



# Hostile attribution bias in impulsive and premeditated aggression



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## ABSTRACT

Previous research has demonstrated an association between trait aggression and hostile attribution bias, or the tendency to interpret others' actions as hostile, yet little research has been devoted to exploring its role in subtypes of aggression. We used hypothetical vignettes to explore hostile attribution bias in impulsive aggressors, premeditated aggressors, and non-aggressive controls. Contrary to our prediction that impulsive aggressors would be more prone to hostile attribution bias, we did not observe direct evidence of this; however, a bias was indirectly evident in the behavior of both types of aggressors. Although they did not specifically articulate feeling as though ambiguous acts were committed with hostile intent, their verbal and physical reactions indicated otherwise. Future research should focus on delineating the full sequence of social cognitions that occur during aggressive encounters in order to determine whether these reactions were produced by common or divergent motivations.

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## 1. Introduction

Unlike anger, which has been identified as an affective feature of aggressive behavior, hostility has been characterized as a more cognitive component of aggression (Epps & Kendall, 1995) and as the attitude that motivates aggression (Spielberger, 1988). Hostile attribution bias (HAB) can be defined as a tendency to interpret the intent of others as hostile, despite the fact that environmental cues fail to indicate clear intent (Milich & Dodge, 1984)\*. The role of biased interpretation of social cues in aggressive behavior has been explained using the social information processing model (Crick & Dodge, 1994). According to this model, the way that children ultimately behave in a given social situation involves a complex sequence of events (encoding of cues, interpretation of cues, clarification of goals, response access or construction, response decision, and behavioral enactment) and is affected by the child's past experiences. Aggressive children frequently misinterpret incoming social cues, tending to automatically assume that the actions of others are negative and, as a result, respond maladaptively in ambiguous interpersonal situations. Research conducted with aggressive children and adolescents has consistently demonstrated a robust relationship between aggression and HAB, both in hypothetical and actual situations (for a review, see Crick & Dodge, 1994). Other re-

search comparing subtypes of aggressive children has revealed greater HAB in reactive versus proactive aggression (Dodge & Coie, 1987). Although the research on HAB began with children, the concept has since been extended to adults.

The most common method of assessing HAB in adults involves presenting ambiguous stimuli that can be interpreted as either hostile/threatening or benign. Participants are shown hypothetical scenarios ranging in nature from hostile to ambiguous to benign and asked to rate how angry they would be if the events happened to them and how intentional and hostile the incidents seemed. Using this design, Epps and Kendall (1995) found that college students high in trait anger and aggression attributed hostility in all three conditions (hostile, ambiguous, and benign), although their HAB was less pronounced in the benign condition. In contrast, those low in trait anger and aggression were less likely to attribute hostile intent in any condition. In a community-based study of drivers, researchers measured participants' reactions to everyday road scenarios and found that drivers high on measures of trait aggressiveness interpreted ambiguous driving incidents as more hostile and intentional than drivers low in aggressiveness, who tended to be reluctant to attribute hostility and generally assumed road incidents to be accidental (Matthews & Norris, 2002). This bias did not extend to scenarios that were blatantly benign or malign, suggesting that individuals' own level of aggressiveness may color the way they interpret interpersonal situations when objective evidence is not available.

Hostile attribution bias has also been observed in men with a history of marital violence. In their study of maritally violent husbands, maritally distressed but nonviolent husbands, and nonviolent/nondistressed husbands, Holtzworth-Munroe and

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\* HAB = Hostile attribution bias; IA = Impulsive aggression; PM = Premeditated aggression.

Hutchinson (1993) presented men with vignettes depicting problematic marital situations and asked them to rate the wife's behavior in each scenario. Violent husbands were more likely than both other groups to attribute negative intentions to the wife, especially in situations depicting jealousy, rejection from the wife, or potential public embarrassment. Other research involving maritally violent men has shown similar results (Eckhardt, Barbour, & Davison, 1998; Jin, Eagle, & Keat, 2008).

Although a substantial literature exists documenting differences in neurochemistry, neuropsychology, psychophysiology, and treatment efficacy between impulsive and premeditated subtypes of aggression (Houston, Stanford, Villemarette-Pittman, Conklin, & Helfritz, 2004; Scarpa & Raine, 2000), social-cognitive factors such as HAB have been largely overlooked. Impulsive (or reactive) aggression involves frequent outbursts in which the person becomes emotionally agitated and loses control of his or her behavior; this agitation is typically not warranted by the situation and often occurs in response to perceived provocation (Stanford, Greve, & Dickens, 1995). In contrast, premeditated (or proactive, instrumental) aggression is marked by planned or goal-directed aggressive acts that are carried out in a controlled, unemotional manner, often for the purposes of social gain or dominance (Barratt, Stanford, Dowdy, Liebman, & Kent, 1999; Stanford et al., 2003). IAs but not PMs tend to exhibit verbal and executive function deficits (Stanford, Greve, & Gerstle, 1997; Villemarette-Pittman, Stanford, & Greve, 2003), abnormally low prefrontal functioning (Raine & Venables, 1988), p300 abnormalities (Barratt, Stanford, Felthous, & Kent, 1997; Houston et al., 2004; Mathias & Stanford, 1999; Stanford, Houston, Villemarette-Pittman, & Greve, 2003) and low serotonin (Linnoila et al., 1983).

