Behavioral inhibition: relation to negative emotion regulation and reactivity

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Abstract

The present experimental psychopathology study sought to address two interrelated theoretical predictions from behavioral inhibition theory and research among young adults. The first was whether individual differences in behavioral inhibition, as indexed by the Behavioral Inhibition Sensitivity (Carver & White, 1994) would relate to negative emotional reactivity elicited by a cognitive stressor. The second aim was to examine how individual differences in behavioral inhibition relate to rumination, a response style associated with prolonged periods of negative affect, particularly depression. Consistent with our hypotheses, behavioral inhibition, relative to other theoretically relevant variables (e.g. basal levels of negative affect), predicted cognitive-affective reactivity as well as a rumination response style. These findings are discussed in relation to understanding how behavioral inhibition is associated with prototypical indices of emotional distress, with implications for forwarding future work with specific types of emotional disorders.

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Behavioral inhibition is a temperament construct defined by motivational sensitivity to interoceptive and exteroceptive signals of punishment, unfamiliarity, and nonreward (Cloninger, 1987); it is characterized by withdrawal-oriented behavior, bodily agitation, and negatively valenced verbal and non-verbal expression (Davidson, Ekman, Saron, Senulis, & Friesen, 1990; Kagan, 1989). Due to the broad theoretical relevance of behavioral inhibition to negative emotional processes and states, this construct has direct implications for better understanding the
nature of emotional disorders (Arcus, 2001). Specifically, the behavioral inhibition system, comprised of the septohippocampal system, its monoaminergic afferents extending from the brainstem and neocortical projections in the frontal lobe, provides the motivational basis for the inhibition of behavior that may lead to negative outcomes, particularly in aversive or novel contexts (Fowles, 1993; Gray & McNaughton, 1996). As such, the behavioral inhibition system can initiate physiological processes and higher cortical functions, including cognitive-affective reactions to environmental challenges and opportunities.

Researchers have studied behavioral inhibition in children (Harmon-Jones & Allen, 1997; Kagan, Reznick, & Snidman, 1988; Reznick et al., 1986; Sobotka, Davidson, & Senulis, 1992). These research studies indicate that a behavioral inhibition response style, as indexed by observable signs of fearfulness and wariness, predict negative emotional states, such as crying in response to novel stimuli, in future circumstances (Davidson & Fox, 1989; Kagan & Snidman, 1991). Behavioral inhibition is also overrepresented in first-order offspring of those with emotion-based psychopathology (Rosenbaum et al., 1990), suggesting these persons may be particularly likely to demonstrate individual susceptibility to negative emotional states. These findings hold promise in regard to forwarding research and theory on how temperamental qualities, an inherited profile of biobehavioral processes (Kagan & Snidman, 1999), relate to individual variation in negative emotional states during adulthood. However, at this juncture, very little experimental psychopathology work (Zvolensky, Lejuez, Stuart, & Curtin, 2001) has attempted to link behavioral inhibition to negative emotional processes among adults. This is unfortunate given that the behavioral inhibition system is theoretically important to vulnerability to both anxiety and depressive states as well as negative affect more generally (Fowles, 1993). Furthermore, although evidence attests to the physiological and behavioral components of the behavioral inhibition construct, markedly less work has been completed at a cognitive level of analysis. The absence of such cognitive-oriented work may impair the translation of behavioral inhibition theory and research to clinical contexts, wherein verbal (self-report) instruments are frequently employed.

Carver and White (1994) have developed the Behavioral Inhibition/Activation Scale (BIS/BAS) to assess dispositional sensitivities to Gray’s two general motivational systems at a cognitive level of analysis. Early research using the BIS scale indicates that this verbal report instrument can detect varying sensitivities in the presumed motivational systems. For instance, scores on the BIS scale have been found to predict self-reported anxiety that occurs in response to a cold pressor task (Carver & White, 1994, Study 3). Gable, Reis, and Elliot (2000) similarly found BIS scores moderated affective responding, with higher scores on the scale associated with enhanced negative emotional reactions to naturally occurring stressful life events. Other research indicates that BIS/BAS scores are predicted by prefrontal brain asymmetry, an electrophysiological index of affective variability, relative to self-reported emotional states (Sutton & Davidson, 1997). Zvolensky, Feldner, Eifert, and Stewart (2001) recently have found that among healthy adults, BIS scores predict self-rated cognitive and affective distress, but not autonomic arousal, during biological challenge. Finally, BIS scores have been found to predict differences in procedural learning under threatening contexts (Corr, Pickering, & Gray, 1997). Additionally, researchers using startle methodology have shown individual differences in trait anxiety affect startle response (Cook, 1999), although these findings have not been consistently replicated (e.g. Grillon, Ameli, Foot, & Davis, 1993). Collectively, the aforementioned findings generally indicate that behavioral inhibition may relate to the differential experience of negative emotional states. Although such studies
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