
Perceiving Others as Intrinsically or Extrinsically Motivated: Effects on Expectancy Formation and Task Engagement

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In Study 1, participants who read about an extrinsically motivated target expected that task engagement would be less enjoyable and associated with less positive affect and that there would be poorer quality of interpersonal relations, compared with participants reading about an intrinsically motivated target. These effects were reversed when additional information disconfirmed initial perceptions of the target's motivation. In Study 2, participants who were taught a skill by an extrinsically motivated (paid) target reported lower interest in learning and lower task enjoyment than those taught by an intrinsically motivated (volunteer) target, despite receiving identical lessons and learning to the same criterion level. Lower levels of interest, task enjoyment, and positive mood "infected" a second learner when the first participant attempted to teach him or her the same skill. Results support a model linking social perception, expectancy formation, and motivational orientations toward activities.

Social controls often undermine interest and enjoyment that people experience when they engage in activities. For example, contingent rewards (Deci, 1971; Lepper, Greene, & Nisbett, 1973), surveillance (Lepper & Greene, 1975), deadlines (Amabile, DeJong, & Lepper, 1976), and imposed performance evaluation (Amabile, 1979; Harackiewicz, Manderlink, & Sansone, 1984) can all attenuate intrinsic motivation. These findings support cognitive evaluation theory (Deci & Ryan, 1985), which proposes that controlling social events undermine personal autonomy, facilitating an internal-to-external shift in the perceived locus of causality for

one's behavior (deCharms, 1968; Heider, 1958) and a corresponding diminution of intrinsic motivation.

Social influence strategies do not always undermine interest and enjoyment in activities, however. For example, when people believe that performance-contingent rewards affirm competence, rather than control one's behavior, no attenuation of intrinsic motivation occurs (Harackiewicz, 1979; Ryan, Mims, & Koestner, 1983). Similarly, setting limits on children's behavior does not undermine intrinsic motivation when activity constraints are conveyed via informational, as opposed to controlling, interpersonal styles (Koestner, Ryan, Bernieri, & Holt, 1984). Finally, surveillance only undermines intrinsic motivation when people believe that the surveillant has controlling intentions (e.g., to evaluate performance or to enforce rules). Incidental surveillance (e.g., based on curiosity) implies no attempt to control behaviors and does not undermine interest and enjoyment in activities (Enzle & Anderson, 1993). These studies suggest that construal processes shape the "functional sig-

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nificance" (Deci & Ryan, 1985, 1987) of rewards, deadlines, surveillance, performance evaluations, and other social controls—that is, they influence whether these events are perceived as coercive or as supportive of personal autonomy.

Consistent with this theme, research has begun to examine how construal processes modify the effects of social controls on task involvement, and a number of studies have demonstrated effects of task labels. Porac and Meindl (1982), for example, showed that rewards undermined intrinsic motivation when participants ascribed extrinsic-motivational attributes to a task (e.g., boredom, obligation, lack of choice). However, when intrinsic-motivational attributes were ascribed to the activity (e.g., enjoyment, challenge, choice, interest), the same rewards did not attenuate intrinsic motivation. Tang and Baumeister (1984) found that labeling an activity as *work* increased intrinsic motivation for participants who held positive attitudes toward work, compared with those who did not. This effect was eliminated when the activity was relabeled as a leisure pastime. Finally, Sansone, Sachau, and Weir (1989, Study 2) varied interpretations of a computer game as a skill or fantasy-related activity and found that instructions designed to improve performance increased intrinsic motivation under the skill interpretation but decreased intrinsic motivation under the fantasy interpretation of the task.

Beyond task labels, recent research indicates that *interpersonal cues* about the motivation of others who are doing an activity can also affect interest and enjoyment during activity engagement. For example, participants in Cellar and Wade's (1988) study assembled Erector set parts after watching a videotape portraying a person exhibiting either an intrinsic or an extrinsic motivational orientation toward the task. Merely perceiving the target person exhibiting enjoyment and persistence while demonstrating the activity led to enhanced intrinsic motivation in perceiver-subjects when they subsequently engaged in the activity. In a similar study, Wild, Enzle, and Hawkins (1992) found that participants who perceived a confederate piano teacher as an intrinsically motivated volunteer reported more enjoyment and more positive affect while engaging in a lesson, were more interested in further learning, and exhibited greater exploratory activity in a free-play period, compared with participants who perceived the piano teacher as an extrinsically motivated (paid) employee.

This *mere perception* effect of interpersonal cues has widespread implications for understanding the motivational dynamics of parenting, education, counseling, and other interpersonal activities. But what specific processes underlie effects on one's own enjoyment and interest of merely perceiving another person as extrinsi-

cally or intrinsically motivated? Cellar and Wade (1988) accounted for their results by linking imitative learning (Bandura, 1977) with script theory (Schank & Abelson, 1977): "motivational orientation and actions of a model will result in the acquisition of cognitive scripts that will affect intrinsic motivation" (Cellar & Wade, 1988, p. 182). On this account, differential perceptions of the model led people to construct scripts for intrinsic (play) or extrinsic (work) orientations toward the activity, which resulted in differential patterns of script-consistent behavior. Unfortunately, this account requires that the interpersonal target actually behaves differently across conditions, and in the Wild et al. (1992) study, the teacher was blind to conditions, gave the same standardized lesson to all participants, and instructed all students to the same criterion level of skill acquisition. These results preclude imitative modeling accounts of the mere perception effect.

