

CONTENT MEETS PROCESS: USING ATTRIBUTIONS AND STANDARDS TO INFORM COGNITIVE VULNERABILITY IN PSYCHOPATHY, ANTISOCIAL PERSONALITY DISORDER, AND DEPRESSION

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Psychopathic individuals' cognitive vulnerability consists of failing to attend to non-dominant cues (Gorenstein & Newman, 1980; Patterson & Newman, 1993). We argue that multiple attributions and standards are activated by a given situation in varying degrees and that attentional capacity is required to use non-dominant attributions or standards. Thus, constraints in processing moderate the content that underlies behavior. More specifically, we discuss how the process-based variable of dominance can inform understanding of aggression in Antisocial Personality Disorder (ASPD) and negative affect in depression. Conversely, we use attributions and standards to clarify how the process-based cognitive vulnerability associated with psychopathy results in dysregulated violence, hostile attributions, lack of responsibility, and violation of standards. We conclude that the dimension of dominance, valuable in specifying the psychopathic cognitive vulnerability, has utility in elucidating other cognitive vulnerabilities and that the content-based models associated with aggression and depression lend specificity to process-based vulnerabilities.

This article focuses on a hypothesized cognitive vulnerability for psychopathic individuals that emphasizes the role of attention. Specifically, in their response modulation hypothesis (RMH), Newman and colleagues (Gorenstein & Newman, 1980; Patterson & Newman, 1993) propose that psychopathic individuals fail to attend to, and thus process, any information that is not part of their current focus of attention. That is, when psychopathic individuals focus their attention on "dominant cues," they often fail to process non-dominant cues that can play an important role in moderating behavior.

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For example, both a psychopathic and non-psychopathic individual (with an antisocial background) might focus their attention on stealing money from a security truck. Such a focus might include external cues (e.g., the location of the truck) and internal cues (e.g., the “rush” associated with the prospect of becoming rich). Suppose other cues exist that are not the current focus of attention, such as the presence of an undercover police officer and thoughts of getting caught and going to jail. According to the RMH, the psychopath’s cognitive vulnerability is characterized by difficulty attending to and processing external or internal non-dominant cues (i.e., cues that are not consistent with their current focus). Thus, in this example, whereas a non-psychopathic individual’s desire to steal money may be moderated by the presence of an undercover police officer or thoughts of going to jail, a psychopathic individual is less likely to process such cues and thus is more likely to attempt the theft. According to the RMH, then, the callous, impulsive, and violent behavior that characterizes criminal psychopaths results from failing to access information that non-psychopathic individuals do access. It is important to emphasize that the information psychopaths fail to access is hypothesized to be of a particular status (i.e., non-dominant information) rather than a particular type.

This process-based approach to psychopathy is not as readily understood or intuitively appealing as competing, more content-based, accounts of psychopathic behavior. For example, the hypothesis that psychopathic individuals are characterized by fearlessness (e.g., Lykken, 1957; 1995) has intuitive and direct connections to the commission of crimes. In contrast, the dominant/non-dominant dimension highlighted by the RMH seems complicated and its connections to violence not easily made.

In this article, we pursue two goals related to integrating process- and content-related variables. First, we clarify the connection between the RMH and psychopathic characteristics using the content-rich constructs of attributions and standards. Second, we employ the process-related dimension of dominance from the RMH to supplement the content-related proposals associated with Antisocial Personality Disorder (ASPD) and depression. The cross-fertilization between process- and content-based views of cognitive vulnerability should improve both areas of research.

To meet these goals, we first establish the empirical validity of the RMH’s view of psychopathy by briefly reviewing key findings. To help with the cross-fertilization of process and content variables, we adopt neural network language to clarify the dominant/non-dominant dimension. We then use this translation to apply the RMH perspective to concepts central to the cognitive vulnerability tradition—attributions

and standards. First, we discuss how the dominance dimension can be applied to content-based concepts such as standards and attributions in ASPD and depression. The aggressive behavior characteristic of ASPD provides common ground with psychopathy, whereas depression illustrates the potential applicability of a process-based dimension for emotional dysregulation. Second, we discuss how RMH's process-based approach to psychopathy can be clarified using the content-based constructs of attributions and standards.

PSYCHOPATHY: EVIDENCE FOR THE PROPOSED COGNITIVE VULNERABILITY

Since its introduction, the RMH has been tested in numerous settings, using a variety of different laboratory tasks. Because this evidence has been reviewed elsewhere (Newman, 1998; Newman & Lorenz, 2003), we simply highlight some relevant examples. Poor passive avoidance has been recognized as a valid and reliable measure of impulsivity (Lykken, 1957; Newman & Kosson, 1986; Trasler, 1978) and is one hallmark of psychopathic behavior (Hare, 1991; Patterson & Newman, 1993). In a typical passive avoidance task, participants are required to respond to rewarded numbers and inhibit responses to punished numbers. Passive avoidance errors (i.e., responding to bad numbers) are errors of commission and are regarded as impulsive. Our laboratory has found that psychopathic inmates only show impulsive behavior on this task compared to controls in situations that require shifting attention to non-dominant cues. For example, Newman and Kosson (1986) observed poor passive avoidance among psychopathic inmates in a condition that involved two sets of stimuli (i.e., rewards and punishments) but did not find any deficits in a condition that involved punishment cues alone. Newman, Patterson, Howland and Nichols (1990) used a similar task but measured how much time a participant paused to process feedback. In a condition that involved both punishment and reward stimuli, psychopaths paused less following punishment and committed more impulsive errors than controls (Study 1). Importantly, when participants were forced to focus their attention on both reward and punishment from the outset of the task (Study 2), there were no group differences in the time spent processing feedback or in impulsive errors. These and other results suggest that failure to process inhibitory cues plays an important role in the impulsive behavior of psychopathic individuals. Furthermore, they suggest that psychopaths fail to process inhibitory cues when such cues are not their current focus of attention.

