

# How Heroes and Traders Maintain Cooperative Involvement: Cognitive Systems for Cooperation

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## Introduction

Rewards can decrease involvement in cooperation. Experimental research has shown that, under certain conditions, the introduction of rewards intended to improve involvement in a cooperative activity has the opposite result in situations in which there is previous cooperative involvement (Frey & Goette, 1999; Mellström & Johannesson, 2008; Warneken & Tomasello, 2008). Moreover, under certain conditions, imposing costs to improve cooperative involvement reduces the previous level of cooperative involvement (Gneezy & Rustichini, 2000). I argue that the decreasing of cooperative involvement by the introduction of rewards or costs is explained by the switching between cognitive systems of the human mind that I identify as the *hero system* and the *trader system*. I argue that the

function of the hero system is to create and maintain connections and cooperative involvement motivated by the appraisal of these connections. A connection is a relation of caring that an individual has with something. (On caring, cf. Frankfurt 1998) I argue that the function of the trader system is to implement cooperative involvement in activities and interactions motivated by the appraisal of their costs and benefits. The trader system is a solution for introducing cooperative involvement in situations without relevant connections. However, the switching from the hero system to the trader system can interfere in the cooperative involvement. Because connections are fundamental for our happiness, interference in the cooperative involvement of the hero system can disturb our happiness.

My purpose in this article is to present not new experimental research but, rather, a new framework for explaining the surprising fact that the introduction of rewards can lead to decreasing cooperative involvement under certain conditions. I try to identify these conditions and elaborate a framework that can be used to develop experimental studies about cooperative involvement. I am relying on experimental studies known in the literature of psychology and economics, and I am conscious of the large number of conditions involved in every experimental study that can interfere with its results, and that a study's findings can be interpreted in different ways. I elaborate a framework that integrates

concepts from discussions in distinct fields of psychology and anthropology and my intention is to contribute to understanding cooperative involvement, something widely held to be fundamental for our life, happiness, and well-being (Deci and Ryan 1991, 2000; Baumeister & Leary, 1995; Kawachi & Berkman, 2001; Thomas, Liu, & Umberson, 2017; Quoidbach, Taquet, Deseilles, Montjoye, & Gross, 2019). I hope this article can make a contribution to an improved picture of human cooperative involvement.

I also have the purpose in this article to identify the basis of the switching between the cognitive systems that I am identifying. This explanation can help to find a way of protecting human emotional involvement from undesirable interferences. I argue that the switching is produced by shifts of attention and appraisals. It is not the introduction of rewards that produces the switching but the attention to the rewards and the appraisal that the individual makes of what he is attending to. My view is that individuals can return to the initial emotional involvement moving their attention to the objects of their connection. I call “object of connection” the individual or group of individuals (whatever their nature or kind) that an individual cares about.

I claim that the hero system and the trader system are cognitive systems with distinct functions that implement different cooperative involvements. I argue that the switching between these systems explains the decreasing in cooperative involvement in

situations of introduction of rewards or costs. For brevity, I say that an individual is in *hero mode* or in *trader mode*.

I claim that the function of the hero system is to create and maintain connections and implement cooperative involvement motivated by the appraisal of these connections. We could say that the hero system works to preserve what the individuals care about. The function of the trader system is to implement cooperative involvement in social interactions and activities motivated by appraisals of their costs and benefits.

According to my picture, each system for cooperative involvement uses different information from the same situation. In hero mode, individuals appraise the cooperative activity or interaction in terms of their connections and perform the cooperative activity or interaction because they consider that this activity or interaction helps or cares for their objects of connection. In trader mode, individuals appraise the cooperative activity or interaction as an exchange between their activity and the rewards or costs of the results of the activity and perform the activity or interaction if they consider the exchange as advantageous.

