The Neuroscience of Buzz: Neural Bases of Message Propagation

Emily Falk, Sylvia Morelli, Locke Welborn, Matthew D. Lieberman
Department of Psychology, University of California, Los Angeles

Information exchange between individuals is at the heart of social interaction, and can result in the spread of important attitudes and behaviors (e.g. health behaviors, product trends, political attitudes). Building on previous work exploring the neural bases of persuasion-induced behavior change (Falk et al., under review), we hypothesized that decisions to pass information on to others are associated with activity in regions associated with self-referential and motivational processing, such as medial prefrontal cortex (MPFC) and precuneus/posterior cingulate (precuneus/PCC).

In this investigation, we used a modified game of 'telephone' to determine what types of neural activity are associated with:

- Decisions to pass information on to others
- Doing so in an accurate and enthusiastic manner
- Doing so in a way that is compelling to others

Self-referential processing and mentalizing about similar others are associated with activity in medial prefrontal cortex (MPFC) and precuneus (Mitchell, Macrae & Banaji, 2006; Ames, Jenkins, Banaji, Mitchell, 2008). In this investigation, we propose that decisions to pass information on to others may involve considering one’s own opinions (“Do I like this show?”). Likewise, effective prediction of what other people will like may also make use of such self-referential processing. Consistent with this prediction, we observed significant activity in MPFC and precuneus/PCC ROIs associated with decisions to propagate information, and association in the MPFC ROI with message recipients’ intentions to propagate information. In addition, other-focused mentalizing may facilitate ‘selling’ information in ways that result in more successful message propagation (increased accuracy/enthusiasm of message delivery; message recipients intend to propagate the information further). In whole brain searches, successful message propagation across a range of measures was associated with activity in both self-referential and other-focused mentalizing regions, including MPFC, Precuneus/PCC, DMPFC and TPJ.

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