If attention allocation, rather than the content of information, accounts for the dysregulated behavior of psychopaths, psychopaths should fail to

attend to any non-dominant cues, even if they lack emotional significance. Newman, Schmitt, and Voss (1997) used a computer task with emotionally neutral dominant and non-dominant cues to test this prediction. In this task, participants viewed pictures with words super-imposed on them. If the dominant cue was a picture, a "P" preceded the trial; if the dominant cue was a word, a "W" preceded the trial. Participants perform better on this task if they are able to focus on the dominant cue and ignore the other, non-dominant, cue. Thus, psychopathic individuals should perform well on the task because they fail to shift attention to non-dominant cues, whereas controls should do so automatically. Results were consistent with this prediction: the irrelevant non-dominant cue interfered less with the performance of psychopaths than controls.

CONTEXT-APPROPRIATE BALANCED ATTENTION (CABA): A NEW TRANSLATION OF THE RMH

Though empirically robust, the dominant/non-dominant distinction lacks clear connections to rich detail provided by content. Recently, MacCoon, Wallace, and Newman (2003a) have translated the response modulation hypothesis into neural network language (an approach that relies heavily on the ideas of Cohen and colleagues [e.g., Cohen, Braver, & O'Reilly, 1996]) and emphasized the importance of Context-Appropriate Balanced Attention (CABA) between dominant and non-dominant cues.

From the CABA perspective, cognitive, emotional, and behavioral responses are represented as neural networks. When we use the term "response," it is meant to incorporate all three types of networks. Networks are influential to the degree they are activated and when networks compete (e.g., one network suggests an avoidance response and, another, an approach response), the most activated network normally determines an individual's response. Thus, dominance is viewed as a function of activation levels, with the most activated network being dominant and other, less activated networks, being non-dominant.

The activation level of a particular network is determined by bottom-up and top-down influences. A network can be activated automatically in a bottom-up way by the presence of a relevant cue.¹ For example, the presence of money bags exposed in an unguarded security truck might activate a behavioral approach network, whereas the presence of a police officer might activate a network associated with inhibition. Cues

1. We view automaticity and effortful control, described by Schneider and Shiffrin, (1977), Shiffrin and Schneider (1977), as occupying opposite ends of a theoretical continuum.

can be external or internal. The presence of a police officer might activate a cognitive network representing the thought, "I could get in trouble here" which, in turn, might act as an internal cue that automatically activates another, related, network, perhaps representing the thought, "if I go to jail, my family would be left alone." The extent to which a network is activated is proposed to be partly a function of the number of times the network has been associated with a particular cue in the past. Thus, if an individual has robbed numerous security trucks, the network representing that response is likely to be more activated than a noncriminal response. An individual with an antisocial background is thus likely to have more activated antisocial responses than an individual from a normative background.

It is obvious, however, that we are not entirely at the mercy of our past experience. Top-down, effortful, selective attention can bias the activation of its target network and thus our ultimate response. Though this perspective was inspired by modern cognitive neuroscience, William James (1890) captures its essence when he describes the mind as "a theatre of simultaneous possibilities. Consciousness consists in the comparison of these with each other, the selection of some, and the suppression of the rest by the reinforcing and inhibiting agency of attention" (p. 288). James's "theatre of possibilities" expresses the important assumption we make that multiple networks—associated with different types of reactions—are activated in any given situation. The point can be illustrated with a model of Stroop interference introduced by Cohen and Huston (1992). In this account, interference on the Stroop task occurs on incongruent trials because two networks are activated by the combined color-word stimulus. For example, if the word "blue" is written in green ink, one network would represent the response "blue" while another would represent "green." Participants are slower on these trials because they must use attention to activate the non-dominant color response (it is non-dominant because we are more accustomed to reading words and ignoring color than vice versa). It is likely that other networks also are activated even in this simple situation. For example, green-related concepts such as "grass" or "money" may be activated. This is consistent with the fact that interference occurs when people name the color of the word "grass" when printed in a nongreen color (Klein, 1964).

Thus, we suggest that a particular stimulus can activate several different types of networks (e.g., behavioral, cognitive, or emotional) as well as multiple networks of the same type (e.g., several emotion networks). For example, if both approach and inhibition responses are activated simultaneously in an individual (cued by the security truck and police officer respectively), focusing attention on the inhibition network will increase its influence and reduce the chances an individual will rob the security truck.

It is important to note that this view does not imply that activated networks always compete with each other or that individuals will be aware of these networks. Indeed, our account suggests that under certain circumstances non-dominant networks may not affect behavior in any appreciable way and that dysregulation can occur as a result.

