., the word "month" followed by the word "sweep") are conceptually related, and they win money based on the speed and accuracy of their responses. Importantly, on each trial, an irrelevant, to-be-ignored stimulus is presented simultaneously with the first of the relevant stimuli (see Figure 4.1). This irrelevant stimulus is distinguished from the relevant stimuli by its appearance: If the relevant stimulus is a word, then the irrelevant stimulus is a picture, and vice versa. The key to this experiment is that the to-be-ignored irrelevant stimulus is either conceptually related or unrelated to the second of the relevant stimuli.

Although the relation of the irrelevant stimulus to the relevant stimulus has no bearing on participants' manifest task, this relationship does have a marked effect on their task performance. Specifically, when the two relevant stimuli are conceptually unrelated (e.g., the words "month" and "sweep"), but the irrelevant stimulus (e.g., a picture of a broom presented simultaneously with the



**Figure 4.1** Sample Display Stimuli for the PW Stroop Task.

word "month") is conceptually related to the second of the relevant stimuli, participants are slower to determine that the two relevant stimuli were unrelated (Gernsbacher & Faust, 1991). Because participants are explicitly instructed to ignore the stimulus that is irrelevant to performance of the manifest task, the interference caused by the irrelevant cue is presumed to be relatively automatic.
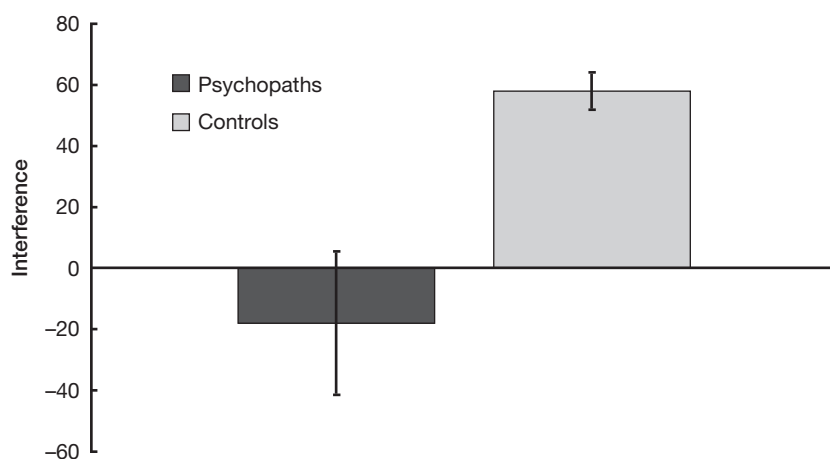
Based on the RMH proposal that psychopathic individuals are impaired in the relatively automatic shift of attention to peripheral information while engaged in goal-directed behavior, it was predicted that psychopathic individuals would be less affected by the presence of an irrelevant but conceptually related stimulus than nonpsychopathic individuals. Consistent with this hypothesis, as shown in Figure 4.2, low-anxious psychopathic individuals showed no interference on the trials involving irrelevant but conceptually related stimuli. They responded just as quickly when the irrelevant stimulus was related to the relevant stimulus as they did when irrelevant and relevant stimuli were unrelated. Conversely, as was the case with "normal samples" (Gernsbacher & Faust, 1991), low-anxious nonpsychopathic participants responded more slowly when the to-be-ignored stimulus was related to the second relevant stimulus. In other words, psychopathic individuals were less affected than were nonpsychopathic individuals by the peripheral information.

