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Motivational synchronicity: Priming motivational orientations with observations of others' behaviors

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Abstract Two experiments tested the motivational synchronicity hypothesis, according to which observation of a target person's behavior implying an intrinsic or an extrinsic motivational orientation primes the observers' corresponding motivational orientation. Experiment 1 revealed that participants exposed to a target person intrinsically motivated to perform a task, relative to those exposed to an extrinsically motivated target person, showed greater intrinsic motivation (free-choice persistence) for the same task. Experiment 2 extended this in two important ways: (1) different tasks were used for the target and participant in order to rule out an expectation-based interpretation of the results, and (2) performance on an activity known to be facilitated by intrinsic motivation was used as the dependent measure. It appears that simply observing others' motivational orientations influences the accessibility of the observers' corresponding motivational orientation.

Keywords Priming · Motivational orientations · Intrinsic motivation · Synchronicity

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Introduction

In recent years, investigators have studied a set of processes variously termed mimicry, contagion, or synchronicity that involve people displaying behavior similar to that observed in others with whom they have had contact (e.g., Byrne and Russon 1998; Chartrand and Bargh 1999). Although observing others could lead the observer to make a deliberate decision to feel and act in ways similar to those they have observed, there is increasing evidence that such social influence can occur, at least in part, in the absence of such conscious deliberations (e.g., Aarts et al. 2008). That is, the perception of another person's behavior can trigger overlapping representations of that behavior in the observer, leading to synchronicity without intention or awareness.

Recent research has indicated that people's motivational orientations can also be primed (Levesque and Pelletier 2003). According to self-determination theory, intrinsic motivation, which is an autonomous form of motivation, represents the human tendency to explore and master challenges while feeling a sense of choice. In contrast, extrinsic control represents the adoption of behaviors for instrumental reasons such as gaining rewards or avoiding threats. Decades of research has found a host of positive outcomes related to intrinsic motivation, such as increased interest, creativity, and performance, whereas extrinsic control has been linked to a range of more negative outcomes (Deci and Ryan 2000). Levesque and Pelletier (2003) found that people given an autonomous/intrinsic motivation prime in a scrambled sentence task experienced greater interest and performed better on a puzzle activity than those given a controlled/extrinsic motivation prime.

Herein we test a motivational synchronicity hypothesis, according to which exposure to an intrinsically motivated

or extrinsically controlled target primes the observers' corresponding motivational orientation, leading those who observe an intrinsically motivated target to evidence greater intrinsic motivation than those who observe an extrinsically controlled target. The rationale behind our hypothesis is that an intrinsic motivational orientation is represented in the minds of people in terms of interest and enjoyment of activities as well as a sense of freedom and choice in behaving, whereas extrinsic control is mentally represented in terms of boredom and alienation from the activity as well as a sense of instrumentality and pressure in behaving (see Deci and Ryan 1985). Based on the aforementioned synchronicity research, it seems likely that observing others expressing intrinsically or extrinsically motivated behavior should prompt the observer's corresponding intrinsic or extrinsic motivation and initiate behavioral functioning concordant with that motivational orientation.

Recent research has indicated that people are able to infer and behave in accord with concrete goals (e.g., earning money) implied by others' actions without conscious intent (Aarts et al. 2004; Aarts and Hassin 2005). The current research differs from that prior work in two ways. First, whereas prior work employed a text comprehension task and written materials, here the critical prompt is expressed verbally as part of actual, overt behavior by the target. Second, and more importantly, our focus is not on the specific goals that direct behavior, but rather on the general motivational orientations that underlie and energize behavior (see Elliot and Church 1997).

Experiment 1

Our first experiment served as an initial test of the specific hypothesis that observing a target person being intrinsically motivated for a task would prime observers to display more intrinsically motivated persistence than those observing a target person being extrinsically motivated.

