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Unpredictable and competitive cues affect prosocial behaviors and judgments[☆]

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ABSTRACT

Why natural selection would favor thoughts or behaviors that benefit others at the cost of oneself (prosociality) in humans is an intriguing question. The present studies explored two kinds of cues representing overarching environmental factors that might affect prosociality: unpredictability, which represents the variability of extrinsic threats, and competition, which represents the relevance of others' performance to one's fitness. In three experiments, we also took into account the interaction between the two environmental factors and two moderators, namely resource availability and prosocial thinking types. In each experiment, participants were exposed to cues of unpredictability and/or competition before assessment of spontaneous prosocial behaviors (Studies 1 and 2) or prosocial judgments in dual-choice dilemmas (Study 3). Results showed that unpredictable cues generally led to lower prosocial behaviors and fewer prosocial judgments (Studies 2 & 3). In contrast, competitive cues led to lower prosocial behaviors among individuals with resource disadvantages (Study 1), and when combined with unpredictable cues (Study 2). However, competition also led to higher prosocial behaviors among individuals with resource advantages (Study 1) and more prosocial judgments in response to rational, utilitarian dilemmas (Study 3). Taken together, these results indicated that human prosociality is affected by environmental factors in predictable ways.

1. Introduction

Researchers have proposed various models accounting for the evolution of prosocial traits, which prompt individuals to help others at a cost to the self (e.g., Nesse, 2007; Nowak & Sigmund, 2005; Trivers, 1971). Importantly, none of the models support the viability of an unconditional “angel gene” that causes prosocial traits to manifest in all environmental conditions. In other words, the human mind is likely sensitized to environmental cues in different situations in order to adaptively adjust one's prosocial behaviors. Although some research has showed that individuals' social behaviors and judgments are influenced by situational cues (e.g., symbol of eyes; Haley & Fessler, 2005; Nettle et al., 2013; darkness; Schaller, Park, & Mueller, 2003), these situational factors are yet to be linked to more general environmental conditions that play a significant role in the evolution of human prosociality.

We propose two overarching environmental factors as candidates that might affect prosociality: whether individuals' fitness depends on

uncontrollable aspects of the environment, and whether fitness depends on others' relative performance. The former is captured by the term “unpredictability” (e.g., Ellis, Figueredo, Brumbach, & Schlomer, 2009), which refers to the presence of extrinsic, uncontrollable threats to one's fitness. The latter might be referred to as “competition”, which constitutes a major selection pressure that shapes human social psyche (Alexander, 1987; Nesse, 2007; Nowak & Sigmund, 1998). Competition, in particular, might be a double-edged sword: While competition for limited resources tends to undermine one's prosociality, competition for prosocial reputation might increase prosocial behaviors. Thus, the present studies constitute an explorative investigation into the effects of unpredictability and competition on different prosocial behaviors (Studies 1 and 2) and prosocial judgments (Study 3).

1.1. Prosociality in the face of unpredictability

While there might be myriad environmental dimensions affecting human prosociality, one key dimension pertains to unpredictability,

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namely levels and variations of extrinsic, uncontrollable threats in the environment (Chang & Lu, 2018). In unpredictable environments, individuals are more likely to prioritize their own fitness (i.e., reproductive success) over that of others, given that directly investing in one's own fitness is more reliable than expecting others to return one's favors in such environments. Thus, environmental unpredictability should negatively affect individuals' prosocial behaviors and judgments (i.e., behaviors and judgments that are consensually regarded as beneficial to others).

Indeed, research has shown that priming extrinsic threats (e.g., infectious diseases) exaggerated participants' xenophobic attitudes, such that they allocated less budget resources to aid foreign immigrants of a less familiar ethnic group (e.g., Faulkner, Schaller, Park, & Duncan, 2004). Sometimes, simply darkness might serve as a signal of unpredictability, activating negative stereotypes of outgroups among individuals who believe in a dangerous world (Schaller et al., 2003). Other studies have found that individuals who believed in a dangerous world or were primed with violent threats expressed less kindness to unfamiliar others (White et al., 2012). Additionally, research using experimental games showed that individuals are less likely to trust and cooperate with others in unpredictable situations. For instance, participants' contribution to common resources declined when the probability of benefiting from public goods became uncertain (Wit & Wilke, 1998). Similarly, participants tended to harvest more irresponsibly from a common resource pool as the variability of the size of harvestable resources increased (Rapoport, Budescu, Suleiman, & Weg, 1992). Overall, it seems that unpredictability generally undermines prosociality (whether in terms of prejudicial judgments or direct behaviors).