Social Perception, Expectancy Formation, and Task Involvement: A Process Model

In many common dyadic interactions (e.g., between teacher and student, parent and child, a manager and subordinate), perceptions of the other's motivation influence the formation of expectancies that shape the functional significance (Deci & Ryan, 1985, 1987) of events that transpire among dyad members. We propose that perceptions of an other's motivation to engage in an activity systematically affect the perceiver's expectations about (a) quality of interpersonal relations (e.g., the extent to which the other will support one's autonomy or control one's behavior) and (b) experiential involvement in the task (e.g., the extent to which interest and pleasure will occur during activity engagement; see Wild, Kuiken, & Schopflocher, 1995). In turn, these expectancies systematically modify the perceiver's motivation when he or she actually engages the task.

Importantly, expectancy formation is not conceived as a mechanistic or obligatory application of fixed cognition-action patterns, as is implied on a script-based account. Rather, it is viewed as a constructive process (e.g., Bartlett, 1932) reflecting the perceiver's psychological needs and goals. On this account, memories of past episodes of social control or autonomy support are blended with current interpretations of others' motivation to form expectations about how supportive of personal autonomy the other individual is likely to be, how enjoyable and interesting an activity is likely to be, and so on. These expectancies affect perceptions of interpersonal relations and quality of experiential involvement during activity engagement.

The present research was designed to test several components of this process model. First, because none

of the existing mere perception studies have directly measured expectancy formation following perceived motivation of an interpersonal target, Study 1 examined whether differential expectancies would be generated in response to perceptions of interpersonal targets adopting different motivational orientations toward activities. Second, although Cellar and Wade (1988) and Wild et al. (1992) demonstrated motivational consequences of perceiving others as intrinsically or extrinsically motivated, these studies did not examine the social impact of interpersonal cues reflecting others' motivation. Thus, Study 2 examined whether different motivational orientations toward an activity—initiated solely by differential perceptions of an interpersonal target—could be spontaneously transmitted from person to person.

Expectancy Formation Hypotheses

The preceding model suggests that perceptions of an interpersonal target as being extrinsically motivated to engage in an activity will elicit expectations (in the social perceiver) that the activity will be less enjoyable and that it will be associated less positive affect, relative to perceiving the same interpersonal target as intrinsically motivated. However, given substantial evidence that people actively revise impressions during social perception (Miller & Turnbull, 1986), it is reasonable to assume that expectancy formation will be influenced by additional construals of the motivation of the target other. Thus, we hypothesized that additional information confirming the target's extrinsic motivation to engage in an activity would accentuate perceivers' expectations of low task enjoyment, negative mood, and poor quality of interpersonal relations and that additional information disconfirming the target's extrinsic motivation would attenuate perceivers' expectations of low task enjoyment, negative mood, and poor quality of interpersonal relations. These hypotheses were evaluated in a reading comprehension task.

STUDY 1: MERE PERCEPTION AND EXPECTANCY FORMATION

Method

PARTICIPANTS

A total of 112 individuals participated in the experiment in partial fulfillment of an introductory psychology course requirement.

MATERIALS

Two sets of fictional vignettes were prepared for the study. The first vignette screened participants for reading comprehension, whereas the second vignette was used to evaluate the hypotheses.

Vignette 1. This narrative depicted a student spending the summer working and giving walking tours of Nantucket Island.

Vignette 2. This narrative described a protagonist, Chris, who phoned a community college to obtain information about receiving instruction in American Sign Language (ASL). The story described Chris's interaction with the program secretary, arriving for a first lesson and an initial conversation with an interpersonal target—the ASL instructor.

Six versions were written, conforming to a 2 (paid vs. volunteer ASL instructor) × 3 (confirming, disconfirming, or no subsequent information about the target's motivation) between-subjects factorial design. For the payment conditions, three excerpts were written to elicit perceptions of extrinsic motivation:

1. All of our instructors are city employees and are paid by the lesson.
2. The instructor paused to record the hour lesson on the payroll sheet by the reception desk.
3. "So, how long have you been teaching sign language," asked Chris. "About two years now as an employee for the city program."

These three excerpts were presented in the payment/no-additional-information condition. In the payment/confirming-information condition, Excerpt 3 was elaborated as follows:

[The instructor replies,] "About two years now as an employee for the city program. But I also get paid to teach ASL in my spare time on Saturdays and Wednesday nights at a high school continuing education program. Frankly, teaching ASL is difficult and demanding work, but the pay I get makes it worth all the effort."