Method

Participants

Fifty-four undergraduates (34 females)[1] received extra course credit for participating in the experiment. They were randomly assigned to an intrinsic or an extrinsic motivational orientation condition.

[1] Across the two experiments, there were no consistent, reliable sex effects.

Procedure

Upon arriving at the lab, participants were told that they had walked in on an ongoing experiment that was nearly finished, and they were asked to take a seat at the back of the room until the session ended. In addition to the experimenter, a confederate playing the role of participant was already in the room when the participant arrived; the sex of the confederate matched that of the participant (Hatfield et al. 1994). The confederate pretended to play a game on a Nintendo Virtual Boy, an outdated portable electronic device that is held up to the player's eyes; the confederate also pretended not to notice the participant's arrival. The experimenter waited for 30 s, asked the confederate to stop playing the game, and then conducted an interview regarding the confederate's experience with the game. The confederate turned to the experimenter and, using a standardized protocol, verbally communicated information about his or her experiences in a way that the participant could clearly see and hear.

The confederate's motivational orientation, as manifest through his or her communication in the interview, reflected either intrinsic motivation or extrinsic motivation. The confederate in the intrinsic motivation condition expressed interest, curiosity, and having experienced optimal challenge while playing the game, whereas the confederate in the extrinsic control condition expressed boredom and disinterest, and reported having participated in the study solely for the purpose of receiving extra credit. The experimenter then thanked the confederate, who left the room, at which point the participant's session purportedly began.

Before receiving any instructions, participants completed a short questionnaire containing the Positive and Negative Affect Schedule (PANAS; Watson et al. 1988). This measure was used to rule out an emotion (or mood) contagion explanation (Hatfield et al. 1994; Neumann and Strack 2000). Participants were then asked to play the Virtual Boy for 10 min. The Virtual Boy featured a tennis game, set to the same moderate level of difficulty for all participants. A pilot study indicated that undergraduates found the game moderately interesting, on average ($M = 4.78$ on a 7-point scale), without generating a ceiling effect (range = 2.67 to 6.67). All participants were provided with instruction on how to operate the Virtual Boy.

After 10 min of playing time, participants were left alone in the room while a free-choice behavioral measure of intrinsic motivation was obtained. The experimenter left the room under the following pretext: "The previous participant ran a little long, so I didn't have time to prepare all of the forms needed for your participation. I'll need to leave the room for a couple of minutes to get the forms from the lab." Before leaving, the experimenter told

participants that they could either play another game on the Virtual Boy, read one of the magazines available in the lab, or simply wait for the experimenter to return. The Virtual Boy and the magazines were laid out on the table, equidistant from the participant. A second experimenter then observed participants surreptitiously through a crack in the drapes covering a one-way mirror, and the number of seconds (out of 180) that participants spent engaging in the target behavior was used as the behavioral measure of intrinsic motivation (see Deci et al. 1999, for validity information on this index of intrinsic motivation).

Finally, participants were run through a funnel debriefing to probe for suspicion (see Bargh and Chartrand 2000). One participant was excluded from the analyses because of speculating that the behavior during the free-choice period was the dependent measure in the experiment.

Results and discussion

Free-choice intrinsic motivation

Following the procedure of previous research (Greene and Lepper 1974) a log transformation, $Y = \log [Y + 1]$, on the amount of time subjects spent with the target task was performed to produce homogeneity of variance (Winer 1971, p. 400). A *t*-test on the number of log transformed seconds of free-choice behavior revealed that participants played longer during the free-choice period following exposure to an intrinsically motivated confederate (Log seconds $M = 2.25$, SD $= 2.6$, raw $M = 75.9$ s) than an extrinsically motivated confederate (Log seconds $M = 1.00$, SD $= 2.0$, raw $M = 30.1$ s), $t(51) = 2.01$, $p = .05$.