I argue that the situations in which cooperative involvement decreases after the introduction of rewards (or costs) are situations in which the mind switches from hero mode

to trader mode after attending to the rewards (or costs) and reappraising the situation as a situation of exchange. Initially, the mind is in hero mode, appraising the situation in terms of connections. After the insertion of rewards and the attentional shift, the mind reappraises the situation as a situation of exchange and switches to trader mode. After switching, the mind considers rewards and costs as the relevant items for deciding involvement in the activity or interaction. Further research is needed to find evidence regarding whether this switching is temporary or not.

I claim that the human mind has two cognitive systems for cooperative involvement that implement different cooperative activities and interactions. A *cooperative* interaction or activity is an interaction or activity in which an individual starts and maintains an activity or interaction to help or benefit another individual or group. I consider all human interactions in which the individual attempts to help an individual or group as types of cooperative interactions.

“Hot cooperation” designates the types of cooperative involvement that the hero system implements by creating circles of connection. Different levels of emotional involvement connect the participants in each type of circle of connection (family, circle of friendship, band, clan, tribe, etc.). In hot cooperation, everyone contributes (by caring, sharing, helping, etc.) to the well-being of the individuals to whom they are connected as

part of a net of interdependent collaboration that ensures that everyone provides and receives benefits. I argue that the hero system uses circles or nets of connection to ensure trust and commitment between connected individuals.

“Cool cooperation” designates the cooperative involvement that the trader system implements. In cool cooperation, the delivery of a benefit is conditional on the receiving of a benefit. Cool cooperation is conditional cooperation.

I argue that the trader system is a solution for implementing cooperative activity in situations without connections and situations in which connections can be too weak to ensure hot cooperation. Because connections are necessary for the happiness and well-being of the individuals, the switching from hero mode to trader mode in situations in which there are connections can disturb the happiness and well-being of the individuals involved.

In this article, I am not discussing the activity of trading itself, that is an activity that can be performed in hero mode. For example, an individual can perform the trading activity motivated by an interest in helping other individuals. We must carefully distinguish the activity of trading from the cognitive system that I call the “trader system”. I could choose another name for this cognitive system.

I also discuss the distinction between decreased cooperative involvement resulting from the introduction of rewards, and decreased involvement in the performance of non-cooperative tasks resulting from the introduction of rewards, which is the subject of the experimental studies of Deci (1971, 1975), Lepper, Greene, and Nisbett (1973), Lepper (1981), Deci and Ryan (1980, 1985, 1991, 2000), and Deci, Koestner, and Ryan (1999). Although the decreasing of involvement in those tasks is outside the scope of this article, I think that the present discussion can make clearer the phenomenon that they involve.

## Cooperative Activity Decreased with Rewards

Experimental research has shown (Frey & Goette, 1999; Mellström & Johannesson, 2008) situations in which decreased cooperative involvement was observed subsequent to the introduction of rewards. We can gain insight into these findings by analyzing them together with the finding of Gneezy and Rustichini (2000) that the introduction of fines as a means to decrease delays has the result of increasing the delays. The puzzling pattern of all these findings listed below is that individuals performing the cooperative activities stopped those activities after realizing that they would receive a reward for their cooperative activity or suffer a cost for avoiding it.

1) After the introduction of monetary payments to compensate for expenses related to transportation, parking, and similar costs, volunteers reduced the hours that they committed to communitarian work (Frey & Goette, 1999). The payments were introduced to boost cooperation but resulted in decreased cooperation.

2) Women's blood donation decreased by approximately one-half after the introduction of a monetary payment (Mellström & Johannesson, 2008). For men, the introduction of a monetary payment did not affect the supply of blood donors.

According to my picture, the participants in (1) and (2) were in hero mode before the introduction of payment. Their motivation was to help the community. The introduction of payment disturbed that involvement. As a result, the individuals reappraised the situation, considering only the costs and benefits of the activity regardless of their emotional involvement with the community. After the reappraisal, the involvement in the activity was decreased.

I acknowledge that there is controversy on the effect of economic incentives for blood donation. Niza, Tung, and Marteau (2013) conducted a meta-analysis on the experimental research on the effect of economic incentives for blood donation and conclude there to be “limited evidence” that economic incentives are successful in increasing the



quantity of blood donated. Famously, Titmuss (1970) claims that economic incentives decrease the quality of the blood donated, rather than the amount of the blood donated.

