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FlashReports

Social cues for creativity: The impact of behavioral mimicry on convergent and divergent thinking

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ABSTRACT

We present behavioral mimicry as a social cue for creative thinking. Specifically, we argue that being mimicked by an interaction partner cues convergent thinking by signalling a social opportunity for collaboration, while not being mimicked cues divergent thinking by signalling a social demand for improvisation and innovation. To test this theory, we experimentally manipulated whether individuals were subtly mimicked or not by an experimenter during a 5 min social interaction, and subsequently measured participants' capacity for convergent thinking (Experiment 1) and divergent thinking (Experiment 2). The results point to the importance of understanding how social relationships influence the creative processes and contributes to the growing understanding of the social function of behavioral mimicry.

In the words of the ancient Greek philosopher Plato, necessity is the mother of invention; creative thinking is motivated by social problems and opportunities. Despite the inescapable truth of social influences on creativity, empirical research traditionally focused on non-social factors such as personality and cognitive abilities to explain creativity (Barron & Harrington, 1981; Eysenck, 1993). Only recently has a "social psychology of creativity" developed, recognizing the impact of social networks, role models, extrinsic rewards, and features of the environment on the creative process (Amabile, 1983; Simonton, 1999). Although this literature has contributed to our understanding of the social side of creativity, there remains a conspicuous gap in the literature: no research has yet examined the impact of *social interactions* – the most fundamental element of sociality – on creative thinking. This is surprising given the pervasiveness of social interaction in everyday life (after all, humans are social creatures) and the potential interpersonal utility of creative thinking. As Darwin (1859/1999) noted, "in the long history of humankind, those who learned to collaborate and improvise most effectively have prevailed."

The research reported here explores how social interactions influence creativity by investigating the impact of nonverbal social feedback on the creative process. Being creative requires both *convergent* and *divergent* thinking capabilities to differing degrees depending upon the nature of the problem (Guilford, 1959). Convergent thinking is associated with the use of wide mental categories, and enables individuals to see similarities, patterns, and relations between apparently diverse pieces of information ("connecting the dots;" Cropley, 2006). Divergent thinking is associated with the ability to shift between mental categories and perspectives ("thinking outside of the box") and facilitates broad scanning ability and the generation of disparate, loosely associated ideas (Guilford, 1959). The utility of convergent and divergent thinking styles in creative problem solving thus varies with social demands: convergent thinking facilitates collaboration and coordination (Bahar & Hansell, 2000; Larey & Paulus, 1999) while divergent thinking facilitates improvisation, innovation, and the consideration of a problem from varying perspectives (Nemeth & Goncalo, 2005; Nemeth & Rogers, 1996).

Interpersonal cues for creative thinking

Humans adapt their cognitive styles to meet a variety of social demands (Schwarz, 1990), including demands for interpersonal collaboration and individual innovation (Nemeth & Rogers, 1996). Opportunities for collaboration arise when we interact with others who are similar, familiar, or motivated to affiliate with us (Brewer, 1996; Tedeschi & Nacci, 1976). In contrast, the necessity arises for individual innovation and improvisation when opportunities to collaborate are not apparent due to social rejection, interpersonal distance, or diversity (Arndt, Routledge, Greenberg, & Sheldon, 2005; De Dreu, 2007). As such, individuals engage in more convergent thinking when interacting with in-group members, people with shared knowledge or skills, and those with whom we are motivated to affiliate (Nemeth & Kwan, 1987), while individuals engage in divergent thinking when interacting in diverse or discordant groups, or with dissimilar or disagreeable individuals

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(Nemeth, 1986). Thus, people engage in more or less convergent and divergent thinking in response to interpersonal cues that signal an opportunity for collaboration or a need for individual innovation.

Mimicry as a cue for creative thinking

We argue that behavioral mimicry is one such interpersonal cue. People automatically mimic the postures, gestures, and body movements of those with whom they interact to a greater extent when they are motivated to affiliate, cooperate, and share personal resources for mutual social gain (Lakin & Chartrand, 2003; Maddux, Mullen, & Galinsky, 2008). In contrast, mimicry decreases and may even be eliminated between members of different social groups, and between individuals who are interpersonally distant or have little motivation to affiliate with each other (Johnston, 2002; Karremans & Verwijmeren, 2008; Yabar, Johnston, Miles, & Peace, 2006). Since mimicry is a cue to interpersonal liking and motivation to affiliate (Lakin, Chartrand, & Arkin, 2008), we argue that mimicry signals an opportunity for collaboration, while the absence of mimicry signals a need for individual innovation.

