



Tracking the evil eye: Trait anger and selective attention within ambiguously hostile scenes [☆]

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Abstract

Previous research has shown that trait anger is associated with biases in attention and interpretation, but the temporal relation between these two types of biases remains unresolved. Indeed, two very different models can be derived from the literature. One model proposes that interpretation biases emerge from earlier biases in attention, whereas the other model proposes that hostile interpretations occur quickly, even prior to the allocation of attention to specific cues. Within the context of integrated visual scenes of ambiguously intended harm, the two models make opposite predictions that can be examined using an eye-tracking methodology. The present study ($N=45$) therefore tracked participants' allocation of attention to hostile and non-hostile cues in ambiguous visual scenes, and found support for the idea that high anger individuals make early hostile interpretations prior to encoding hostile and non-hostile cues. The data are important in understanding associations between trait anger and cognitive biases.

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1. Introduction

Chronically high levels of anger have numerous adverse consequences, including an increased likelihood of aggressive behavior (Deffenbacher, 1992), relationship difficulties (Deffenbacher, 1992), and cardiovascular health problems (Smith, 1992). It is therefore important to understand the cognitive underpinnings of individual differences in trait anger. Such an understanding, for example, could have practical implications for anger reduction strategies among individuals prone to anger (Meier, Robinson, & Wilkowski, 2006).

Previous work on the cognitive correlates of trait anger has highlighted biases related to both selective attention (e.g., Smith & Waterman, 2003) and the interpretation of ambiguously hostile behaviors (e.g., Graham, Hudley, & Williams, 1992). However, it is unclear how these two sets of biases are related to each other. We therefore outline two plausible models concerning relations between biases in attention and interpretation. We then suggest that these models make opposing predictions that can be tested in the context of visual scene perception, the focus of the current study.

2. Trait anger, attention, and interpretation

Many studies have found that angry individuals preferentially attend to hostile cues or stimuli. This result has been found in studies using the emotional Stroop task (Eckhardt & Cohen, 1997; Smith & Waterman, 2003; Van Honk, Tuiten, de Haan, van den Hout, & Stam, 2001a; Van Honk et al., 2001b), visual search tasks (Cohen, Eckhardt, & Schagat, 1998; Smith & Waterman, 2004), and spatial cuing paradigms (Smith & Waterman, 2003; see also Wilkowski, Robinson, & Meier, submitted for publication). It is important to note that this bias has typically been measured with respect to isolated hostile and non-hostile stimuli rather than integrated visual scenes.

In addition to attention biases, there are also data linking trait anger to hostile interpretations of ambiguously hostile situations. An ambiguously hostile situation is a situation in which one person is harming another person, but it is unclear whether this harm was intended or not. In an important early study, Dodge (1980) found that aggressive children interpreted such ambiguously hostile situations as more hostile in nature. However, aggressive and non-aggressive children did not differ with respect to their interpretation of clearly intentional or unintentional situations. This basic finding has been termed the *hostile attribution bias* and has been replicated with children of numerous ages and nationalities (see Crick & Dodge, 1994, for a review), as well as with adult populations (Dill, Anderson, & Deuser, 1997; Epps & Kendall, 1995; Hall & Davidson, 1996).

Subsequent studies have shown that individual differences in anger, rather than behavioral aggression per se, are most closely linked to interpretation biases. For example, the hostile attribution bias is found only among individuals who engage in angry forms of aggression (Crick & Dodge, 1996; Dodge & Coie, 1987). A direct link between biased interpretation and trait anger has been found in more recent studies (Epps & Kendall, 1995; Wingrove & Bond, 2005), and anger also mediates the relationship between interpretation biases and aggression (Graham et al., 1992). In sum, there is strong evidence that interpretation biases are closely linked to trait anger.

2.1. Toward an integrated framework

Crick and Dodge (1994) proposed that attention and interpretation are two separate stages at which biased information processing could lead to increased anger and aggress-

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