At any given moment, the activation levels of various networks are determined by a combination of top-down and bottom-up influences. The CABA perspective emphasizes the importance of a context-appropriate balance between attending to dominant and non-dominant cues. The best response for a particular context may be represented by the most activated (or dominant) network or by a less activated (or less dominant) network. In the first case, top-down attention is not needed to engage in the best response. However, in the second case, top-down attention is necessary for activating the non-dominant response so it can out-compete the dominant—but maladaptive—response. It is in the latter situation that a psychopathic individual would appear dysregulated because, according to the RMH and CABA, a psychopathic individual fails to attend to non-dominant networks if their top-down attention already is committed to an alternative network.

Finally, Newman and Lorenz (2003; also see, Newman & Wallace, 1993) have proposed two pathways that lead to a failure to process non-dominant cues. One pathway involves the process-based deficit associated with psychopathy: Psychopathic individuals fail to process any non-dominant cue regardless of its emotional nature or their emotional state. The other pathway emphasizes that emotion can prevent the processing of non-dominant cues. Newman and Lorenz (2003) adopt Scherer's (1994) notion that as the intensity of an emotion increases, the amount of time an individual spends evaluating responses decreases. In network terms, as emotional intensity increases, attention will become increasingly focused on fewer, more dominant, networks. Thus, with increasing emotional intensity, an individual's response is increasingly likely to reflect the most activated networks available, without the moderating influence of non-dominant networks. Such a response is less likely to reflect accurately the demands of the current situation (Newman & Lorenz, 2003). The theorizing about both of these pathways suggests the relevance of the current process-based approach to non-psychopathic populations, such as individuals with ASPD or depression.

ATTRIBUTIONS AND PERSONAL STANDARDS AS DOMINANT OR NON-DOMINANT NETWORKS

In order to discuss the role of dominance in attributions and personal standards, it is necessary to make the simple point that the emotional

and cognitive content that make up various attributions or standards can be viewed as neural networks activated by a relevant cue. Just as with any network, it seems likely that a particular situation will activate more than one such network. Thus, the relative activation levels of these networks become important, as does an individual's ability to attend to non-dominant attributions or standards in a given situation.

APPLYING A PROCESS-RELATED VIEW TO ANTISOCIAL PERSONALITY DISORDER (ASPD) AND DEPRESSION

To illustrate the potential value of integrating the process-related dominance dimension with content-related perspectives, we apply dominance to ASPD and depression, two domains in which content-related perspectives are particularly well developed. In so doing, it is important to emphasize that we are not proposing a new theory nor providing adequate coverage of the content-related work in these areas.

ATTRIBUTIONS

Weiner (1985) suggested that when confronted with an outcome, an individual engages in a search for the causes of the outcome, making one or more attributions for it. The nature of these attributions influences the individual's responses. The process of making attributions can increase individuals' understanding of themselves and their environment, helping the individual manage his or her own reactions (Kelley, 1971). Gilbert and colleagues (Gilbert, Pelham, & Krull, 1988) have argued that people make relatively automatic social inferences about others and then, if they have the necessary attentional capacity, correct these inferences, in part by using contextual information. The accuracy of an individual's inferences may depend therefore on whether this final correction stage occurs.

The dominance dimension is particularly relevant in considering the nature of attributions likely to be made by an individual. In terms of networks, we suggest that an individual's automatic inferences represent the most activated network available at the moment. That is, the inference most strongly associated with the current situation is the one most likely to influence processing in the absence of top-down attention. Such dominant inferences can be corrected by using top-down attention to activate non-dominant networks that represent other information. As Gilbert has argued recently, "it makes sense to assume the usual and correct for the unusual" (Gilbert & Gill, 2000; p. 395). In our terms, it makes sense that responses would be guided by dominant networks and then moderated by non-dominant networks if time and capacity allow. Such

a perspective provides a speculative mechanism for at least some cases of “preemptive processing” in which individuals make impulsive attributions (Costanzo & Dix, 1983).

This perspective casts new light on what variables may influence the attributions individuals make. Specifically, if individuals lack the time or mental capacity to activate a non-dominant attribution, they will be more likely to use the most dominant causal explanation available. Accepting the dominant explanation for an event represents a problem only if a non-dominant attribution is more accurate. Only in this situation will top-down attention be necessary for choosing, and then acting on, the most context-appropriate attribution. That is, if a non-dominant network represents the most accurate attribution for an event, time or capacity to activate this attribution should improve self-regulation. Thus, we argue that attending to non-dominant networks often is required for well-regulated emotions, cognitions, and behavior.

As Millon (1981) lamented, a diagnosis of ASPD is based more on the antisocial behavior an individual commits than the cause of such behaviors. He argues that the cause of an individual’s aggressive behavior is “their anticipation that others will be hostile” (p. 182). This suggests a role for attributions in ASPD-related aggression. We use attributions and the dominance dimension to argue for at least three different causes for ASPD-related aggression: (1) at least some cases of ASPD are due to the presence of more aggressive content relative to non-ASPD individuals; (2) at least some cases of ASPD may be due to similar dominant attributions but different non-dominant attributions, a possibility that highlights the point that (3) at least some cases of ASPD may be caused by emotion-related focusing of attention on a restricted range of possible attributions.