This finding has been replicated conceptually with a PW Stroop task in both male (Hiatt, Schmitt, & Newman, 2004) and female (Vitale, Brinkley, Hiatt, & Newman, 2007) offenders and adolescents with psychopathic traits (Vitale et al., 2005). On this task, participants name pictures while attempting to ignore superimposed, incongruent words. The conflicting peripheral information (the words) reliably slows the picture-naming of normal samples (Golinkoff & Rosinski, 1976). As on the PW Task, low-anxious psychopathic individuals differed significantly from non-psychopathic participants in that their task performance was not impaired by the presence of the incongruent words.
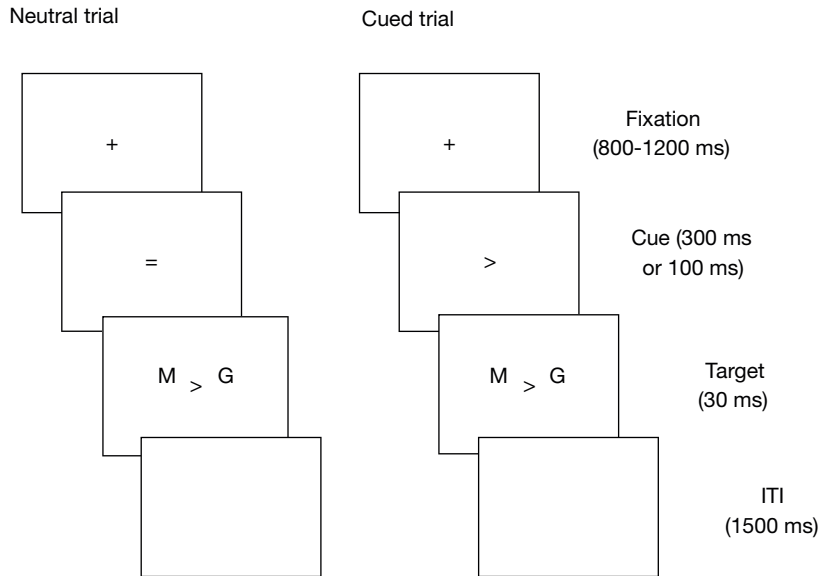
The results presented above suggest that, whereas information peripheral to ongoing goal-directed behavior will be processed relatively automatically by non-psychopathic individuals, this is not the case for psychopathic individuals. Instead, once the psychopathic individual's focus of attention has been established in service of a goal, information peripheral to that focus will fail to attract processing. In a strong test of this assertion, Zeier, Maxwell, and Newman (2009) used a modified Erikson flanker task that enabled them to manipulate directly the participants' focus of selective attention. On each trial of this task, participants are presented with a display that consists of two stimuli, one that appears in the left visual field and one in the right, as well as a centrally



**Figure 4.2**  Average Interference from Psychopathic versus Non-psychopathic Individuals on the PW Stroop Task.

presented arrow that points towards the stimulus that is serving as the "target" stimulus for that trial. On each trial, the participant is instructed to indicate whether the target stimulus is a letter (e.g., G, M) or a number (e.g., 5, 8). Previous research shows that, when the target stimulus is incongruent with the nontarget stimulus (e.g., the target is a letter, and the nontarget is a number), participants are significantly slower to identify the target stimulus correctly.



**Figure 4.3** Sample Stimulus Presentation on the Directional Flanker Task.



**Figure 4.4** Average Interference for Psychopathic and Non-psychopathic Participants on Cued versus Neutral Trials of the Directional Flanker Task.

Importantly, as presented in Figure 4.3, before each trial, a pre-target stimulus appears on the screen. On some trials, referred to as "cued trials," this pre-target stimulus provides a cue for the location of the target stimulus (e.g., the pre-target stimulus is an arrow that points to the side on which the target stimulus will be located). On other trials, referred to as "neutral trials," the pre-target stimulus does not provide a location cue (e.g., the pre-target stimulus is an equal sign).

The results were consistent with the prediction that psychopathic individuals would be relatively insensitive to peripheral information when their attention was already engaged by a primary task. As shown in Figure 4.4, on cued trials (i.e., those trials on which a focus of attention was established), psychopathic participants' performance was significantly less affected than non-psychopathic participants' performance by the presence of an incongruent "nontarget" stimulus. However, there was no significant difference in the performance of psychopathic and non-psychopathic participants on neutral trials.

In summary, these data are consistent with the assertion that:

• Psychopathic individuals' insensitivity to peripheral information is most apparent when they have already engaged a primary focus of selective attention.

**Response Modulation and the Psychopathic Individual's Emotion Deficit**

One of the cardinal features of psychopathy is the psychopathic individual's apparent "inability to experience or appreciate the emotional significance of everyday life events" (Williamson, Harpur, & Hare, 1991, p. 260; see also, Cleckley, 1976). As a result, many researchers have proposed that psychopathy is characterized by a fundamental deficit in emotion reactivity (Blair, 2007; Lykken, 1957). However, an important implication of the RMH is that the processing of affective cues may not differ substantially from the processing of affectively neutral stimuli examined in the studies described above.

Specifically, according to the RMH, psychopathic individuals' demonstrated emotion deficits result primarily from their deficit in the relatively automatic reallocation of attention to peripheral, affective information while engaged in goal-directed behavior. Cleckley (1976) writes of Max: "He is, furthermore, lacking in the ability to see that others are moved. It is as though he were colorblind" (p. 40). In terms of the RMH, Max may not be "colorblind," but he *will* be deficient in his ability to attend to and to process the emotion cues present in his social interactions with others.

