



Altruistic behavior as a costly signal of general intelligence

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Abstract

Unconditional altruism is an enduring puzzle for evolutionary approaches to social behavior. In this paper, we argue that costly signaling theory, a well-established framework in biology and economics, may be useful to shed light on the individual differences in human unconditional altruism. Based on costly signaling theory, we propose and show that unconditional altruistic behavior is related to general intelligence. The cost incurred by engaging in unconditional altruism is lower for highly intelligent people than for less intelligent people because they may expect to regain the drained resources. As a result, unconditional altruism can serve as an honest signal of intelligence. Our findings imply that distinguishing altruistic behavior from cooperative behavior in social psychological and economic theories of human behavior might be useful and that costly signaling theory may provide novel insights on various individual difference variables.

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1. Introduction

Altruistic behavior is difficult to reconcile from a Darwinian perspective. A behavior that reduces an individual's fitness cannot survive the selective forces of natural selection. As altruism appears to reduce an individual's fitness, natural selection seems to predispose individuals to selfishness (Williams, 1992). Individuals need resources to survive and

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reproduce, therefore finite resources imply competition. Incurring a cost to help another organism does not seem to fit in the strict Darwinian framework. Many theories explaining various types of cooperation have been proposed in biology and economics (Fehr & Fischbacher, 2003; Gurven, 2004) but a theoretical explanation of *unconditional* altruism (defined as benefiting others at a cost to oneself, Wilson, 1976) has remained elusive to date.

The purpose of the present investigation was to provide a first step towards establishing the potential of costly signaling theory for increasing our understanding of altruistic behavior. In essence, we propose that altruistic behavior may serve as a costly signal of general intelligence. Before describing the specific studies, it may be helpful to review costly signaling theory. Costly signaling theory (CST; Grafen, 1990a, 1990b; Zahavi, 1975; Zahavi & Zahavi, 1997) explains how individuals use costly behaviors to convey information about themselves. People may differ in the qualities that they possess, such as economic status or certain skills. These qualities may be partially concealed, while simultaneously being valuable to others. For instance, potential partners prefer an actor possessing a certain quality to an actor not possessing it. As a result, actors possessing an unobservable but desirable quality have an incentive to signal their quality to perceivers because perceivers are more likely to select them as a partner if they know their true type. However, actors *not* possessing the quality have an incentive to mimic the signal. Costly signaling theory provides a framework that explains how signals can be transmitted in a reliable way. Signal reliability is secured by making the signal costly and the signal-cost quality-dependent (Zahavi & Zahavi, 1997). Quality-dependence of the cost reflects the characteristic that the cost is smaller for individuals possessing the quality than for agents lacking it. Only those possessing the quality can afford the quality-dependent cost that the signal entails. As a consequence of the quality-dependent cost structure, the perceiver of the signal can be confident that the signaling actor has the underlying quality. For example, the purchase of a very expensive (i.e., the cost) piece of art provides the reliable information that the buyer is very wealthy (i.e., the quality). After all, someone lacking a huge amount of resources is simply not able to waste money on this kind of luxury product.

2. Costly signaling theory and altruism

The statement that altruism may serve as a costly signal has received theoretical support in anthropology, biology, and economics (e.g., Boone, 1998; Gintis, Smith, & Bowles, 2001; Gurven, 2004; Lotem, Fishman, & Stone, 2003; Roberts, 1998). Empirical support for the theory is beginning to emerge. Anthropological fieldwork (in a Meriam community, living on islands off the northeast tip of Australia) investigated the typical profile of men who provided turtles for a feast, which is considered as an altruistic act because it is costly for the providers (Bliege Bird, Smith, & Bird, 2001). The research showed that success at hunting (and hence the ability to provide the feast) depends on several qualities of the hunter such as his environmental knowledge, strength, leadership skills, and organizational skills. As the amount of food that a hunter can provide is reliably related to these skills, altruism may serve as a costly signal of those underlying abilities (Bliege Bird et al., 2001; Smith & Bliege Bird, 2000). Additionally, experimental work has shown that participants may compete by means of altruism to signal trustworthiness (Barclay, 2004).

Altruistic behavior is costly by definition. However, it is less clear what quality altruistic behavior might be related to. Although unequivocal evidence for the link is still missing,

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