The content of attributions has important implications for aggression in ASPD-related behaviors. At least in some cases of ASPD, it is likely that aggressive behavior is due to the presence of more aggressive content relative to non-ASPD individuals. Inasmuch as these individuals behave antisocially as children, a criteria that must be met for an ASPD diagnosis (American Psychiatric Association, 1994), it is likely they have developed a greater number of antisocial attributions. It has been well documented that individuals who make hostile attributions for an action taken by another are more likely to behave aggressively (e.g., Crick & Dodge, 1996; Dodge & Newman, 1981; Nasby, Hayden, & DePaulo, 1980). In these accounts, it is the type of attribution made that counts: a hostile attribution for another individual’s behavior (but not a pro-social one) makes aggressive behavior more likely.

The dominance dimension suggests that similarly aggressive individuals may have similar dominant content, but different non-dominant content. Suppose that two individuals are confronted with the same am-

biguous act (e.g., they are hit by a ball thrown by a peer), an event that activates several networks suggesting different attributions for the act. Suppose that in one individual, dominant and non-dominant networks alike represent hostile attributions. Such a person is unlikely to benefit from time and/or capacity to activate non-dominant networks because even non-dominant networks suggest attributions associated with an aggressive response (e.g., "He did it because he thinks I'm weak"). Suppose that in the second individual, one or more non-dominant networks exist that represent more adaptive attributions (e.g., "He is a friend of mine, it was an accident"). Time and/or capacity may reduce the likelihood of an aggressive response in this individual.

This last point suggests the involvement of a process-related variable in antisocial aggression. The emotion pathway, specified by Newman and Lorenz (2003; also see, Newman & Wallace, 1993), provides one set of circumstances in which an individual will narrow his or her attention to dominant attributions, and fail to activate non-dominant alternatives. This perspective provides an attentional mechanism for findings that emotional or threatening situations increase hostile attributions in aggressive but not nonaggressive boys (Dodge & Somberg, 1987) and that children confronted with a threatening situation have a higher probability of emitting a dominant response (Harris & Siebel, 1975).

The perspective also is consistent with Rubin and Krasnor's (1986) suggestion that children's solutions to social problems differ depending on whether these solutions are based on more automatic versus more reflective processes. Inspired in part by this perspective, Rabiner, Lenhart, and Lochman (1990) found evidence that this is the case. The authors presented participants with stories in which the main character was faced with a problem and participants were asked to generate a solution to the problem immediately after hearing the story (a condition designed to elicit more automatic responses) or after a 20 second delay (a condition designed to elicit more reflective responses). The authors compared the solutions generated by controls, nonaggressive rejected boys, and aggressive rejected boys. According to our perspective, these groups are likely to differ in the content of their activated attributions with aggressive rejected boys having more aggressive non-dominant attributions than nonaggressive rejected boys, who have more aggressive non-dominant attributions than controls. Given that controls have not been rejected as often as the other two groups, we would predict they would be more likely than the other groups to have a non-hostile, dominant attribution. We speculate that nonaggressive rejected boys have aggressive behavior in their repertoire because they have experienced hostility directed toward them in the past, but that networks representing nonaggressive behavior are more accessible for these individuals com-

pared to aggressive rejected boys. Thus, the groups should differ in how much benefit they derive from time to consider non-dominant attributions. Though not a direct test of this interpretation, the results are consistent with it. In the immediate condition, controls generated significantly more solutions involving verbal assertiveness (but nonaggressiveness) than either of the two rejected groups, but when given an opportunity to reflect (the delay condition), nonaggressive rejected boys more closely matched controls in the numbers of these solutions they generated. Both groups differed from the rejected aggressive boys, who showed low levels of verbally assertive solutions regardless of reflection time.

As another example, Dodge and Newman (1981) found that when decisions are made quickly, biases are exposed. We assume that bias is a function of failing to correct for maladaptive networks activated automatically by a situation. In this light, it is interesting that aggressive boys are likely to interpret their own behavior in terms of prior expectations, whereas nonaggressive boys are likely to rely on information from the current situation (Lochman & Dodge, 1998; also see, Dodge & Somberg, 1987). According to our perspective, such evidence suggests that aggressive boys may rely on activated networks formed from previous experience, whereas nonaggressive boys engaged in more data-driven—and thus, potentially more accurate—processing.

Such findings may explain why “stop and think” strategies are an important component in anger-management training (e.g., Douglas, 1972; Kendall & Braswell, 1985). The active ingredient in this approach can be conceptualized as giving individuals the time necessary to attend to non-dominant networks related to a less aggressive response. Our perspective suggests that such strategies may not be useful for individuals who lack adaptive networks for a given situation. This, in turn, suggests a time-course for treatment of such individuals. Before “stop and think” strategies can be effective, adaptive networks must be developed and then made more dominant through practice.

The process-based dimension of dominance also has implications for emotion regulation. The hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) suggests the importance of attributions for depression. According to a recent reformulation of this theory, called the Attention-Mediated Hopelessness theory (AMH; MacCoon, Abramson, Mezulis, Hankin, & Alloy, 2006), both vulnerable and nonvulnerable individuals experience negative affect in response to a negative life event (e.g., Metalsky, Halberstadt, & Abramson, 1987) and both use attention to understand and attempt to remediate negative outcomes. However, whereas nonvulnerable individuals are able to use attention to process cognitive content that leads to decreased rumination and improved

mood, vulnerable individuals access content that leads to increased rumination and depression. That is, in contrast to nonvulnerable individuals, vulnerable individuals are unable to evaluate and/or correct their initially negative reactions to a negative event.