3) Ten daycare centers for children introduced a fine for delays. The aim of the fine was to reduce the incidence of parents being late to pick up their children (Gneezy & Rustichini, 2000). Parental delay is a problem of cooperation. The result, however, was an unexpected increase in delays on the part of the parents. The parents felt comfortable paying as compensation for their delay. The cancelation of the fines failed, at least during the time considered in the study, to make the parents' cooperation to return to the original level.

Before the introduction of the fine, the parents appraised their situation in terms of commitment to the community of the daycare center. The parents were in hero mode, committed to the community that cares for their children. After the introduction of the fine, the parents reappraised the situation as an exchange of the cost (the fine) for the gain (more time to pick up the children) and considered the exchange advantageous. At least for the duration of the study, the parents stopped seeing the situation in terms of commitment to the community.

4) The introduction of rewards decreased the involvement of 20-month-old children in helping behavior (Warneken & Tomasello, 2008). Children who received rewards for helping subsequently helped less than children who did not receive rewards.

The experiment (4) provides evidence of the pattern of switching at an early age. See also a similar pattern with children in Fabes, Fultz, Eisenberg, May-Plumlee, and Christopher (1989).

According to my picture, in situations (1-4), the introduction of rewards and costs produced a switching of cognitive systems. The participants were initially in hero mode. After the insertion of external rewards and costs, they no longer considered the situation as one of connection but, rather, as one of exchange. As a result, the cooperative activity of the participants decreased. Surely the experiment with 20-month-old children requires careful interpretation to know how the children understand contexts of exchange. The experiment, however, shows a decrease in cooperative behavior following the introduction of rewards.

I claim that in (1-4), the decreasing of cooperative interaction is the result of the switching between cognitive systems. This claim can be true although there are situations in which increases in rewards (or costs) lead some individuals to resume their cooperative

activity. We can ask if the result of increasing the rewards (or costs) after the switching to trader mode would lead to a resumption of cooperative activity in hero mode, or whether this resumption would only happen in trader mode. The knowledge of the phenomenon of switching systems can improve decisions about how to maintain cooperative involvement at desired levels.

## Shifts of Attention and Involvement Patterns

I claim that shifts of attention and noting involvement patterns are necessary conditions to produce the switching between the systems hero and trader. I use “production” rather than “causation” because the first term does not commit my picture to a causal approach. The term “production” allows us to keep open the discussion about what the nature of the relation is exactly between attention, noting involvement patterns, and the switching.

For a philosophical discussion of the interaction between shifts of attention and cognitive systems, cf. Campbell (2002). Shifts of attention play a role in emotion regulation (Johnson, 2009) and they are successful ways of reducing emotional reactivity (Rothbart & Sheese, 2007). Philosophers have argued that shifts of attention can also change the phenomenology of perception (James 1890, Block 1995, Chalmers 2004). Ned Block

argues that, regardless of having fixed eyes, moving one's attention around a scene produces different non-illusory percepts that cannot result from the properties of the object in the scene or from the properties that the experience represents (Block 2010).

I claim that the introduction of rewards elicits the attentional shift and shifting one's attention allows evaluating the performance in the activity or interaction as something that is exchanged by the rewards. After that attentional shift, the individual notes the available exchange involvement pattern. I call "involvement patterns" ways in which the motivators of the activity or interaction (the things that motivate the activity or interaction) are related to it. I call "hero pattern", the pattern in which the object of connection is the motivator of the activity. I call "exchange pattern" the pattern in which the motivators are things that the individual expect to receive in exchange for the activity or interaction.

A distinct involvement pattern is what I call the "enjoyment pattern" in which the motivator of an activity or interaction is the enjoyment that this activity or interaction produces. The empirical findings of Edward Deci in Deci (1971, 1975) show examples of this kind of involvement pattern. (I discuss the findings of Deci and Richard Ryan in "A Distinct Involvement Pattern" ahead.) My picture opens the possibility of saying that the enjoyment pattern is included in the hero pattern.

