

The Neural Correlates of Seller Reputation in an Online Market

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Online feedback systems provide a mechanism to signal seller reputations to transactors and facilitate technology-mediated cyber markets. On eBay, total feedback score and a star symbol are placed next to the seller ID at the top of the feedback profile. The seller ranking can be strongly signaled by the star, which changes from a yellow star to silver shooting star with an increase in the feedback score. A body of research provides evidence for the effect of seller reputation, indicated by ratings and reviews, on online auction behavior, including sales (Li and Hitt, 2008; Archak et al., 2011; Chevalier and Mayzlin, 2006), price premium (Ba and Pavlou, 2002), sale time (Ghose et al., 2009), and market share (Duan et al., 2009). The development of neuroscience provides the potential to explore bidder behavior at a deeper level and to offer better theoretical explanations for online auction behavior (Dimoka et al., 2012b).

In electronic commerce, Dimoka et al. (2010) first identified the neural correlates of trust and distrust evaluation with four sets of seller profiles. They used textual scales for trust and distrust to measure the cognitive processing for these two constructs. This study extends their work and uses an advanced method to detect online seller reputation computation during online bidding activity.

In the process of online auction, bidders first assign a “goal value” (Rangel et al., 2008), to a product and then make a bid. “Willingness-To-Pay” (WTP) is computed during the bidding. The Becker-DeGroot-Marshak (BDM) auction (Becker et al., 1964) has been widely adopted to measure WTP in marketing science and was recently introduced into consumer neuroscience for a similar purpose (Plassmann et al., 2007; Linder et al., 2010; Harris et al., 2011). This study adopted the BDM auction mechanism to measure value computation in two real online bidding tasks.

This study aims to investigate the effect of online reputation, reflected by seller ranking (e.g., hearts versus crowns), on WTP with behavioral and neural data. A within-subject factorial fMRI experiment was designed with three phases: a pre-scanning, a scanning, and a post-scanning phase. The tasks of subjects were to bid a price for a range of products in BDM auctions. In the pre-scanning phase, subjects bid for products to get the “base” product value (without seller rankings). In the scanning phase, subjects bid for products provided by the given seller (five-heart seller or five-crown seller) to obtain the “combined” value (with seller rankings

included). Self-report measures for seller reputation were collected in the post-scanning phase.

This study advances the measurement of online seller reputation by directly detecting value computation during auction bidding. Borrowing from consumer neuroscience, the BDM auction provides an effective method to evoke cognitive processing (i.e. value computation of WTP). A multi-method approach was applied to measure and understand the effect of seller reputation on WTP. The study contributes by identifying the brain area responding in the value computation of seller reputation, and providing the neural evidence for the effect of seller reputation on price.

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