In network terms, the vulnerable individual will need to use effortful attention to correct excessively negative, but dominant, attributions that increase their risk for rumination and depression. By applying the idea of network dominance to depression, the current perspective suggests two important variables not emphasized in the hopelessness literature. Specifically, our perspective suggests that successful correction depends on (1) the existence of adaptive, non-dominant networks and (2) the availability of attentional resources to activate these networks to the point where they out-compete dominant networks. The first variable suggests the possibility that two individuals might appear to have a similar degree of cognitive vulnerability based on their dominant attributions for a situation, but have different degrees of vulnerability based on the full complement of available, but non-dominant, networks also activated by that situation. Measuring these non-dominant networks (by using tasks that measure implicit processes, such as priming or lexical decision paradigms), could increase the predictive power of the construct of cognitive vulnerability as it relates to hopelessness depression. The second variable suggests that trait- and state-related availability of attentional capacity also can moderate the severity of an individual's cognitive vulnerability. For example, our perspective suggests that cognitive load would impair the ability of vulnerable individuals to correct their maladaptive attributions.

As a brief example, imagine two students who receive a "C" on an exam. Both students feel depressed mood as a result of not meeting their expectations and both try to resolve this discrepancy with attention (the use of attention to resolve discrepancies is discussed below; also see, MacCoon, Abramson et al., 2006). There are two possibilities for a nonvulnerable student. Either this student has a dominant attribution that is adaptive and suggests a way to resolve the current discrepancy (e.g., "I didn't study hard enough. .next time I'll study harder"), or, perhaps more intriguingly, has an initial maladaptive dominant attribution (e.g., "I am stupid") that can be corrected by activating a non-dominant attribution (e.g., "I didn't study hard enough"). In contrast, the vulnerable individual may be characterized by (1) the nonexistence of adaptive non-dominant networks or (2) a lack of attentional resources necessary to activate such networks. Such a perspective has implications for the success of psychological interventions. For example, if the vulnerable student was raised without any modeling of non-depressogenic attributions, the first stage of therapy might be characterized as the creation of

positive networks that, over time and with practice, could compete with negative networks. On the other hand, if the vulnerable student had experienced positive modeling, that individual simply may need practice attending to the networks representing these adaptive attributions or be taught techniques to increase the capacity needed to do so.

In this section, we have suggested that in a given situation several networks representing potential attributions may be activated simultaneously. In some circumstances, it is possible that a non-dominant attribution represents the most adaptive or accurate attribution for that situation. In such cases, using top-down attention to activate the relevant non-dominant attribution generally will improve self-regulation. ASPD-related aggression may depend, in part, on the attributions made by an individual for an action committed against them. We reviewed evidence suggesting that some individuals behave less aggressively when given time to consider their behavior and speculated that such time allows them to process non-dominant attributions. Finally, attributions play a role in vulnerability to depression. We have highlighted the idea that a cognitively vulnerable group may be heterogeneous with respect to the type of non-dominant attributions activated by a given event. If true, this perspective suggests different treatment approaches for these different groups.

STANDARDS

Carver and Scheier (1998) argue that “human behavior is a continual process of moving toward, and away from, various kinds of mental goal representations” (p. 2). According to this perspective, individuals adjust their behavior by comparing the effects of their behavior to a relevant reference value or standard.²

When a discrepancy exists between the two, individuals adjust their behavior to minimize the discrepancy either by changing their behavior to meet the standard or shifting to a new standard (Carver & Scheier, 1998). Thus, personal standards play an important role in self-regulation.

Paralleling our discussion of attributions, we believe it fruitful to think about multiple standards being activated by particular situations, with the most activated standard having greatest influence in guiding behavior. As with attributions, if the dominant standard is adaptive, top-down attention may not play a great role. However, there are at least two situations in which top-down attention can play an important

2. We use the term standards in a general sense that includes goals while recognizing that differences between these constructs may have important implications for self-regulation (Boldero & Francis, 2002)

role: (1) if the dominant network does not represent a standard, then attention is necessary to make a standard (represented by a non-dominant network) more accessible; and (2) if two standards compete, top-down attention can resolve the competition in favor of one of the standards.

Relevant to the first situation, several researchers have suggested that attention can increase the salience of standards (e.g., Wicklund & Duval, 1971) and their influence on behavior (Carver & Scheier, 1998). Specifically, attention directed toward the self increases the influence of a particular standard likely to be salient at the time. For example, aggression decreases with increased self-awareness when a nonaggressive standard is salient (Scheier, Fenigstein, & Buss, 1974), but increases when an aggressive standard is most salient (Carver, 1975).

This suggests that attention directed toward a standard increases its influence on behavior and that failure to attend to a standard should decrease or eliminate its influence. In our terms, the standard that guides behavior is the one most dominant at that time. There is evidence that this is the case. For example, Carver (1975) gave participants the opportunity to administer shocks to a confederate learner. In the self-focus condition, the level of shock was predicted by the participant's attitude about the use of punishment (collected weeks earlier). However, under conditions of low self-focus, participants' shock administration was not influenced by their personal attitudes but, presumably, by other networks activated by the experimental situation (e.g., the goal of succeeding with the required training of the "student").