Although it is plausible that all or the most part of the participants in the experiments (1-4) were able to note the exchange pattern, not every participant switched to trader mode. Surely noting an involvement pattern is distinct from choosing to start an activity or interaction that exemplifies that pattern.

My picture proposes that attentional shifts and identifications of involvement patterns are necessary but not sufficient to produce the switching between the systems for cooperative involvement. My picture predicts that a mother will remain in hero mode in caring her child, although rewards are offered to her to improve her caring. The mother can recognize the exchange pattern and maintain the hero mode. I think that the strenghteness of connections to what Harry Frankfurt aptly calls “the things we care about” (Frankfurt 1998) is decisive to maintain the hero mode or return to the hero mode once again. I consider that the key point to choose the involvement pattern is how deep the individual’s connection to the things figuring in the situation is. Perhaps what my picture presents as the working of two systems is the outcome of different emotional ways of approaching situations.

An important question is what makes humans maintain a particular involvement pattern. This surely depends on needs, goals, values, interests, beliefs, desires, and

intentions of the individual. Answering this question can allow us to answer the question on what factors could make a person able to avoid the switching.

I claim that in hero mode the attentional objects are the objects of connection and the hero pattern. The introduction of rewards and costs elicits an attentional shift that makes the rewards and costs and the exchange pattern in which they are the attentional objects.

My picture is compatible with the thesis that recognizing attentional objects as objects of connection in a hero pattern and as rewards or costs in an exchange pattern are kinds of appraisal as the appraisal theory (Arnold 1960) supposes. For a philosophical discussion on appraisals, see Nichols (2007). Langer (1967) and Bowlby (1969, 1982, p. 104, 108) point out that “often” appraisings are “*felt*” (1969, p. 104).

Although the thesis that these attentional shifts result in appraisals is independent from the thesis that the switching results from the attentional shift, I claim that moving attention to objects in involvement patterns is a kind of appraisal. I propose that noting a hero pattern in a situation is to “feel” feelings of caring for the things in that situation. These “intuitive appraisals”, to use Bowlby’s (1969, 1982, p. 104) apt phrase.

Because there is an attentional shifting, individuals can return to their previous level of emotional involvement by once more attending to the people and communities they care about. However, in experiment (3), the participants did not immediately return to their

previous level of cooperative involvement. Further research is needed to determine under what conditions the switching produces temporary or permanent effects.

Individuals in trader mode consider interactions and activities in terms of costs and rewards, rather than in terms of the emotional features of their connections. Thus, performing an activity in trader mode, in certain conditions, can be an obstacle to creating and maintaining the connections that individuals create in hero mode. Because creating and maintaining connections are necessary conditions for human well-being and happiness (Baumeister & Leary, 1995; Deci & Ryan, 1991, 2000; Kawachi & Berkman, 2001; Thomas, Liu, & Umberson, 2017; Quoidbach, Taquet, Deseilles, Montjoye, & Gross, 2019), this outcome can disturb human well-being and happiness.

## The Function of the Hero System

I propose that the function of the hero system is to create and maintain connections. A connection is the emotional relation that individuals have with the things they care about and only with the things they care about. Different psychological theories have claimed that humans have an innate need for connection. I agree with that claim and propose that the hero system works in a way that satisfies this psychological need and promotes the cooperative involvements that are necessary for the survival of social groups.

According to Deci and Ryan (1991, 2000) and to Baumeister and Leary (1995), the need for connection is an innate human need. These authors call this need “the need to belong” (Baumeister & Leary, 1995) and “the need for relatedness” (Deci & Ryan, 2000). Bowlby (1969) calls this need the “desire for attachment”. Deci and Ryan (2000) propose that humans pursue connection to other humans and groups to satisfy this innate human need. Individuals need to feel connected to others—“to love and care, and to be loved and cared for” (Deci & Ryan, 2000, p. 231). Baumeister and Leary (1995) and Deci and Ryan (2000) propose that connection is necessary for well-being.

