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How activating cognitive content shapes trust: A subliminal priming study ☆

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ABSTRACT

The activation of cognitive contents plays a prominent role in social psychological research. Yet, so far this has received little attention in economics. In our research we connect a standard social psychological manipulation to activate cognitive content (a trust vs. distrust priming manipulation) to a classic paradigm from economics (a trust game). Our findings demonstrate that subliminally activating the concept of trust (vs. distrust) leads participants to judge a series of strangers as more (vs. less) trustworthy. Moreover, our research shows for the first time that such a subliminal priming manipulation shapes the subsequent sending behavior in a fictitious version of a standard economic trust game. This suggests that psychological priming techniques allow new insights into what determines beliefs in economic games.

1. Introduction

Trust is a crucial ingredient in virtually all economic and social relationships. Every day we choose to trust doctors, teachers, employers, colleagues, airlines, neighbors, traders, and others. Trust equally affects the effectiveness of large markets and entire economies (Bolton, Greiner, & Ockenfels, in press), as well as every person's microcosm of friendships (Crocker & Canevello, 2008), committed relationships (Koranyi & Rothermund, 2012), and family ties (Conley, Moors, Ziegler, & Feltner, 2011). As a result, for decades trust has been in the focus of research in economics (e.g. Arrow, 1974; Greiner & Ockenfels, 2009) and psychology (e.g. Schul, Mayo, & Burnstein, 2004; Todorov, Baron, & Oosterhof, 2008), as well as in neighboring disciplines such as evolutionary theory (Yamagishi, Cook, & Watabe, 1998), neurobiology (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005), sociology (Coleman, 1990), and philosophy (Lahno, 2002). However, the paradigms used to capture trust, and the corresponding perspectives on trust, typically differ markedly across the disciplines.

In economics, researchers tend to focus on the role of preferences and beliefs for trust. One's *preferences* determine which outcome one favors. Preferences are typically assumed to be exogenous to the context (i.e. consistent over different contexts), stable over time, and to only depend on outcomes. Classic game-theory, for example, assumes that people always pre-

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fer having more money to having less money. Yet, apart from the material gain, other factors have been found to determine one's preferences. The relation of one's own outcome to the outcome of others (Bolton & Ockenfels, 2000), if an interaction partner is an ingroup- or outgroup-member (Chen & Li, 2009), or one's inherited dispositions (Cesarini et al., 2008) may significantly influence which outcomes individuals prefer. Furthermore, this literature also assumes that preferences how people evaluate, for example, their relative position in a group or the welfare of in-group vs. out-group matches are exogenous and stable. In line with this assumption, preferences are usually represented by fixed utility functions in economic models (cf. Loewenstein, Rick, & Cohen, 2008). In addition to one's preferences, one's *beliefs* about how others will behave in a given situation influence how we behave ourselves. Whether we do or do not believe that an interaction partner will cooperate, for instance, affects our own willingness to cooperate. Beliefs are assumed to be formed according to equilibrium conditions (i.e. decisions are mutually best responses given one's preferences, and beliefs about decisions accurately reflect actual decisions), and are subject to rational updating if possible and necessary.

For trusting behavior the interplay of preferences and beliefs becomes obvious in simple economic trust games (Berg, Dickhaut, & McCabe, 1995). In standard two-person trust games, a truster owns an initial endowment, which he or she can either keep or transfer to another person – the trustee. The investment of the truster is typically multiplied by a certain rate (e.g. 2), so that the trustee receives more than the truster has initially sent (e.g., 2 Euro for every Euro sent by the truster). In a second step, the trustee decides how much he or she is willing to return to the truster, which might also be multiplied by a rate larger than 1. According to game theoretical reasoning, people's preferences in such a game are fixed: Apart from the core preference to maximize one's personal gain, other overarching preferences such as individual levels of risk aversion (Karlan, 2005), altruism (Ashraf, Bohnet, & Piankov, 2006; Cox, 2004), and betrayal aversion (Bohnet, Greig, Herrmann, & Zeckhauser, 2008; Bolton & Ockenfels, 2010) influence how much a truster is willing to send: For instance, the less risk averse and the more altruistic a given truster, the more he or she is willing to send. In addition to preferences, beliefs about the trustworthiness of one's counterpart also shape individual behavior in a trust game. Clearly, trusters are likely to send more money, if they see their counterpart as trustworthy (Ashraf et al., 2006; Bolton, Loebbecke, & Ockenfels, 2008; Bolton & Ockenfels, 2009; Greiner, Ockenfels, & Werner, 2012) – which in turn may depend on the underlying institutions (Bohnet, Frey, & Huck, 2006; Bolton et al., 2008).