As this research suggests, standards can moderate aggression. Normative beliefs for predicting aggressive behavior, defined as "individualistic cognitive standards about the acceptability of behavior" (Huesmann & Guerra, 1997, p. 409), predict teacher and peer reports of aggressive behavior in children, perhaps because they are used by an individual to determine the acceptability of an aggressive behavior in a given situation (Huesmann & Guerra, 1997). Thus, the existence of a nonviolent standard and the available capacity to access it may represent important variables in regulating aggression. It seems likely that an analogous situation exists with respect to other antisocial behaviors.

Standards are relevant for the domain of emotion regulation as well. For example, self-discrepancy theory (e.g., Higgins, 1987; Strauman & Higgins, 1987) has focused on the importance of personal standards as a vulnerability factor for depression. The theory highlights the nature of the standards that are associated with a particular situation. It distinguishes between representations of the actual self (the attributes individuals believe themselves to have) and the ideal self (the attributes individuals would ideally like to have). Discrepancies between actual and ideal selves are associated with depression-related symptoms, such as

sadness, disappointment, and dejection (e.g., Strauman & Higgins, 1987). For example, receiving a “C” on an exam might activate a network representing the ideal standard of being an “A” student for one individual, while the same exam failure might activate the ideal standard of “passing the class” for another. The first student is likely to become more depressed than the latter because a “C” is discrepant from an “A.” Thus, the dominant standard can influence affect.

Adding dominance to this perspective suggests that minimizing discrepancy-related negative affect should depend on (1) the existence of more adaptive, non-dominant standards and (2) the availability of attentional resources to activate these standards so they out-compete dominant standards. It seems plausible that represented somewhere in the brain of the “C-expectant” student is a network representing the standard of being an “A” student and, similarly, that a “passing is good enough” standard may exist in the “A-expectant” student. For the “C-expectant” student, focusing on being an “A” student might increase their motivation to improve their grades, just as focusing on a lower standard for the “A-expectant” student might decrease their feelings of depression (especially if the student is incapable of achieving an “A” grade). If an alternative standard is not available as a non-dominant network, our perspective suggests that such a standard must be created.

In this section, we have illustrated that antisocial aggression and depression depend, in part, on the type of attributions and standards an individual accesses. To this content-rich perspective, we have added the process-related variable of dominance, suggesting that the status of a particular attribution or standard also may play an important role in determining behavior or emotion. Specifically, two vulnerable individuals may look identical in terms of their dominant attributions or standards, but differ in the type of non-dominant attributions or standards activated by a given situation. We also have noted the usefulness in being able to attend to and adopt different standards as a way of increasing motivation or decreasing depression. In either case, the perspective emphasizes the potential importance of non-dominant networks. Furthermore, a process-based approach suggests that attentional capacity may act as an important moderator for one type of individual but not another, a view that suggests different treatment approaches for each type.

APPLYING ATTRIBUTIONS AND STANDARDS TO A PROCESS-RELATED VIEW OF PSYCHOPATHY

We have discussed the potential value of applying the process-related dimension of dominance to content-rich theories of antisocial aggression and depression. We now focus on applying the content-rich con-

structs of attributions and standards to a process-related view of psychopathy in the hopes of clarifying the connection between the dominance dimension and psychopathic characteristics and behavior.

ATTRIBUTIONS

Carver and Scheier (1990) emphasize that expectancies about potential outcomes are particularly important when impediments to a goal exist. As this view implies, attributions may be particularly important when outcomes are better or worse than expected. Thus, one major impetus for making attributions is the recognition that current events are discrepant from expectations.

We believe that psychopaths are particularly unlikely to experience a discrepancy because non-dominant networks are unlikely to become activated enough to compete effectively with a dominant network. Remember that a psychopath may be less likely, for example, to register the conflict between an inhibitory network (cued by a police officer) and his or her current dominant response (robbing a security truck). In this way, psychopaths are less likely than others to experience a discrepancy that will initiate the attributional process, and therefore, less likely to make attributions about a particular situation. Given the importance of attributions for control over oneself and the environment, this aspect of a psychopath's cognitive vulnerability is likely to be particularly maladaptive. For example, if individuals do not experience their current behavior as discrepant, they may be less likely to make causal attributions. Consequently, they would be less likely to gain insight into their role in causing the problem or learn from the experience so that they avoid similar mistakes in the future.

Even if a psychopathic individual does make an attribution, it is not likely to reflect the influence of non-dominant information. There is evidence that when psychopaths do make attributions, they are more likely than nonpsychopaths to make external attributions for problems in their lives (e.g., Harry, 1992). Wallace and Newman (2004) have argued that this is because psychopaths tend to focus their attention on external cues that are more salient (and thus more dominant) than on less salient internal cues or contextual information. As a consequence, psychopathic individuals may be less likely than others to attribute a particular outcome to self-related variables and, thus, are less likely to take responsibility for a particular outcome. The failure to take responsibility for their actions is characteristic of psychopathic individuals (Hare, 1991; Harry, 1992) and stands as a barrier to effective treatment (Wallace & Newman, 2004). Furthermore, failure to take responsibility is likely to contribute to their lack of guilt and remorse. If an outcome is due to an external vari-

able, why feel guilt over it? In fact, psychopathic individuals do differ from controls in their attributions of guilt (Blair et al., 1995).