Affect

Individual *t*-tests were conducted comparing affect ratings following exposure to either intrinsically or extrinsically motivated confederates. The results revealed no difference in positive affect (Ms $= 2.8$, SD $= .64$, and 2.8, SD $= .83$, respectively) or negative affect (Ms $= 1.5$, SD $= .47$, and 1.4, SD $= .4$, respectively), indicating that participants' affective experiences were not altered by the manipulation. Further, the manipulation's effect on free-choice intrinsic motivation remained significant when controlling for positive and negative affect, $F(1, 49) = 5.03$, $p < .04$, and $F(1, 49) = 6.02$, $p < .02$, respectively.

These findings provide evidence that participants exposed to the expressive behavior of an intrinsically motivated other subsequently experienced greater intrinsic motivation than did participants who had been exposed to an extrinsically motivated other. Thus, it appears that observation of the expression of one person's motivational orientation can lead to the activation of that same motivational orientation in another, consequently impacting behavior (viz., free-choice persistence). Because we controlled for positive and negative affect, we ruled out emotional contagion as an explanation.

However, simply showing that another person's expression of intrinsic motivation for a task led to greater intrinsic motivation for the same task in the participants does not ensure that the process through which this happens is the priming of a motivational orientation. Expectations about the specific task (the Virtual Boy) being either interesting or boring based on observations of the confederate could provide an alternative account for the results of Experiment 1. Thus, in the next experiment we examined participants' behavior on a different task from the one the confederate had been working on. If the confederate's behavior primes a motivational orientation in participants, this orientation should affect participants' behavior on a different task, not just the one the confederate had worked on.

Experiment 2

This experiment was designed to accomplish two important objectives. First, we primed intrinsic and extrinsic motivational orientations through observation of a confederate communicating about his or her experiences with a geometry task, and then examined the effects on a completely different task, namely, anagrams. Obtaining supportive results using this approach would bolster our contention that the process underlying the effect in Experiment 1 was the priming of a motivational orientation, rather than the prompting of expectations about the specific task being interesting or boring.

Second, rather than examining intrinsic motivation per se through a free-choice persistence measure, we assessed actual performance on a task that intrinsic motivation is known to facilitate. Specifically, previous research has shown that within non-evaluative settings, intrinsic motivation is a positive predictor of quality of performance on interesting, moderately challenging tasks such as anagrams (Vansteenkiste et al. 2004). Given that Experiment 1 found differences in intrinsic motivation assessed via free-choice behavior, we predicted that participants' performance on anagrams would be significantly better following exposure to an intrinsically motivated target than an extrinsically motivated target.

Method

Participants

Thirty-four undergraduates (16 females) received extra course credit for participating in the experiment.

Participants were randomly assigned to an intrinsic or extrinsic motivational-orientation condition.

Procedure and manipulations

Both the procedure and the manipulations were identical to those of Experiment 1, with the exception that the confederate's responses reflected engagement with a geometry task on paper rather than the Virtual Boy. The confederate's task involved manipulating geometric shapes taken from an IQ test. In addition, participants were told that each participant in the experiment received a different activity to work on and that theirs would be "word jumbles." Before starting, participants were given a description of the task and told they had 15 min to work on the anagrams. Following engagement with the anagrams, participants were run through the same debriefing procedure as in Experiment 1.

The anagram task contained thirty five-letter, single-solution anagrams to be solved over a 15-min period. The anagram set was derived from a published list (Mayzner and Tresselt 1966); anagrams were selected based on average solution times to ensure moderate difficulty of the activity.

Results and discussion

A *t*-test on anagram performance indicated that participants in the intrinsic motivation condition correctly solved more anagrams ($M = 17.6$, SD $= 6.5$) than those in the extrinsic motivation condition ($M = 12.8$, SD $= 4.1$), $t(32) = 2.41$, $p < .04$. In a subsequent analysis we controlled for participants' general ability using self-reported Scholastic aptitude test (SAT) verbal and math scores and cumulative grade point averages (GPA). Experimental condition continued to yield a significant main effect on task performance $F(1, 29) = 6.45$, $p < .02$, and none of the control variables explained significant variance.