Recent proposals and findings from neuroscience are consistent with this assertion and with the results from the behavioral paradigms described above. For instance, Meffert, Gazzola, den Boer, Bartels, and Keysers (2013) found that, although psychopathic individuals showed less spontaneous (i.e., automatic) activation of brain regions involved in experiencing interactions than non-psychopathic individuals while viewing a set of video clips with emotional content, this group difference was reduced dramatically when psychopathic individuals were instructed to "feel with" the actors in the video. In other words, when the emotional content of the interactions was made part of the psychopathic participants' primary focus of attention, they showed responsiveness to emotion information closer to that of non-psychopathic individuals (see also, Moul, Killcross, & Dadds, 2012).

In a direct test of the prediction that psychopathic individuals will exhibit normal emotional reactivity under conditions that enable them to process fear-relevant stimuli, Newman Curtin, Bertsch, and Baskin-Sommers (2010) examined fear-potentiated startle (FPS) using a task that manipulated participants' focus of attention. The task required participants to view and categorize letter stimuli that could also be used to predict the administration of electric shocks. Instructions served to activate goal-directed behavior that involved either a focus on threat-relevant information (i.e., the color that predicted electric shocks [shocks on red; no shocks on green]) or an alternative, threat-irrelevant dimension of the letter stimuli (e.g., upper/lower case of the letter). As predicted by the RMH, under conditions that focused attention on the threat-relevant dimension of the stimuli, there was no evidence of a psychopathy-related deficit in FPS. However, psychopathic individuals

did display a significant deficit in FPS under conditions that required participants to focus on a threat-irrelevant dimension of stimuli (i.e., when threat cues were peripheral).

In a follow-up study, Baskin-Sommers, Curtin, and Newman (2011) provided further evidence that psychopathic individuals' insensitivity to threat cues and consequent deficit in FPS result only when their primary focus of attention has already been established. In this study, the authors measured FPS in a new sample of offenders in four conditions that crossed attentional focus (threat focus vs. alternative focus), with early versus late presentation of goal-relevant cues. As in Newman et al. (2010), results showed that there was no deficit in psychopathic participants' FPS under conditions that focused attention on the threat-relevant dimension of the experimental stimuli (i.e., threat-focus conditions), but there was a pronounced deficit in FPS when threat-relevant cues were peripheral to their primary focus of attention (i.e., alternative-focus conditions). Further, the psychopathic deficit in FPS was apparent only in the early alternative-focus condition, in which threat cues were presented *after* the alternative goal-directed focus had already been established.

Existing evidence suggests that FPS is generated via the amygdala (e.g., Davis, Falls, Campeau, & Kim, 1993). To test for possible differences in amygdala activation that might underlie differences in FPS among psychopathic and non-psychopathic individuals, Larson and colleagues (2013) completed an imaging study, using the FPS paradigm employed by Baskin-Sommers et al. (2011), with an independent sample of inmates. Results indicated that decreased amygdala activation in psychopathic offenders occurred only during the early, alternative-focus condition (i.e., the same condition under which psychopathic participants' FPS was impaired). Importantly, under this condition, psychopathic individuals also exhibited greater activation in selective attention regions of the lateral prefrontal cortex (LPFC) than non-psychopathic individuals, and this increased LPFC activation mediated psychopathy's association with decreased amygdala activation. In contrast, under conditions when they were explicitly attending to threat, psychopathic individuals' amygdala activation did not differ from non-psychopathic individuals. This pattern of amygdala activation closely parallels results for FPS and, moreover, highlights the potential role of the LPFC in mediating the failure of psychopathic individuals to process important information—including emotion cues—when it is peripheral to the primary focus of goal-directed attention. These results corroborate the idea that attention moderates the emotion deficits and apparent "fearlessness" of psychopathic individuals and, moreover, implicate an early attention bottleneck as a proximal mechanism for deficient response modulation in psychopathy (see Newman & Baskin-Sommers, 2012).

In summary, these studies demonstrate the following:

- The expression of psychopathic individuals' emotion deficit is dependent on whether emotion is primary to the goal or peripheral to the goal.
- The attention modulation of psychopathic individuals' emotion processing is found using behavioral, fear-potentiated startle, and neuroimaging measures.

### Synthesis

We suggest that psychopathic individuals suffer from a deficiency in their ability to allocate attention and controlled processing resources in a relatively automatic manner. This deficit diminishes the awareness and processing of potentially useful peripheral information and, consequently, interferes with the ability to regulate dominant response inclinations and goal-directed activity. As a result, unlike most people, who have a substantial capacity for anticipating the consequences of their actions, psychopathic individuals tend to be aware of those sorts of consideration only when they are (a) central to the current response set or ongoing activity, or (b) made salient prior to the initiation of goal-directed behavior or a response set. In other words, when information is central to the primary focus of attention, it may be utilized readily by the psychopathic individual. Conversely, when the information is peripheral to the current response set, and its accessibility thus depends on the

allocation of limited-capacity cognitive resources (i.e., when those resources are engaged elsewhere), the ability to utilize that information is—although not completely absent—diminished substantially.