I claim that the hero system promotes connection and the creation of connections is a necessary condition for individuals' happiness and well-being. Perhaps well-being is a component of happiness. (Cf. Williams (1985) and Raz (2004) for philosophical discussions of well-being.)

Because the hero system introduces connection in groups, it implements the strategy of hot cooperation. A strategy of hot cooperation is one in which everyone contributes to the group by sharing and helping in a network of interdependent collaboration that ensures that everyone contributes and receives benefits. In hot cooperation, the interactions exhibit what Sahlins (1972) calls “generalized reciprocity”.



I claim that the hero system implements hot cooperation by implementing a circle or net of connection that is a net of individuals related by connections in which everyone is prepared to share and help and expects to be a recipient of sharing and helping. Individuals care for and are prepared to help those to whom they are connected. Families, circles of friendship, bands, clans, and tribes are examples of circles of connection. These circles have different levels of emotional involvement. I claim that emotional involvement is something that individuals create using attention.

The circles or nets of connection of an individual include all the individuals that he or she cares about (for example, natural things and our planet). Because of this feature, the circles or nets of connection that I am talking about are *not* the “circles of friendship” that Dunbar (2018) says that are a “series of hierarchically inclusive layers” in which every circle of friendship has an increased number of individuals but decreases in “average emotional closeness” and time investment in the friendship (Dunbar, 2018, p. 35-6).

I claim that connection requires commitment and trust and makes available the commitment and trust necessary for hot cooperation. The claim that the hero system implements hot cooperation is independent from the claim that trust and commitment are the characteristics that the hero system uses to implement hot cooperation.

I propose the following operational definitions of commitment and trust.

Commitment is the willingness to act to benefit another individual. Trust is the expectation that another individual is willing to benefit us and avoid any action that could hurt us. Such a treatment of trust is in accordance with the definition of trust of Mayer, Davis, and Schoorman (1995) as “the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action relevant to the trustor, irrespective of the ability to monitor or control that other party” (p. 712). On definitions of trust, see Balliet and Van Lange (2012). On definitions of commitment, see Van Lange et al. 1997).

The activity of helping is not an activity of exchange. A person helping someone else is not in a direct exchange in virtue of two conditions. First, the helper will receive help only if he also is in need. Second, with respect to a future situation of being helped, it is possible that the future helper will not be the same person who was helped.

Because the benefits in hot cooperation are not directly exchanged, the preservation of the network of sharing and helping requires a commitment to help and share and the trust that others will help and share. Thus, hot cooperation requires commitment and trust.

My view is that circles of connection are circles of commitment and trust. Findings support the idea that humans are prepared to perform cooperative action when they experience trust (Pruitt & Kimmel, 1977) and concern for others (Carnevale & Pruitt, 1992; De Dreu, Weingart, & Kwon, 2000; De Dreu, 2004). Pruitt and Kimmel (1977, p. 375) treat “trust” as an “expectation of cooperation”. Carnevale and Pruitt (1992, p. 539) treat concern for others, or “other-concern”, as “concern about the other party’s outcomes”. I take the term “other-concern” to have the same meaning as the term “commitment”.

Commitment leads individuals to benefit an individual or group rather than themselves. Van Lange et al. (1997, p. 1375) note that “strong commitment” leads individuals to be willing to prioritize benefiting another individual or group over themselves. Thus, the hero system creates a network of emotionally bonded individuals in which everyone cares for and helps everyone else.

## The Function of the Trader System

The function of the trader system is to implement cooperative activities in situations in which there are no connections. The trader system is a solution to create cooperation in situations without connections and situations in which the connections are too weak to ensure hot cooperation. In trader mode, the individual appraises the cooperative activity by

its costs and gains. In trader mode, the individual considers costs and benefits that can result from an activity or interaction.