In sum, as predicted, we found a significant effect of the confederate's expressed motivational orientation on participants' task performance. Participants exposed to an intrinsically motivated other performed better on the anagram task than did participants exposed to an extrinsically controlled other, even after accounting for general ability. This effect was obtained despite the fact that the confederate expressed his or her motivational orientation toward an unrelated task, thereby ruling out the possibility that task expectancy per se was responsible for the observed effect.

General discussion

Two experiments tested the hypothesis that observing behavior in others that implies an intrinsic or an extrinsic motivational orientation would prime people's corresponding motivational orientation and behavior. Experiment 1 established that exposure to an intrinsically motivated target led observers to display greater free-choice intrinsic motivation for the activity than did exposure to an extrinsically controlled target. This was the case even after accounting for positive and negative affect, thereby effectively ruling out emotional contagion as the underlying process. Experiment 2 extended these findings by showing that observation of another person expressing intrinsic relative to extrinsic motivation for a particular task facilitated more effective performance on a completely different task, consistent with the priming of intrinsic motivation. This latter study thus ruled out expectations about the interest value of the specific task as the process through which the effect occurred. Although we did not choose to do so in the present work, future studies may wish to compare the relative strength of extrinsic and intrinsic motivational primes by contrasting both with a neutral comparison group. Across both experiments, not a single participant expressed suspicion regarding the confederate's role, suggesting that consistent with a priming interpretation, motivational orientation (1) was activated outside of participants awareness and (2) elicited a measurable response.

The current findings represent the first experimental demonstration that people's motivational states can be influenced by the motivational states of others. Whereas previous research in this area has relied on lexical means to prime motivational states (Bargh 1996; Hodgins et al. 2006; Levesque and Pelletier 2003), the present work utilized live confederates. An advantage of this method is that it operationalizes and tests a process whereby motivational states may be primed in real world circumstances, making people more similar in both outlook and action. The present research therefore offers a concrete and relevant insight into what may be a common motivational process in everyday life, influencing people's behavior in school, home, and the workplace.

The present work also extends recent work on goal contagion (Aarts et al. 2004), which has shown that inferences about other people's concrete goals can automatically prompt observers to act in accord with the goals implied by the target's behavior. In our experiments, rather than focusing on concrete goals, we focused on expressions of general motivational orientations as the prime that can alter observers' motivation in the direction of the prime. Thus, priming can lead to synchronicity with regard to the *energization* as well as the *direction* of behavior.

Our documentation that synchronicity can operate with regard to motivational orientations has various implications. First, because it suggests that general motivational orientations can be mentally represented, it is likely that

other types of orientations (such as approach vs. avoidance motivation; Elliot 2006) could similarly be represented, primed by observations of others, and thus spread among people. This line of thinking is consistent with Bargh's auto-motive model (Bargh 1990; Bargh and Chartrand 1999), which argues that chronic goals and mental states repeatedly linked with certain environmental events can automatically be triggered when similar situational features are presented. To the extent that distinct motivational orientations are associated with specific situations or events, there is reason to believe they can be similarly primed.

Second, because previous evidence has indicated that conscious processes can activate motivational orientations (e.g., Deci and Ryan 2000), the current findings that motivational orientations can be prompted between people on the basis of observing behavior represents another indication that human functioning emerges from both explicit and implicit routes of social learning (Meltzoff and Prinz 2002; Tomasello et al. 1993). What remains to be examined experimentally is how the explicit and implicit routes interact in shaping and modulating the social influence of motivational orientations (Ryan and Deci 2006). Of particular interest is the role that reflective awareness plays in moderating both processes, and the extent to which people are susceptible to adopting motivational states that run counter to the experience of autonomy. As social creatures, humans are surrounded by others on an ongoing basis. Future research would therefore do well to identify specific parameters in which people are most and least susceptible to priming via others.

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