This emphasis on the interaction between automatic and controlled processes is compatible with Cleckley's (1976) observation that the impaired judgment shown by psychopathic individuals is specific to circumstances in which they are engaged in goal-directed behavior. This does not mean that psychopathic individuals are incapable of regulating behavior, only that, for them, the redirection of attention and, hence, self-regulation will be more effortful (i.e., dependent upon controlled processing capacity rather than on more automatic processes). In consequence, the capability to utilize peripheral information will be especially vulnerable to disruption when available attentional and controlled processing resources are reduced, such as when psychopathic individuals are engaged in goal-directed behavior, when they are emotionally "caught up" in a situation, or when processing capacity is reduced owing to the use of drugs or alcohol.

### Implications for the Diagnosis and Treatment of Psychopathy

Historically, the prognosis for psychopathy has been poor, and research consistently suggests that psychopathic individuals are resistant to treatment. Compared with non-psychopaths, psychopathic individuals in treatment demonstrate poor program adjustment and higher attrition (e.g., Berger, Rotermund, Vieth, & Hohnhorst, 2012; Ogloff, Wong, & Greenwood, 1990; Olver & Wong, 2009, 2011) and lower levels of therapeutic gain (Chakhssi, deRuiter, & Berstein, 2010; Hughes, Hogue, Hollin, & Champion, 1997; Roche, Shoss, Pincus, & Ménard, 2011). Further, in some studies, treatment appears to be associated with heightened recidivism rates for psychopaths (e.g., Hare, Clark, Grann, & Thornton, 2000; Rice, Harris, & Cormier, 1992).In the following section, we:

- argue that, based on the evidence of distinct etiological processes, psychopathy should be differentiated from ASPD and other externalizing syndromes for the purposes of diagnosis and treatment;
- provide an RMH-based explanation for why traditional treatment approaches may be unsuccessful with psychopathic individuals;
- provide an alternative method of treating psychopathy based on a cognitive remediation approach.

### Psychopathy as a Distinct Diagnostic Entity

One important implication of the RMH is the need to differentiate psychopathy from ASPD and other antisocial syndromes for the purposes of diagnosis and treatment. In terms of treatment approaches, this necessity might be best understood in the context of the distinction between cognitive distortions and cognitive deficiencies and their different implications for intervention. According to Kendall and Dobson (1993), a *cognitive deficiency* involves a lack or deficit in some specific type of information processing activity (e.g., working memory impairments associated with schizophrenia). *Cognitive distortions*, on the other hand, are the result of intact, but dysfunctional, processes (e.g., excessively negative thoughts about the self associated with major depressive disorder).

Central to many of the cognitive–behavioral and social skill interventions currently used to treat ASPD, psychopathy, and other antisocial syndromes is the assumption of cognitive distortion. For example, Samenow (1996) details a set of "thinking patterns" associated with the criminal personality, including "defaulting on responsibilities that are not to the criminal's liking or interest" (p. 147) and "fear of being put down" (p. 147), and Walters and Di Fazio (2000) describes eight "thinking styles" that contribute to a criminal lifestyle, including entitlement, power orientation, and superoptimism. Similarly, cognitive therapy theorists (e.g., Beck, Freeman, & Davis, 2004; Young, 1994) propose that ASPD, like many other psychiatric disorders, reflects the influence of

dysfunctional or maladaptive schemas. Schemas are cognitive structures that (a) are based on past experience, (b) guide information processing, and (c) represent beliefs about the self and one's physical and social environment. The products of schema-based information processing include judgments, inferences, and attributions, such as interpretations of one's own or others' actions (e.g., social inferences), and specific thoughts and expectations about the present and future.

Like dysfunctional thinking patterns, dysfunctional schemas will give rise to judgments, inferences, and attributions that are consistently biased in an erroneous manner (i.e., they will cause cognitive distortions). For instance, one who believes that others are likely to be hostile is at risk of interpreting an ambiguous interaction as reflecting an aggressive intent (e.g., Dodge & Crick, 1990) and then acting in accord with this misperception (e.g., in an aggressive manner). A number of maladaptive schemas have been implicated in the manifestations of ASPD, including "Wanting something or wanting to avoid something justifies my actions" (Beck et al., 2004, p. 175), "My thoughts and feelings are completely accurate, simply because they occur to me" (Beck et al., 2004, p. 175), and "the views of others are irrelevant to my decisions, unless they directly control my personal consequences" (Beck et al., 2004, p. 175).