Hostile attribution bias can serve to maintain chronic aggressive behavior by increasing the likelihood of an aggressive response; when hostile intent is perceived in the behavior of others, an aggressive individual may feel that violent behavior is justified because he or she may view it as retaliation rather than instigation (Holtzworth-Munroe, 1991). This is consistent with research showing that the perception of aggressive intent in others is a powerful cause of anger and aggressive behavior (Epstein & Taylor, 1967).

Based on previous research suggesting personality differences between impulsive and premeditated aggressors (Helfritz & Stanford, 2006; Houston et al., 2004), it is likely that IAs are more prone to HAB. In fact, Giancola (1995) has proposed that the impairments in executive function seen in hostile (impulsive) aggression may lead to a cognitive bias that could increase the likelihood of aggressive behavior in stressful or provocative situations. He explains that, "...deficient self/social monitoring, abstract reasoning, and attention skills may compromise one's ability to read and correctly interpret potentially ambiguous social cues which can conceivably lead to misunderstandings and possibly aggression in conflict situations" (pp. 444,445).

Premeditated aggressors, on the other hand, do not have executive function deficits and often use aggression as a tool to get what they want. Since they are in control of the situation, it stands to reason that they would be more immune to emotional overreactions that could affect their reading of a given social situation.

Although this is an understudied area of research, Bailey and Ostrov (2008) investigated the relationship between HAB and aggressive subtypes in a non-selected sample of emerging adults and their results, albeit tentative, showed that reactive physical aggression was associated with a HAB for ambiguous situations related to physical provocation whereas proactive physical aggression was not. Seager (2005) used a binocular rivalry task related to weapons perception in combination with hypothetical vignettes depicting social situation to assess the self-schemas of incarcerated men and found that hostile self-schemas, in conjunction with trait

impulsivity, were related to both the frequency of past violent offenses and the degree of psychopathy. Other researchers have also observed a link between HAB and psychopathy (Serin, 1991; Vitale, Newman, Serin, & Bolt, 2005); however, despite the fact that aggressive men often possess psychopathic tendencies (e.g. disregarding the rights of others), one need not be physically aggressive to be considered a psychopath, as there are many nonviolent ways to violate the rights of others (e.g. "conning" someone out of his or her life savings; Hare, 1991) so it is unclear how these results fit into the aggression literature.

To our knowledge, ours is the first study to explore HAB in impulsive and premeditated aggressors with a lifetime history of chronic physical aggression problems. Additionally, previous research on adult HAB has indicated a need to investigate the role of gender of the provocateur (Tremblay & Belchevski, 2004). Due to social norms, we expected an overall trend of decreased aggression toward women as compared to men across all participants; however, given the uncontrolled nature of impulsive aggression, we predicted that this trend would be less pronounced in IAs as compared to PMs and controls.

The purpose of the current research was to explore how HAB may differ across subtypes of aggression. Due to differences in personality suggested by our previous work (Helfritz & Stanford, 2006; Houston et al., 2004), we predicted that IAs would show greater evidence of HAB as compared to both PMs and controls, as indicated by their responses to the Conflict Situation Vignettes (Tremblay & Belchevski, 2004).

## 2. Material and method

### 2.1. Background

This paper is part of a larger study investigating similarities and differences in personality, psychopathology, cognitive factors, and electrophysiological responses in impulsive and premeditated aggressors, as a comprehensive direct comparison is lacking in the literature. The study sample, group formation criteria, and data collection procedures have been reported previously (Helfritz-Sinville & Stanford, *in press*).

### 2.2. Participants

Students ( $N = 867$ ) from undergraduate courses at a large private liberal arts university were screened using self-report questionnaires and those who met criteria for either the premeditated aggressive, impulsive aggressive, or non-aggressive control group were contacted by phone and invited to participate. The final sample ( $N = 58$ ) of male college students (aged 18–24 years) was comprised of three groups: impulsive aggressors (IAs;  $n = 15$ ), premeditated aggressors (PMs;  $n = 22$ ), and non-aggressive controls ( $n = 21$ ).

### 2.3. Materials and procedure

Informed consent was obtained and each participant completed a battery of self-report measures and event-related potential tasks as part of a larger study; the experimental session lasted approximately three hours and was followed by debriefing.

#### 2.3.1. Conflict Situation Vignettes (Tremblay & Belchevski, 2004)

This measure was intended to serve as a self-report index of HAB. Twenty-four vignettes depicting three types of everyday conflict situations (intentional, ambiguous, and unintentional provocation) were presented. Sample vignettes include (a) "You are walking across a busy intersection and it is clear that you have the

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