



Seeing enemies? A systematic review of anger bias in the perception of facial expressions among anger-prone and aggressive populations



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ABSTRACT

No systematic research has been conducted to determine whether anger-prone and potentially externalizing, aggressive individuals have anger bias when perceiving facial expressions within neuropsychological paradigms. However, such knowledge is relevant because anger bias may be a cognitive pathway mediating aggression in individuals susceptible to externalizing behavior. This paper therefore aims to clarify whether anger-prone and aggressive populations are emotionally biased toward perceiving others as angry and hostile when processing facial expressions in neuropsychological paradigms. A systematic search of electronic databases and a subsequent manual search identified 15 studies involving 21 experiments ($n = 2155$). Some type of biased perception pattern was observed in all but one study consisting of one experiment and two studies each consisting of two experiments in which one showed no bias. The biased perception pattern was, however, not restricted to a deficit in selective attention. Rather, it involved a broader bias pattern where anger and hostility were perceived from ambiguous and even unambiguous non-hostile expressions. The present review provides preliminary evidence that anger-prone and aggressive populations are characterized by bias toward perceiving others as angry and hostile when processing facial expressions in a variety of neuropsychological paradigms. Seeing enemies could, indeed, be a cognitive pathway that mediates reactive and instrumental aggression during social interaction among susceptible populations. However, more research is warranted in this unsystematically and poorly investigated area.

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1. Introduction

Emotional bias in attention can be broadly defined as a tendency toward perceiving emotional stimuli in a particular maladaptive and consistent manner. Emotional bias in facial expressions and words has been extensively investigated in various types of psychopathology characterized by emotional dysfunction where a variety of neuropsychological paradigms have been used, e.g. dot-probe tasks, emotional Stroop tasks, and facial expression tasks. Negative emotional bias has been consistently linked to internalizing disorders like depression and anxiety (Bar-Heim et al., 2007; Field & Cox, 2008; Peckham, McHugh, & Otto, 2010). The most investigated and most consistent finding is that individuals with anxiety disorders are characterized by negative bias in selective attention when confronted with ambiguous stimuli, a feature that is particularly prominent when processing social threat-related stimuli like anger (Bar-Haim et al., 2007; Macleod & Holmes, 2012). However, only few studies have investigated anger bias related to facial images or words in anger-prone and aggressive populations, particularly in clinical and forensic populations. A number of studies find that anger-prone and aggressive clinical and forensic populations exhibit bias in selective attention toward aggression and violence-related words (e.g. Domes et al., 2013; Smith & Waterman, 2003), but only little attention has been devoted to the study of ambiguous angry facial expressions. Likewise, little research exist in relation to anger bias in the perception of neutral or emotional facial expressions other than anger, viz. attention is thereby focused at one unambiguous target without any anger stimulus. This lack in current research seems peculiar as facial expressions carry crucial information about emotional valence in social interaction, and anger-prone populations have an increased likelihood of displaying aggressive behavior (Deffenbacher, 1992). Although individuals with anxiety disorders do not normally display aggressive behavior, it is an important question whether bias in the processing of social-threat stimuli, specifically anger and hostility, may be a cognitive pathway mediating aggression in more externalizing populations. If anger-prone and/or highly aggressive individuals perceive others as angry and having hostile intentions toward them (whether anger stimuli are present or not), it is likely that they will act aggressively, either as a preemptive strategy to discourage a potential aggressor or as a justified response to the perceived aggression toward them. Thus, aggression may become a habitual response in social interactions given that anger-prone individuals will be more inclined to fight the perceived threat than to (freeze or) flee from it as would be expected from individuals displaying more internalizing behavior. An important hypothesis warranting further investigation is therefore whether anger-prone and aggressive individuals are, indeed, seeing enemies, i.e. if they are perceptually biased toward perceiving others as angry and threatening when processing facial expressions.

1.1. Objective

The objective of this study was to systematically review the literature to investigate whether there is preliminary evidence that anger-prone and aggressive populations are characterized by bias in attention toward perceiving others as angry and threatening when processing facial expressions within neuropsychological paradigms.

2. Method

2.1. Search strategy

This systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA: Moher, Liberati, Tetzlaff, & Altman, 2009) guidelines. First, a systematic literature search was performed in the following bibliographic databases: EMBASE, PubMed, PsycINFO, and Web of Science. A broad search was conducted in order to identify all relevant studies containing the following key terms: conduct disorder OR antisocial personality disorder OR dissocial personality disorder OR psychopathic personality disorder OR personality disorder OR psychopath OR psychopathic OR callous-unemotional OR anger OR hostility OR aggression OR aggressive OR aggressiveness OR personality OR conduct problems OR antisocial behavior OR aggressive behavior AND facial expression paradigm OR facial expression task OR facial expression test OR facial expression OR angry faces OR hostile faces. Searches were conducted for all years until 01 August 2014. Second, we screened titles and afterwards abstracts of the papers identified and excluded those that did not satisfy the selection criteria. Third, we analyzed the full text version of all remaining papers and excluded those that did not satisfy the selection criteria. The reference lists of the retrieved papers were checked for any further relevant citations. Fourth, we included the identified relevant papers for a full analysis.

2.2. Study selection

The papers included in this systematic review met the following criteria: 1) They were original English-language, peer-reviewed research papers. 2) They included a reliable and validated measure of anger, hostility, aggression, or related clinical and forensic constructs like conduct disorder (CD), antisocial personality disorder (ASPD), or psychopathy. 3) They included a control group with low scores on anger and/or aggression for comparison. Studies with more than one case group were included if they contained an analysis of case-group differences in performance of the experimental task and if participants scoring high on anger and/or aggression were categorized as a distinct group. 4) The focus case group/s had no primary neurological or (other) psychiatric diagnosis that could explain its angry and aggressive behavior. 5) Bias was operationalized using a neuropsychological task with acceptable psychometric properties, and whole-face expressions of primary emotions were used as stimuli material. 6) Finally, it was required that participants had not been manipulated experimentally to state anger during exposure to the stimuli material.

2.3. Data extraction and synthesis

Two authors independently extracted all data from the original reports. Possible disagreements concerning study selection were resolved through discussion. In case of persistent disagreement, a third reviewer was consulted.

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