In support of this, research has demonstrated that being mimicked leads people to cooperate rather than to compete (Maddux et al., 2008), increases willingness to comply with persuasion attempts (Tanner, Ferraro, Chartrand, Bettman, & van Baaren, 2008), and promotes attitude convergence (see Chartrand & van Baaren, 2009, for a review). On the other hand, not being mimicked may signal a need for individual innovation; it leads to more pronounced expressions of individualism, interpersonal distance, and less cooperation with others (Ashton-James, van Baaren, Chartrand, Decety, & Karremans, 2007).

Consistent with the notion that social demands for collaboration instigate convergent thinking and demands for innovation and improvisation elicit divergent thinking, we hypothesize that being mimicked (a collaboration cue) will increase convergent thinking, and that not being mimicked (an innovation cue) will increase divergent thinking. In two experimental studies, we examine how the extent to which individuals are mimicked (being mimicked versus not mimicked) influences both convergent and divergent thinking, an important first step in understanding of the role of interpersonal social processes on creative outcomes.

Experiment 1: mimicry and convergent thinking

Method

To test the hypothesis that mimicry increases convergent thinking, 57 participants (29 female, 28 male) were either mimicked or not mimicked during a 5 min conversation with an experimenter on a neutral topic (“what did you learn in your last class?”). In the mimicry condition, the experimenter subtly mirrored the nonverbal behaviors of participants as they spoke, including face, hair and body touching, posture shifting, and limb movements. In the no-mimicry condition, the experimenter refrained from mirroring the participants’ behaviors (Chartrand & Bargh, 1999).

Following this, participants completed a computer-based 10-item pattern recognition task (see Appendix) that was selected based on previous research (Brophy, 1998; Cropley, 2006; Runco, 1993; Zhang & Sternberg, 2006) indicating that the identification of patterns requires convergent thinking. At the end of the experiment, participants completed a demographic questionnaire and funnel debriefing procedure (Bargh & Chartrand, 2000), which indicated that none of the participants were aware of the presence or absence of experimenter mimicry (see Fig. 1).

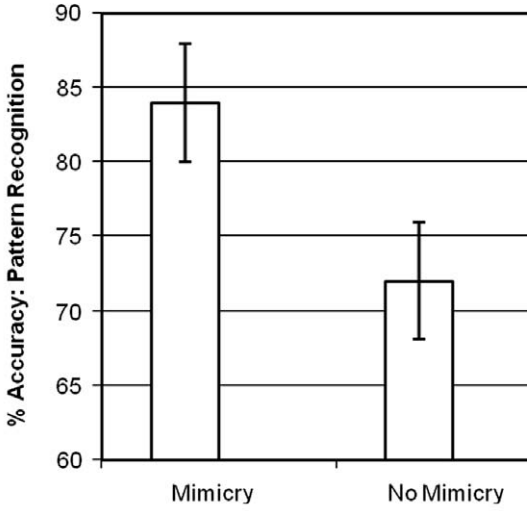

Fig. 1. Mean performance on a pattern recognition task as a function of the presence or absence of mimicry (Experiment 1). Higher scores indicate a greater capacity for convergent thinking.

Results and discussion

Participants’ accuracy on the pattern recognition task was submitted to a one-way ANOVA. As predicted, participants who were mimicked by the experimenter correctly identified more patterns ($M = 8.35$, $SD = 1.54$) than those who were not mimicked ($M = 7.24$, $SD = 2.53$), $F(1, 56) = 4.00$, $p = .05$, $\eta_p^2 = 07$. On the basis that pattern recognition is indicative of convergent thinking ability, Experiment 1 provided the first evidence that the presence of mimicry in social interaction encourages convergent thought relative to the absence of mimicry.

An alternative explanation for our results could be that participants who were not mimicked performed worse on the pattern recognition task due to strained cognitive resources (Finkel et al., 2006). To address this concern, we examined reaction time data that was collected during the pattern recognition task. We found that the mimicry condition to which participants were assigned did not influence the amount of time taken to answer each item ($M_{Mimicry} = 36.20$ s, $SD = 12.05$; $M_{No\ \ Mimicry} = 36.49$ s, $SD = 18.22$), $F = .005$, *n.s.*, indicating that the impact of mimicry on pattern recognition is not likely to be a function of mental processing capacity. Furthermore, we employed a *divergent* rather than convergent thinking task in Experiment 2, hypothesizing that participants who were *not* mimicked would demonstrate higher performance than those who were mimicked on a divergent thinking task.

Experiment 2: mimicry and divergent thinking

Method

Fifty-eight participants were randomly assigned to one of two experimental conditions in which they were either mimicked or not mimicked by an experimenter during a 5 min conversation, as described in Experiment 1. Following this experimental interaction, participants completed a modified version of Rubin, Stoltzfus, and Wall’s (1991) novel product labelling task (see also Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). They were asked to create three novel labels for three different product types (pasta, nuclear element, pain reliever). Participants were provided with six example product names for each category, all of which had