Economic theories provide a clear prediction for rational decision making of selfish players in those games: If the trust game is played once and two players participate and remain anonymous, nothing should be sent by the truster and nothing should be returned by the trustee (Berg et al., 1995). This reasoning is derived by backwards induction: If more money is better than less, the truster should not return anything. Thus, the truster should not send anything to the trustee in the first move because nothing is expected in return. Not to trust and not to reciprocate is thus the only Nash-equilibrium among selfish and rational players.

Social psychological research, on the other hand, offers a different viewpoint. Investigating a large variety of phenomena, various researchers have concluded that how humans think, feel, and act is shaped by more than one rather "rational" way of integrating information. Rather, dual-process theories have assumed a prominent role in explaining human judgment, decision making, and behavior. In addition to a "rational" (Epstein, 1991), "deliberative" (Fazio, 1986), "systematic" (Chaiken, Liberman, & Eagly, 1989; Petty, Cacioppo, & Berkowitz, 1986), "rule-based" (Sloman, 1996), and "effortful" (Devine, 1989) way of information processing, these theories propose a second way. This second route operates in a more "heuristic" (Chaiken et al., 1989; Petty et al., 1986), "associative" (Sloman, 1996), "experiential" (Epstein, 1991), and "automatic" (Devine, 1989; Fazio, 1986) fashion (for an overview of dual-process models see Evans, 2008; Smith & DeCoster, 2000). From this angle, it is not as clear that the rather "rational" thinking style is superior. In the domain of social psychology it is broadly acknowledged that heuristic processing often constitutes a valuable tool to reach fast and resource-saving decisions without necessarily being accompanied by trade-offs in accuracy (e.g. Corcoran & Mussweiler, 2010; Gigerenzer & Gaissmaier, 2011; Mussweiler & Epstude, 2009; Tversky & Kahneman, 1974).

Recently, an integrative framework for these two principle ways of information processing has been proposed (Strack & Deutsch, 2004, 2005). More specifically, this approach assumes two systems (a reflective and an impulsive system) to operate simultaneously and to influence each other throughout the formation of social behavior. The *reflective system* requires substantial cognitive resources and integrates and weighs information about outcome-values and their respective probabilities to reach the best decision. This is somehow reminiscent of the way economic theory assumes humans to reach decisions. In the Reflective- Impulsive Model (RIM; Strack & Deutsch, 2004), all judgments and decisions are assumed to involve the reflective system. This is partially inherent to the nature of judgments and decisions, namely their explicitness and their propositional structure. When judgments and decisions are formed, the reflective system has taken part in their generation by relating critical contents to one another in a propositional manner and by assigning a truth value to these relations (Strack & Deutsch, 2004). For example, the judgment that someone is a trustworthy person includes the relation of the person to the category of trustworthy people. Furthermore, decisions – such as decisions to trust another person – are strongly influenced by reflective weighing and integrating outcome-affecting information. In fact, economic research has often demonstrated the reflective component of trust decisions: Variations in game structure and outcome-expectancies critically shape trusting behavior in economic trust games (Snijders & Keren, 2001). The *impulsive system*, on the other hand, requires little cognitive resources. It is fast and relies on the principle of spreading activation within the structures of associative networks. The reflective system and the impulsive system are interactive. Thus, information processed in the one system can affect processing in the other system. For example, whenever one deliberatively encounters a decision in the reflective system, corresponding contents in the impulsive system will be activated and used to reach the decision. Vice