Serin (1991) found that psychopathic individuals attribute hostile intent to others more than non-psychopathic individuals, a replicated finding (Vitale, Newman, Serin, & Bolt, 2005; see Serin & Kuriychuk, 1994 for a relevant model). Currently, the reasons for this phenomenon are not known. A content-based perspective could suggest that compared to others, psychopathic individuals have less fear of getting hurt in a potential altercation and, therefore, are not as motivated to search for information that suggests a non-hostile explanation for others' behavior. It also is possible that psychopathic individuals focus on the most dominant cues available (e.g., "I am angry") and make the dominant attribution (e.g., "They are deliberately disrespecting me") because they fail to shift their attention to non-dominant information (e.g., an apologetic look) or explanations that are non-hostile in nature (e.g., "He hit me with the ball by accident"). For example, if an individual's dominant emotion in a situation is anger, it is plausible that an attribution of hostile intent is likely to be highly activated. Given that there is some evidence that psychopathic individuals report greater anger than controls in response to similar situations (Serin, 1991), we would expect psychopathic individuals to make more hostile attributions in anger-provoking situations, an expectation supported by empirical evidence (Serin, 1991). Of course, in this case, these explanations are not mutually exclusive. It may be that psychopathic individuals do not process non-dominant cues suggesting a non-hostile attribution because fear does not motivate them to engage in an effortful search as it does others. The main point here is merely to demonstrate that a failure to process non-dominant information could increase the likelihood of hostile attributions and aggressive behavior.

STANDARDS

It has been suggested already that personal standards, such as normative beliefs, play an important role in moderating aggressive behavior. Recall that our perspective emphasizes standards as one of many types of networks that can be activated simultaneously in a given situation. If the dominant network happens to represent a standard, then behavior will be guided by that standard. However, if the most activated network represents another type of network, this will become most influential. In the latter case, a standard, represented by a non-dominant network, would become a dominant influence on behavior only if it is activated by top-down attention in an effortful way.

Given the importance of a standard's content (e.g., whether it is a violent or nonviolent standard) as well as its accessibility (as evidenced by

manipulations like self-focus), it is perhaps easier to see how profound a vulnerability it is for psychopathic individuals to fail to process non-dominant networks. Even if a psychopathic individual possesses a standard that would moderate his or her callous, antisocial behavior, such an individual will not be influenced by that standard unless it happens to be the most dominant network in a given situation. Thus, even if psychopathic individuals possess a standard suggesting their current behavior is inappropriate, it will not influence their behavior if their attention is focused elsewhere. It is easy to see how blindness to personal or societal "shoulds" could lead to callous behavior. For example, if psychopathic individuals are focused on robbing someone, they are unlikely to focus on standards suggesting minimal violence. Examples from Hare's (1991) manual for the Psychopathy Checklist-Revised (PCL-R) suggest that such an individual may "trash" a house during a burglary or assault a victim during an armed robbery. As suggested by the studies reviewed earlier, when attention is not focused on a standard, an individual can be more aggressive than his or her own standards would suggest.

Instrumental aggression, in contrast to reactive aggression, is aggression committed in the service of meeting a goal. There is evidence that psychopathic individuals are more prone to instrumental aggression than others (Cornell et al., 1996). Our perspective suggests a reason why: when psychopathic individuals are focused on a goal, they are particularly unlikely to attend to any cues unrelated to their goal, cues that might otherwise moderate their aggressive impulses.

Blair (1997) recently has highlighted the distinction between moral and conventional transgressions. One way to study the distinction is to ask children whether a given behavior is permissible with or without the prohibition of an authority figure (e.g., a teacher). For example, children with a developed moral/conventional distinction would report that unprovoked violence toward a peer is unacceptable even if a teacher says it is permissible, whereas children without this distinction would be more likely to view the acceptability of the behavior as dependent on the teacher's rule. Viewed from the dominance perspective, we speculate that a teacher's stated position about the acceptability of a behavior is likely to be represented clearly and saliently in the environment, whereas other information about its acceptability (e.g., what my parents think, how I would feel in the same situation) will be less dominant. From this perspective, then, children with psychopathic tendencies should make determinations of acceptability based on dominant cues and, thus, be less likely to exhibit a clear moral/conventional distinction. There is some evidence that this is the case (Blair, 1997). There also

is evidence that weaker moral/ conventional distinctions are associated with aggression and delinquency (Nucci & Herman, 1982).

The inability to attend to non-dominant networks suggests that developmental history may be more important for psychopathic individuals than non-psychopathic individuals. Imagine two antisocial individuals. In CABA terms, imagine that both have developed the same dominant and non-dominant networks and that many of them are antisocial in nature. From a content perspective, both individuals are made of equally "bad stuff." Unfortunately, whereas non-psychopathic individuals can access non-dominant networks that moderate their antisocial behavior, psychopathic individuals cannot. Thus, from the point of view of behavior, the psychopathic individual is likely to appear more violent, callous, and antisocial than a non-psychopathic counterpart given the same background.