The trader system implements cool cooperation in a group. In cool cooperation, the delivery of a benefit is conditional on the receiving of a benefit. One receives a benefit only if one provides a benefit. Thus, cool cooperation is conditional. Under cool cooperation, the interactions exhibit what Sahlins (1972) calls “balanced reciprocity”.

The trader system extends cooperative activity. Cool cooperation happens between the two extremes of hot cooperation and lack of cooperation. The trader system is a way to allow individuals outside the circles of connection to cooperate.

It is plausible that each system for cooperative interaction makes use of distinct ways of emotional activity. The hero system requires a higher emotional investment that is appropriate for long-term connections, while the trader system requires a lower emotional investment appropriate for short-term interactions.

One indication that individuals can switch between these two modes is the finding that there are two types of emotional responses to betrayals of trust, corresponding to the “personal domain” and the “social domain” (Joskowicz–Jablonek & Leiser, 2013). The betrayal of trust in close relationships, such as friendships, elicits a stronger emotional

response than the betrayal of trust between strangers in which someone *harms* a social contract. The relief actions are very different too. Individuals consider monetary compensation to be appropriate relief only for betrayals in the social domain. Monetary compensation in the personal domain is considered “unsuccessful” and “inappropriate” (Joskowicz–Jablonek & Leiser, 2013, p. 1805).

## A Distinct Involvement Pattern

The purpose of this section is to distinguish between decreased *cooperative* involvement resulting from the introduction of rewards or costs (hereafter, “phenomenon 1”) and decreased involvement in the performance of tasks that are enjoyable by themselves resulting from the introduction of rewards or costs (“phenomenon 2”). I claim that the two phenomena are distinct, although they are sometimes treated in the research literature without this distinction.

My discussion in this article focuses on phenomenon 1. Phenomenon 2 was discussed in the research literature on motivation in Deci (1971, 1975), Lepper et al. (1973), Lepper (1981), Deci and Ryan (1980, 1985, 1991), Deci et al. (1999) and Gneezy, Meier, and Rey-Biel (2011).

Phenomenon 1 happens in situations in which individuals perform cooperative interactions and activities. These interactions and activities are performed for the benefit of some individual or group with which the individual has a connection. I propose that cooperative interactions and activities are emotionally attractive because they provide the opportunity to make or strengthen connections.

Phenomenon 2 happens in situations in which individuals perform activities that they consider enjoyable by themselves. These activities include the performance of tasks considered attractive or interesting by the individuals, such as working to solve puzzles (Deci, 1971), and tasks that allow one to exercise creativity, such as writing headlines (Deci 1971). Deci (1975) and Deci and Ryan (1980, 1985, 1991, 2000) propose that these activities have characteristics that allow individuals to satisfy the need for competence and the need for autonomy. According to Deci and Ryan (2000), the need for competence is satisfied by tasks that allow one to improve one's skills, whereas the need for autonomy is satisfied in situations in which individuals are free to choose which tasks they accept. On the neural correlates of the beneficial results of choices of individuals in harmony with their own interests and values, see Murayama et al. (2015).

The research about phenomenon 2 is beyond the scope of this article. I claim that a switching to trader mode also produces the phenomenon 2. In phenomena 1 and 2, the

introduction of rewards (or costs) decreases the involvement in the activity. In phenomenon 1, the decrease is produced by the switching between hero and trader systems, whereas in phenomenon 2, the decrease is produced by the switching between what I call “system of enjoyment” and the trader system. In both phenomena, the introduction of rewards plays a role in the switching to trader mode, making the individuals appraise their activities in terms of rewards and costs.

## Conclusion

Can the individuals return to the hero mode after the switching? Further research is needed to know whether the switch to trader mode is temporary or permanent. I think that the picture I presented can help to find ways to protect our connections. This picture suggests that individuals can return to the hero mode moving their attention to the things they care about. Knowing how these systems affect the individuals will allow us to protect the hero system’s ability to maintain the connections and protect the trader system’s ability to extend cooperation.

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