Given this conceptualization, it is not surprising that interventions used to address antisocial behavior are often geared either towards changing these dysfunctional or maladaptive schemas through the use of structured cognitive–behavioral interventions (e.g., Hare et al., 2000; Seto & Barbaree, 1999) or towards altering the products of these schemas through the use of therapeutic community-based social skills, empathy, and/or anger management training (e.g., Ogloff et al., 1990; Rice et al., 1992).

In contrast to this conceptualization of ASPD, however, we propose that psychopathy is not characterized by cognitive *distortions* arising from the presence of dysfunctional or maladaptive schemas. Rather, we propose that this syndrome is best understood as reflecting cognitive *deficiency*: that is, a deficit in a specific information processing activity—specifically, the attention-based deficit in response modulation described in the first part of this chapter.

This is not to say that psychopathic individuals will not also be characterized sometimes by the presence of maladaptive or dysfunctional schemas. Such thinking has been well demonstrated among psychopathic individuals, and we might expect that a deficiency in the ability to evaluate the appropriateness of responses would lead to the sorts of life experience (e.g., frequent interpersonal conflicts) that might promote the development of such schemas (e.g., "others are hostile, therefore I am justified in taking advantage of them") and their resulting response repertoires (see also Serin & Kuriychuk, 1994). However, according to the RMH, the psychopathic individual's deficient attention processing will be more immediately influential in determining their behavior than the content of their thinking.

Clinical descriptions indicate that, even when no benefits result from noncompliance, psychopathic individuals are less likely than non-psychopathic individuals to follow societal rules or norms (see also, Blair, 1997). In direct contrast to formulations that emphasize deliberate noncompliance with societal rules and expectations on the part of the psychopathic individual, according to the RMH, the chronic violation of social norms displayed by psychopathic individuals may stem from their inability to access well-developed rule-related schemas once goal-directed behavior has been initiated. Much of one's knowledge of social norms is based on prior experience and stored in schema-like cognitive structures (e.g., the sequences of events that occur in familiar situations such as visiting a restaurant: being seated, ordering from a menu, dining, paying a bill; Nisbett & Ross, 1980). However, it is likely that, because the RM deficit constrains the psychopathic individual's information processing, their schemas may be underdeveloped (i.e., lacking in normal social and/or emotional elaboration) or biased. Further, whereas most persons are able to benefit from existing schema-based information both prior to initiating and during social interactions, according to the RMH, psychopathic individuals' ability to use such information will be limited

once goal-directed behavior has been initiated. As a result, even if a psychopathic individual did develop socially appropriate schemas, such cognitions would be less likely to be used to guide his or her behavior.

In summary, we propose that the maladaptive and antisocial behaviors exhibited by psychopathic individuals are not primarily the result of cognitive distortions, as is the case for many non-psychopathic individuals with ASPD, but instead are rooted in a specific attention-based deficit in response modulation. Further, we believe that, if psychopathy is associated with a deficiency, rather than a distortion, treatments that focus foremost on changing dysfunctional thinking or maladaptive schemas will be ineffective. For these psychopathic individuals, it is not the *content* of the cognitions that is the primary problem: it is the *accessibility* of this content in the moment.

Given a clinical distinction between psychopathy and other antisocial syndromes, clinical assessments are needed to set psychopathy apart. Although there has been a recent proliferation in measures of the psychopathy construct (e.g., Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Levenson, Kiehl, & Fitzpatrick, 1995), given the well-demonstrated and long-established clinical utility of the PCL-R, we argue that this should continue to be the measure of choice, particularly in offender populations. Further, we suggest that clinicians may wish to consider that scores from 1 to 29 are likely to reflect the strength of antisocial schemas (and the resulting cognitive distortions), such as those associated with ASPD, whereas scores of 30 or more are likely to be indicative of the presence of the fundamental attentional, response modulation, and self-regulatory deficits that characterize psychopathy.[4]

A study by Vitale, Newman Serin, and Bolt (1998) provides some evidence for this assertion. In this study, the researchers examined the relationship between PCL-R scores and the tendency to make hostile attributions, which reflects the effects of hostile cognitive schemas (e.g., Beck et al., 2004) and is associated with an increased likelihood of enacting a hostile or aggressive response (e.g., Dodge & Crick, 1990). In our study of hostile attributions among incarcerated male offenders, we found that the likelihood of attributing hostile intent to the ambiguous, provocative behavior of another increased steadily with increasing PCL-R scores to approximately a score of 30, at which point the relationship plateaued. That is, PCL-R scores below 30 were associated with an increasing influence of hostile schemas, whereas those above 30 were not. Indeed, the correlation between PCL-R scores and hostile attributions in Caucasian offenders was .37 ($p < .01$) when psychopaths were eliminated from the distribution. This correlation dropped to .27 ($p < .05$) when the psychopaths were reinserted in the sample, and dropped further, to a nonsignificant .16, when participants with mid-range scores were removed from the sample (i.e., when only psychopaths and controls were included). Although unconventional, these analyses clearly demonstrate that mid-range PCL-R scores (i.e., those that may be associated with non-psychopathic criminality) were most related to hostile attributional style.