However, evidence also indicates that individuals' decisions in the face of unpredictability might be moderated by their resource advantages/disadvantages. For example, a series of experiments conducted by Griskevicius and colleagues showed that priming unpredictable future lowered delayed gratification and increased risk taking in financial decisions for participants with low childhood socioeconomic status (SES), but not those with high childhood SES (Griskevicius et al., 2013; Griskevicius, Tybur, Delton, & Robertson, 2011). Here, childhood SES might signal resource advantages/disadvantages, rather than absolute levels of resources, that calibrate individuals' behavioral proclivities in the future (e.g., high-SES individuals might act more prudently in the face of unpredictable threats in order to preserve their advantages). These behavioral proclivities might also be applied to the area of prosociality. For example, Piff, Stancato, Martinez, Kraus, and Keltner (2012) found that, in the face of unpredictability, high-SES individuals tended to be less generous in order to preserve their own resources. It appears that the prudence of resource-advantaged individuals might discourage them from acting prosocially in the face of unpredictability. In contrast, low-SES individuals were more community-oriented, and were more willing to engage in prosocial actions. Thus, although unpredictability might be detrimental to prosociality in general, it might not be so among individuals facing resource disadvantages.

1.2. Prosociality in the face of competition

Competition can be broadly defined as the covariance between one's fitness with one's relative performance compared with others (similar to “contest competition”; Birch, 1957). Unlike unpredictability, competition necessitates social interactions and comparisons, which are prevalent in primates and most prominently in human society. Although it is difficult to observe an individual's reproductive fitness being influenced by competition, research on social comparison effects has shown that economic behaviors and subjective well-being are often associated with the decisions or income of others (Ferrer-i-Carbonell, 2005; Hodgson, 1988).

Intuitively, competition is often contrasted with cooperation and associated with selfish motives (i.e., people care exclusively about their own self-interests in competition with others; Fehr & Schmidt, 1999). However, theories from a social selection perspective regard competition as a constructive force that has shaped human prosociality. As long as prosocial benefits meet certain conditions (Nowak & Sigmund, 2005), it is in everyone's interest to seek prosocial allies and punish selfish cheaters (Alexander, 1987). Indeed, researchers have shown that chimpanzees exhibited prosocial behaviors with potential allies in the competition for status (De Waal, 2007). Anthropological studies have also shown that the degree of market integration and community size (both are likely associated with competition at the societal level) correlated positively with fairness concerns and altruistic punishment in different experimental games, respectively, across diverse societies (Henrich et al., 2010).

When individuals' fitness depends on mutually beneficial cooperative relationships, individuals have to earn social partners' favors by being more kind and generous than others. This “competitive altruism” constitutes a social selection for increasingly prosocial traits in competitive environments (Nesse, 2007). In support of this, sometimes even an ambiguous cue of others' presence might enhance prosocial responses, indicating individuals' sensitivity to cues of social competition. For instance, research showed that participants were more generous toward partners in various experimental games when being “watched” by eye-like images (Haley & Fessler, 2005; Nettle et al., 2013). However, direct evidence for the effect of competition on prosociality remains largely absent.

Moreover, the constructive effect of competition on prosociality might be contingent on several other factors. First, as with unpredictability, resource availability might also moderate the effect of competition on prosociality. This is because resource availability might be easily converted to competitive advantages/disadvantages in human society. Since prosocial behaviors impose costs on prosocial actors, those with more resources or who are in a better competitive position can afford to be more generous in altruistic competition than those with less. Conversely, those facing resource shortages or competitive disadvantages might show lower degrees of prosociality in competitive situations (to save more resources for themselves). Consistent with this latter prediction, research using an experimentally induced competition pressure showed that poorer performers tended to cheat more in the competition (Schwieren & Weichselbaumer, 2010). Moreover, firms in relatively disadvantaged positions tend to hide more profits for tax evasion in more competitive market conditions (Cai, Liu, & Xiao, 2005). In sum, compared with individuals with resource disadvantages, those with resource advantages are more likely to benefit from competitive altruism and more likely to show prosociality in competitive situations.

Secondly, competition might be intertwined with unpredictability in real environments, leading to interactions of these two factors on prosociality. Unpredictability might weaken the altruistic competition mechanism that promotes prosocial behaviors via increased “errors” in prosocial reciprocal interactions (e.g., individuals might fail to reward others' prosociality because of a lack of information or a lack of resources) or through decreased reliability of one's “reputation score”. Indeed, Panchanathan and Boyd (2003) showed in simulation studies that when errors were introduced, reciprocal prosocial responses based on a reputation scoring mechanism can be easily undermined by defectors.

A third potential moderator might be the type of prosocial concerns that individuals bring to bear on their behavior. Specifically, Greene and colleagues proposed a dual-process model of moral judgments, highlighting the conflict between affect-driven, intuitive moral concerns to uphold deontological principles (e.g., one should never harm others), and cognition-driven, rational moral concerns to maximize utilitarian values (i.e., the greatest good for the most people; Greene,

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