Testing the impact of frustration and anger when responsibility is low[☆]

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A B S T R A C T

Anger is a powerful emotion and it is important to understand its role in human interaction. Angry individuals may become hostile in their dealings with others, and this has strategic consequences. Battigalli, Dufwenberg, and Smith (2015; BDS) develop a formal framework where frustration and anger affect interaction and shape economic outcomes. This paper presents an experiment designed to test predictions based on versions of the theory that involve no or low responsibility of the punished person. In this specific context, I find only limited support for the theory: While unfulfilled expectations about material payoffs generate negative emotions in subjects (which is in line with BDS' conceptualization of frustration), these emotions do not affect subjects' behavior in the experiment.

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1. Introduction

Anger can be a strong behavioral force, with important consequences for human interaction. When anger is expressed through hostility and aggression, it potentially shapes interaction and outcomes in, for example, situations involving negotiation and bargaining, contractual holdup, delegated decision making, conflict, and social dilemmas.[1]

Although it seems important to understand the sources of anger, as well as its consequences for strategic interaction, this topic has received relatively little attention in the development of behavioral theory.[2] Battigalli, Dufwenberg, and Smith

[1] For accounts of negative emotions and anger in similar situations, see, e.g., Pillutla and Murnighan (1996), Sanfey et al. (2003), Bosman and van Winden (2002), Bolle et al. (2014), Hopfensitz and Reuben (2009), and Drouvelis and Grosskopf (2016).
[2] This is especially true for the analysis of immediate (as opposed to anticipated) emotions, which focuses on the "action tendency" of emotions experienced by the decision maker (e.g., Elster, 1998; Loewenstein, 2000).

(2015; BDS) contribute to fill this gap in the literature by developing a theory where frustration and anger affect interaction and outcomes, using the framework of psychological game theory (Geanakoplos et al., 1989; Battigalli and Dufwenberg, 2009). The objective of my paper is to investigate the empirical relevance of BDS, and to this end I design an experiment to test predictions based on versions of the theory that involve no or low responsibility of the punished person. This constitutes the first experimental test of BDS.

In BDS, anger is anchored in frustration, which is the result of unfulfilled expectations about material payoffs.[3] Frustration sometimes makes players hostile toward their co-players. When frustrated, a player may go after other players, but his desire to do so depends on his evaluation of the other players' part in the outcome that frustrates him. BDS develop three different versions of how this evaluation process shapes the actions of frustrated players: With *simple anger*, frustrated players are angry at anyone, regardless of the source of frustration; with *anger from blaming behavior*, players are targeted only if they caused frustration; and with *anger from blaming intentions*, players are targeted only if they intended to cause frustration.

With this paper I develop tests for two important variants of the theory: simple anger and anger from blaming behavior. Simple anger (BDS' first anger hypothesis) formalizes a version of the classical Dollard et al. frustration–aggression–displacement hypothesis, where aggression through a displacement effect is directed at substitute targets (Dollard et al., 1939; Berkowitz, 1989). Such displaced aggression could be relevant when the source of frustration is intangible, as in the case of an unexpected loss suffered by a local soccer team, which has been associated with substantial increases in domestic violence and violent crime (Card and Dahl, 2011; Munyo and Rossi, 2013). Dramatic changes in weather and climate could have a similar effect, for instance through strong and correlated income shocks as a source of frustration and anger.[4] With anger from blaming behavior (BDS' second anger hypothesis), frustrated individuals are angry at those who caused frustration through their behavior. Vis-à-vis simple anger, a key ingredient for anger from blaming behavior is the importance of blame attribution and other-responsibility.[5] And compared to anger from blaming intentions, anger from blaming behavior is more relevant if people focus more on what they can observe (and expect to observe) rather than on intentions, which in many situations are more difficult to discern.

BDS create a rich framework for theoretical analysis. It is, however, quite challenging to develop convincing experimental tests of the theory, because people's behavior is shaped both by the emotions they experience themselves and by their anticipation of others' behavior due to the emotions they might experience (it is a psychological game where subjects have belief-dependent utility functions). It is also the case that the different versions of the theory may predict similar behavioral patterns in a given situation of interest. One example is the two-player ultimatum game, where simple anger and anger from blaming behavior predictions coincide.[6] Therefore, the strategy in the present paper is to lift up, focus on, and compare important variants of the theory in a condensed and specific setting, as simply as possible. The experimental treatments are built around the following situation: A player who had a good chance to earn 100 Swedish kronor (about 12 US dollars at the time of writing) finds himself with only 10 kronor. Is he frustrated? Theory suggests he might be, since he has been obstructed from reaching a desired outcome. Would he punish a passive co-player, who had no chance at all to prevent the misfortune? Simple anger suggests he might. Would he punish an active co-player, who made a "bad" choice in a binary lottery and thereby caused the misfortune? Anger from blaming behavior suggests he might.

I develop specific experimental tests for simple anger and one of the two versions of anger from blaming behavior formalized by BDS. The tests are quite extreme in that they focus on relatively unsophisticated behavior, such as Pareto-damaging punishment of passive co-players. Theoretically, simple anger is widely applicable to situations involving sophisticated strategic interaction, but the conceptual basis is quite rudimentary: I hit my head on the kitchen shelf and therefore I punish you; I hit my thumb with a hammer and therefore I punish you; or you bring me bad news and therefore I punish you (Frijda, 1993). Focusing on this aspect seems natural for a first experimental test of the theory. Moreover, while anger from blaming behavior admits more sophisticated reasoning (about co-players' blameworthiness), it too can be quite rudimentary. For example, it admits punishment for mistakes or bad luck. Gurdal et al. (2013) document behavior that is consistent with this aspect of anger from blaming behavior. In their experiment, an agent invests money on behalf of a principal. The agent chooses between a safe and a risky prospect, and the principal subsequently decides on remuneration for the agent and a dummy player. Interestingly and in line with anger from blaming behavior, Gurdal et al. find that agents are paid less (relative to the dummy player) following bad realizations of the risky prospect, i.e., they are punished for bad uncontrollable

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[3] This is based on the notion of frustration as an obstruction to reaching a desired outcome, which is a common conceptualization in psychology; see, e.g., BDS or Potegal and Stemmler (2010) for details and discussion. For alternative ways to model anger, see, e.g., Akerlof (2016) who focuses on rule violations as a source of anger.

[4] See, e.g., Burke et al. (2015) and Ranson (2014) for a discussion and empirical evidence on climate and interpersonal violence.

[5] See, e.g., Averill (1983), Smith and Ellsworth (1985), and Wranik and Scherer (2010) for a discussion on the role of blame attribution in anger.

[6] In the ultimatum game, an unexpected low offer would generate frustration, to the same extent irrespective of whether we view behavior through the lens of simple anger or anger from blaming behavior. Whereas the key difference between the versions of the theory is the process by which a player evaluates his co-player's part in an outcome that frustrates him, in this particular case a frustrated responder would be equally hostile toward the proposer in any of these two versions of the theory, since with simple anger he does not care about the source of frustration, and with anger from blaming behavior he fully blames the proposer for causing frustration. On the contrary, with anger from blaming intentions (BDS' third anger hypothesis), the degree of hostility would depend on the extent to which the responder thought that the proposer intended to cause frustration. See BDS for further discussion and examples.