Riser and Kosson (2013) examined the criminal behavior and cognitive processing of individuals with ASPD with and without comorbid psychopathy. In keeping with the proposal that the two syndromes should be differentiated, the authors found that ASPD individuals with psychopathy had been charged with more types of crime (i.e., criminal versatility), and more violent and nonviolent crimes, than individuals with ASPD only. Further, ASPD individuals with psychopathy

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4.  Although the PCL-R cutpoint of 30 is the most common value both in research and applied settings, it should be used to generate diagnostic and treatment hypotheses only (as is the case for any psychometric assessment instrument). Some 'true' psychopaths may score somewhat less than 30, and some ASPD non-psychopaths may score somewhat above 30. For example, based on differences in the laboratory performance of Caucasian and African-American offenders diagnosed using the PCL-R, Lorenz and Newman (2002) have speculated that, whereas a score of 30 on the PCL-R may indicate the point at which cognitive deficiencies begin to have the greatest influence upon Caucasian offenders, this may not be the case for African-Americans.

performed significantly more slowly than ASPD-only individuals on a global–local test of cognitive processing.

To summarize, even if the behavioral manifestations at times appear similar, it will not serve the purposes of diagnosis to group persons within the same diagnostic category if the underlying causal processes markedly differ. In consequence, because the psychopathology of the psychopathic individual in all likelihood results from cognitive processes that differ qualitatively from those that characterize the non-psychopath with ASPD (i.e., cognitive deficiencies stemming from specific information processing deficiencies vs. cognitive distortions resulting from the influence of antisocial schemas), it is not sufficient to categorize the psychopathic individual's problem as ASPD. Rather, psychopathy merits a separate diagnosis and, potentially, a separate treatment approach.

### Treatment Considerations for Psychopathy

Given the proposed differences in the etiological processes associated with non-psychopathic ASPD and psychopathy (i.e., cognitive distortions vs. information processing abnormalities), it should be expected that there might be differences between these groups in the treatment outcomes for standard cognitive therapy interventions. Specifically, we would expect cognitive therapy to be less effective for psychopathic individuals than for ASPD non-psychopaths. This is because cognitive therapy presupposes that the individual's distorted cognitions will be accessible to the individual (Beck et al., 2004). Furthermore, beyond just the awareness of the cognitions (i.e., specific judgments, interpretations, and inferences) arising from schemas or thinking styles, there is a need for those cognitions to be processed and for the consequent behavioral responses to be evaluated. This allocation of attention can occur in a controlled manner if, for example, the schema is intentionally accessed owing to its relevance to the current behavioral goal. Nevertheless, as discussed above, the direction of attention and controlled processing both to external and to internal stimuli (such as cognitions) often proceeds in an automatic manner (Wallace & Newman, 1997). Hence, the awareness and processing of schema products will often depend on the relatively automatic allocation of cognitive resources.

We have postulated that psychopathic individuals suffer from a deficiency in the automatic direction of attention to external and internal stimuli that are peripheral or nonsalient in the context of an ongoing behavioral response. Hence, for psychopathic individuals, internal stimuli will receive substantially less processing, especially when those cognitions are peripheral to an ongoing response or response set. Therefore, standard cognitive therapy focused on altering maladaptive schema content or dysfunctional thinking is expected to be less effective for psychopathic individuals than for non-psychopathic individuals with ASPD.

Importantly, we are *not* asserting that schemas and cognition products are without influence in psychopathic individuals. First, psychopathic individuals' ability to access schema contents or products in a controlled or intentional manner is comparable to that of non-psychopathic individuals. Second, prior to the initiation of goal-directed behavior, the accessing of schemas should not be compromised.

This second point implies that schema-based processing that occurs prior to the initiation of a response set may influence the types of response or response sets that subsequently are initiated. For example, psychopathic individuals who, in addition to having the hypothesized information processing deficiencies, have developed antisocial schemas will be more prone to initiate antisocial responses than will psychopathic individuals whose schemas are relatively pro-social (e.g., that do not produce cognitive distortions, such as hostile attributions for others' actions).

