



## The relations between anger, coping with anger, and aggression, and the BIS/BAS system

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### Abstract

In two studies, the relations between the experience and expression of anger and the Behavioral Inhibition System/Behavioral Approach System were investigated with self-report data. In a first study, our results replicated previous findings that trait anger relates positively to both BIS and BAS, and generalized these findings to a measure of trait anger based on contextual anger responses. In a second study, the relations between anger coping-styles, anger expression, and BIS/BAS were examined. It was hypothesized that coping with anger involves low activity of either BIS or BAS, resulting in the anger coping styles of anger-out and anger-in, respectively. Measures of anger-out were found to be positively related to a measure of BAS and negatively to a measure of BIS, whereas the opposite pattern of associations was obtained for anger-in. Furthermore, corresponding to an anger-out coping style, both physical and verbal aggression were found to be positively related to BAS, and negatively to BIS.

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**Keywords:** Behavioral inhibition system; Behavioral approach system; Trait anger; Coping with anger; Aggression

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## 1. Introduction

It has been argued that two systems lie at the base of the regulation of emotion and behavior (Depue & Iacono, 1989; Fowles, 1980; Gray, 1987, 1990): (1) The Behavioral Inhibition System (BIS) deals with aversive motivation and avoidance behavior; its primary purpose is preventing or stopping behavior that is expected to lead to punishment or the cessation/loss of reward. As such, BIS activity has been related to the experience of negative emotions, in particular anxiety (Arnett & Newman, 2000; Carver & White, 1994; Gray, 1987, 1990). (2) The Behavioral Approach System (BAS) deals with appetitive motivation and approach behavior. It is activated by conditioned stimuli of reward or opportunities to avoid or stop punishment. It energizes behavior directed at acquiring the rewards or eliminating the punishment (Depue & Iacono, 1989). As such, BAS has been related to the experience of positive emotions (Carver & White, 1994; Gable, Reis, & Elliot, 2000; Gray, 1990).

Recently, however, several authors have argued that BIS and BAS may not be uniquely related to either negative or positive emotions (Carver, 2004; Corr, 2002; Harmon-Jones, 2003; Putman, Hermans, & van Honk, 2004). In particular, the emotion of anger can be considered to have a negative affective component (relating it to BIS activity) as well as an approach-motivated component (relating it to BAS activity). As such, anger has been hypothesized to result from activity of both BIS and BAS.

With the present research, we aim to examine the relation between different aspects of anger on the one hand and BIS/BAS on the other hand. In a first study, we aim to replicate and further generalize previous findings on the relation between trait anger and BIS/BAS. In a second study, we aim to more closely examine the relations between anger coping-styles and the expression of anger on the one hand, and BIS/BAS on the other hand.

## 2. Study 1: Trait anger and BIS/BAS activity

We hypothesize that anger, amongst other things consists of a component related to negative affect and an approach action-related component, resulting in positive relations between trait anger and both BIS and BAS. With respect to anger and BIS, both have been associated with general negative affect or neuroticism (Berkowitz, 2000; Carver & White, 1994; Costa & McCrae, 1992; Watson, 2000). Furthermore, anger is considered an emotion that is accompanied by a negatively valenced hedonic tone (Lazarus, 1991); moreover, in his influential account of anger and aggression, Berkowitz (2000) argued that anger can generate from negative affect. With respect to anger and BAS, the former is accompanied by a clear approach motivation—antagonism (Averill, 1983; Frijda, 1986). Thus, although anger has a negative affective value, also BAS may be hypothesized to play a role in anger (Carver, 2004; Harmon-Jones, 2003). Previous research has indeed revealed that individual differences in BAS are positively associated with individual differences in trait anger (Harmon-Jones, 2003). Furthermore, it has been shown that increased left-prefrontal cortical activity and decreased right prefrontal cortical activity—a correlate of approach motivation or BAS—is associated with state anger (Harmon-Jones & Allen, 1998), especially when there is something the person can do to resolve the anger-inducing situation (Harmon-Jones, Sigelman,

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