Perhaps more importantly, the psychopath's cognitive vulnerability has serious developmental implications, irrespective of the individual's life experience. The failure to attend to a network in a given situation not only affects the behavior of the moment, but also is likely to undermine future use of that network in similar situations. Patterson and Newman (1993) have suggested that attention to a particular cue helps to consolidate learning. In CABA terms, using top-down attention to activate a network in one moment should strengthen the bottom-up activation of that network in the future. If a psychopathic individual simply attends to the most dominant network of a given moment, only this network is strengthened for future bottom-up activation. Compare this to a non-psychopathic individual who would attend to—and thus strengthen the activation of—multiple networks. In a future situation, the psychopathic individual's dominant network is even more highly activated relative to non-dominant networks than before, leading to a vicious cycle in which non-dominant networks are even less likely to conflict with the dominant network and call for attention, and are even less likely to be attended to in the future. Thus, the range of networks processed in a given situation narrows, and over time, maladaptive behaviors can become crystallized as a relatively inflexible, generalized coping style, the hallmark of a personality disorder (Millon, 1981).

In such a way, the process-based cognitive vulnerability proposed by the RMH could lead to a content-related vulnerability over time. Specifically, if two children are raised in an antisocial environment in which cues of hostility and aggression dominate, the psychopathic child will be especially likely to process only those dominant cues and, therefore, especially likely to develop antisocial behavior unmoderated by any non-hostile cues also present. Such an individual would develop fewer pro-social standards than his or her non-psychopathic counterpart. If

nonviolent standards do not exist for an individual, it is easy to see why such an individual would rationalize their own behavior and fail to understand why his or her behavior should be viewed as particularly bad. Such a perspective certainly would contribute to individuals' lack of remorse for his or her behavior, a core characteristic of psychopathic individuals.

Even when psychopathic individuals survive their childhood with positive, pro-social standards intact, they may be less likely to recognize discrepancies between a given standard and a particular behavior. As a result, psychopathic individuals would be unlikely to recognize that a violation of their own standards has occurred.

In short, because of a simple process-based vulnerability of failing to process non-dominant cues, psychopathic individuals will be less likely in a given situation to access a standard, notice that their behavior violates a standard if it exists, and be less likely to have standards that compete with other activated networks. As a consequence of this vulnerability, psychopathic individuals are less likely to benefit from a pro-social developmental environment than an individual with ASPD, because the psychopathic individual will not process the pro-social cues unless they are dominant.

In this section, we have suggested that as a function of failing to process non-dominant networks, psychopathic individuals may be unable to recognize a discrepancy, and thereby fail to make any attributions for a given situation. Such a failure may prevent psychopathic individuals from gaining insight into their own behavior and learning to avoid similar mistakes in the future. This deficit, in turn, may result in failures to take responsibility for their behavior as well as failures to understand their own lives accurately (i.e., lack of insight, as noted by Cleckley, 1976). Even if a psychopathic individual makes an attribution, it is likely that such an individual will access only the dominant attribution for a situation and thus will be vulnerable when a non-dominant attribution represents the more accurate assessment of the situation. We made a similar argument regarding standards. Psychopathic individuals should be less likely than non-psychopathic individuals to notice when their behavior violates personal or societal standards when those standards are non-dominant. Even if the dominant network represents a standard, failing to process non-dominant standards can mean the development of fewer pro-social standards over time.

INTEGRATION AND CONCLUSIONS

We have argued that the psychopath's cognitive vulnerability involves difficulty processing non-dominant networks. We have suggested that

in any given situation, multiple networks are activated simultaneously to varying degrees and that top-down attention can be used to activate non-dominant networks. From this point of view, it is significant that two antisocial individuals or two depressed individuals may have similar dominant standards or attributions, but that their non-dominant standards and attributions may differ. Moreover, this perspective implicates different treatment goals and yields more specific predictions about when time and capacity will result in improved emotional and behavioral regulation. In particular, treatment for an individual lacking adaptive standards or attributions may require the creation of such networks before time and capacity make any difference in behavior or affect. In contrast, an individual with adaptive non-dominant standards and attributions may benefit by improving his or her ability to focus attention on these networks.

We also applied the content-rich constructs of standards and attributions to increase our understanding of the process-based cognitive vulnerability associated with psychopathic individuals. In particular, we illustrated how a deficit in attending to non-dominant networks could lead not only to more dysregulated violent behavior in an antisocial individual, but would prevent a psychopathic individual from learning from his or her mistakes and assuming responsibility for his or her behavior. In individuals with a background in which hostility is a dominant feature of their social landscape, psychopathy also could lead to increased attributions of hostility because these would likely be dominant. Even if raised in a pro-social environment, we have proposed that the psychopathic vulnerability would prevent access to pro-social attributions, standards, and behavior, if attention is focused on antisocial cues. A psychopath's vulnerability may limit recognition that a discrepancy exists between standards and behavior, limit the ability to correct behavior to meet goals, and increase the likelihood of developing a content-based bias over time.

In conclusion, we have applied the dimension of dominance to traditionally content-rich psychological concepts such as attributions and standards. Our discussion of antisocial aggression and psychopathy illustrated its importance to behavioral regulation, whereas our discussion of depression illustrated its importance to emotion regulation. Through these discussions, we attempted to illustrate the broad applicability of the dominance dimension and give it more tangibility. In short, the dimension of dominance is a valuable theoretical tool for predicting the complex behavior of psychopathic individuals and describing their cognitive vulnerability, and has utility in elucidating other cognitive vulnerabilities as well.

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