More generally, we propose that maladaptive (as well as compensatory or otherwise adaptive) schemas will be more influential for shaping the behavior of psychopathic individuals prior to initiating response sets, whereas their information processing deficiencies will be the primary psychopathological influences once a response set has been initiated. Three conclusions follow:

- Standard cognitive interventions aimed at modifying antisocial cognitions are likely to have some efficacy in controlling the psychopathic individual's *premeditated* antisocial behavior, but, because most persons, including psychopathic individuals, at times experience fleeting inappropriate or antisocial thoughts and impulses, these interventions will have less impact on impulsive antisocial behavior or antisocial behavior secondary to an established behavioral goal.
- To control antisocial and other maladaptive response sets, psychopathic individuals will require compensatory strategies for circumventing the response modulation impairment that undermines their ability to engage appropriate self-regulation.
- Once compensatory strategies are developed, the psychopathic individual should be able to make effective use of adaptive, socially appropriate schemas across a variety of contexts.

While the evidence for psychopathic individuals' information processing deficiencies continues to develop, efforts to develop programs designed to build compensatory strategies have scarcely begun (Serin & Kuriychuk, 1994). Nevertheless, one potentially fruitful approach consistent with the idea of cognitive deficiency is to conceptualize the psychopathic individual's failure to attend to peripheral information as a specific skill deficit and to target this skill deficit through cognitive remediation.

### Cognitive Remediation for Psychopathy

Cognitive remediation is based on the assumption that, if we understand the mechanisms of behavior change, we can build interventions that capitalize on this understanding. Specifically, in a cognitive remediation intervention, the emphasis is on training individuals in the particular cognitive skills—such as paying attention to contextual cues, sustained attention, and working memory—that underlie behavior (Klingberg, 2010; Wykes & van der Gaag, 2001).

For example, in healthy adults, Klingberg and colleagues have shown that working memory training not only improves overall working memory capacity, but also changes the functioning of dopamine neurotransmission and brain plasticity (McNab et al., 2009). Research examining the effects of cognitive remediation for disorders with known cognitive abnormalities, such as attention deficit–hyperactivity disorder and schizophrenia, has been promising (Stevenson, Whitmont, Bornholt, Livesey & Stevenson; 2002; Wykes et al., 2003). If such an approach were adopted for psychopathy, it would allow clinicians to target specifically the cognitive–attentional deficits uniquely associated with the syndrome and potentially increase the likelihood of treatment success.

Along these lines, Baskin-Sommers, Curtin, and Newman (2015) designed a cognitive intervention that targeted the response modulation deficit associated with psychopathy and examined the efficacy of this intervention in a sample of incarcerated adult male offenders. Participants in the study were 124 substance-dependent inmates who were classified as psychopathic or non-psychopathic. As outlined in Figure 4.5, following pretesting on a set of tasks that assessed both RM-related and unrelated skills, participants were randomly assigned to one of two treatment conditions: In the psychopathy-specific "attention to context" condition, inmates participated in a 1-hour, computer-based training session once a week for 6 weeks that used three tasks targeting the RM deficit. Each task provided individuals with opportunities to practice attending to peripheral or nonsalient cues and noticing changes in contextual information (e.g., rule changes). In the non-psychopathy-specific control condition, participants also completed a 1-hour, computer-based training session once a week. However, in this control condition, the tasks were not selected to address specifically the RM deficit, but focused, instead, on providing practice inhibiting behavior and regulating emotion reactions more generally.

It was hypothesized that, with appropriate training, psychopathic individuals who are normally oblivious to important affective, inhibitory, and punishment cues that contraindicate ongoing goal-directed behavior could learn to attend to such peripheral information.

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As presented in Figure 4.6, consistent with the hypothesis, after 6 weeks of computerized training, psychopathic individuals in the "attention to context" (i.e., the psychopathy-specific) training group demonstrated significant improvement, not only on the three training tasks, but also on the RM-related tasks that had been used at pre-testing. Conversely, psychopathic participants in the control condition showed no significant improvement over the course of training on the non-psychopathy-specific training tasks and showed significantly less improvement on the post-training RM tasks than those in the "attention to context" group.
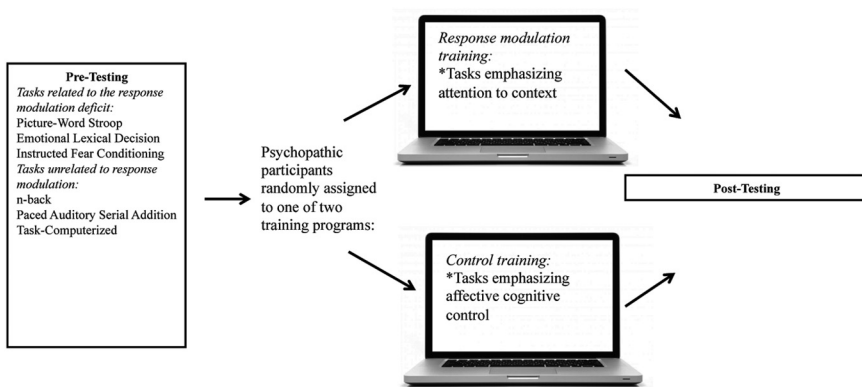


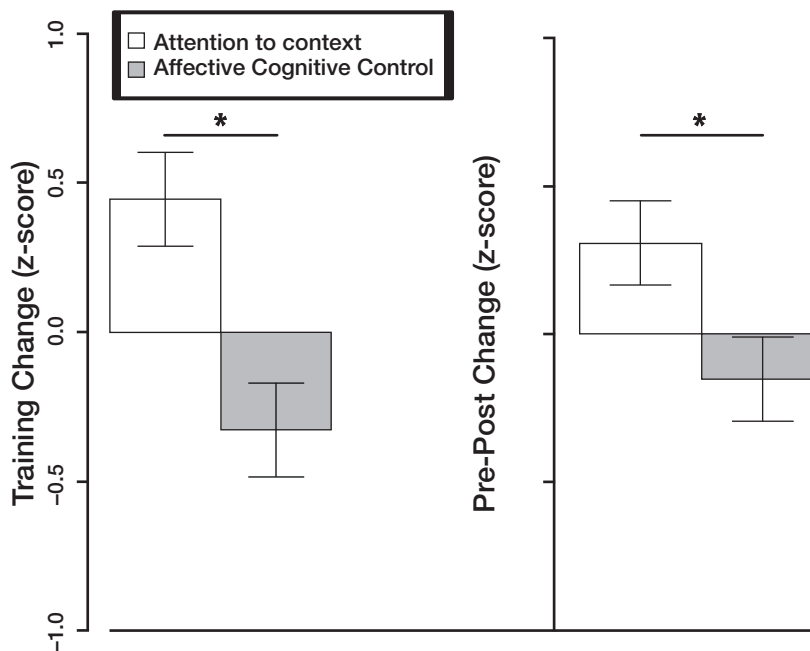**Figure 4.5**  Design of the Cognitive Remediation Treatment Study.



**Figure 4.6**  Results for Psychopathic Participants from Baskin-Sommers et al. (2015).

Although these data represent only the first test of the efficacy of a cognitive remediation approach to psychopathy, given the apparently intractable nature of their deficits and long-standing pessimism regarding treatability, these results represent a major step forward in the area of psychopathy treatment. Further, this study highlights the value of identifying, developing, and testing mechanism-based intervention and the substantial potential for addressing psychopathic individuals' disinhibited and costly behavior by identifying and targeting the specific RM dysfunctions that characterize the disorder.

## Summary

We have proposed in this chapter that psychopathic individuals suffer from a general information processing deficiency involving the relatively automatic shift of attention to stimuli that are peripheral to ongoing goal-directed behavior. This deficiency is detrimental to the psychopathic individual because it constitutes an impairment in the response modulation process. Response modulation (a) entails brief and relatively automatic shifts of attention from the implementation of goal-directed behavior to its evaluation, and (b) is crucial to initiating controlled processes associated with self-regulation. Because this deficiency differs qualitatively from proposed etiologies for other antisocial syndromes, including the schema-based etiology put forward by cognitive therapists, the present formulation implies that psychopathy merits a separate diagnosis. We also have speculated that the primary instrument for diagnosing psychopathy—the PCL-R (Hare, 2003)—should be conceived as reflecting a continuous measure of the strength of antisocial schemas of the sort associated with ASPD at scores lower than about 30, and the presence of attentional, response modulation, and self-regulatory deficiencies at levels of 30 and above.

With respect to treatment implications, the range of PCL-R scores roughly from 1 to 29 might be used to estimate the extent to which antisocial schemas and cognitive distortions are influential and, hence, the extent to which standard cognitive therapy interventions aimed at altering those schemas might be useful. Cognitive interventions aimed at altering maladaptive schemas might also produce some benefit for psychopathic individuals (i.e., those scoring 30 or above on the PCL-R) in decreasing premeditated antisocial behavior. On the other hand, cognitive remediation interventions, such as those employed by Baskin-Sommers et al. (2015), might aid psychopathic individuals in compensating more directly for their attentional and RM deficits and, in turn, make them better able to utilize adaptive self-regulatory processes and to benefit from other therapeutic interventions.

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