In the payment/disconfirming-information condition, Excerpt 3 was elaborated as follows:

[The instructor replies,] "About two years now as an employee for the city program. But I also volunteer to teach ASL in my spare time on Saturdays and Wednesday nights at a high school continuing education program. I find it very rewarding to see people learn how to sign."

For the volunteer conditions, three excerpts were written to elicit perceptions of intrinsic motivation:

1. "If you're available weekday afternoons, I can set up a time for you to meet with one of our professional volunteer instructors."
2. The instructor paused to record the hour lesson on the volunteer sheet by the reception desk.
3. "So, how long have you been teaching sign language," asked Chris. "I've volunteered about two years now for the city program."

These three excerpts were presented in the volunteer/no-additional-information condition. In the volunteer/confirming-information condition, Excerpt 3 was elaborated as follows:

[The instructor replies,] "About two years now for the city program. But I also volunteer my time on Saturdays and Wednesday nights at a high school continuing education program. I find it very rewarding to see people learn how to sign."

In the volunteer/disconfirming-information condition, Excerpt 3 was elaborated as follows:

[The instructor replies,] "I've volunteered about two years now for the city program. But I also get paid to teach ASL in my spare time on Saturdays and Wednesday nights at a high school continuing education program. Frankly, teaching ASL is difficult and demanding work, but the pay I get makes it worth all the effort."

Aside from these alterations, the six stories were identical in content.¹

Measures. Vignette 1 was followed by two open-ended questions assessing reading comprehension. Following Vignette 2, an open-ended question assessed efficacy of the experimental manipulation: "Why was the instructor giving ASL lessons?" This was followed by a series of 38 scale items modified from the Intrinsic Motivation Inventory (IMI; McCauley, Duncan, & Tammen, 1989; Ryan et al., 1983), which measured expectations about task enjoyment (for both instructor and student), mood, and quality of interpersonal relations. Two versions of the scale were created. One assessed beliefs about the protagonist's motivation (e.g., "Chris enjoys ASL lessons"), the other assessed beliefs about what the participant's motivation would be if he or she was in that situation (e.g., "I would enjoy ASL lessons"), and half of the participants received each version. Items were scored on a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). The 6 versions of the story were crossed with the two response conditions to yield 12 versions of the materials. Participants were randomly assigned to receive 1 of the 12 sets of questionnaire materials.

PROCEDURE

Participants were run in small groups. Upon arrival, they were told that the researchers were studying story comprehension and that they would read two fictional stories and would provide their reactions on a series of questionnaire items. Instructions emphasized that it was important to carefully read each story twice to ensure comprehension and to vividly imagine the events occurring in the narrative. They were also informed that, after reading each story, they could not turn back to read it again.

Analyses and Results

READING COMPREHENSION: DATA REDUCTION

A total of 20 participants did not answer reading comprehension questions about the first vignette correctly, so their data were eliminated from the analyses, leaving 92 participants (51 females, 39 males, 2 providing no gender information). The mean age of the final sample was 19.4 years.

MANIPULATION CHECK

Free responses to the question "Why did the instructor give ASL lessons?" were rated by five judges, blind to the hypotheses of the study and to conditions. Each judge independently rated responses on 9-point scales for intrinsic motivation, defined as performing the activity solely for the interest or enjoyment in doing the task itself (e.g., "the instructor enjoyed teaching" or "because it was fun"), and for extrinsic motivation, defined as engaging in the activity for some type of reward or contingency apart from the task itself (e.g., "for the money" or "to get something on a resume"). Intraclass correlations across the five raters were .83 and .84 for the intrinsic and extrinsic motivation scores, respectively. After averaging the intrinsic and extrinsic ratings across raters, extrinsic motivation scores were reverse scored and averaged with the intrinsic scores to form a single perceived motivation score; higher scores indicated greater perceived intrinsic motivation of the ASL instructor.

A 2 (intrinsic vs. extrinsic story type) \times 3 (subsequent information) \times 2 (ratings from the self vs. other perspective) ANOVA was performed on the perceived motivation score. It revealed a reliable Story Type \times Subsequent Information interaction, $F(2, 79) = 42.91, p < .0001$. Under the volunteer story type, perceived intrinsic motivation was high in the confirming-information and no-further-information conditions ($M_s = 7.2$ and 7.1 , respectively) and was low in the disconfirming-information condition ($M = 4.9$). Conversely, under the payment story type, perceived intrinsic motivation was low in the confirming and no-further-information conditions ($M_s = 1.8$ and 3.9 , respectively) and was high in the disconfirming-information condition ($M = 6.0$).

SCALE ANALYSES

Principal components analysis (unities placed in the diagonals, varimax rotation) was performed on the 38 items to identify a smaller set of coherent dimensions representing the primary dependent measures: expected task enjoyment (for teacher and student), mood, and quality of teacher-student interaction. Two criteria were used for item inclusion: loadings of .7 or greater and no cross-loadings on other factors. Two subscales assessed subjects' beliefs about the ASL instructor. An Enjoyment-Value of Teaching subscale (five items; Cron-

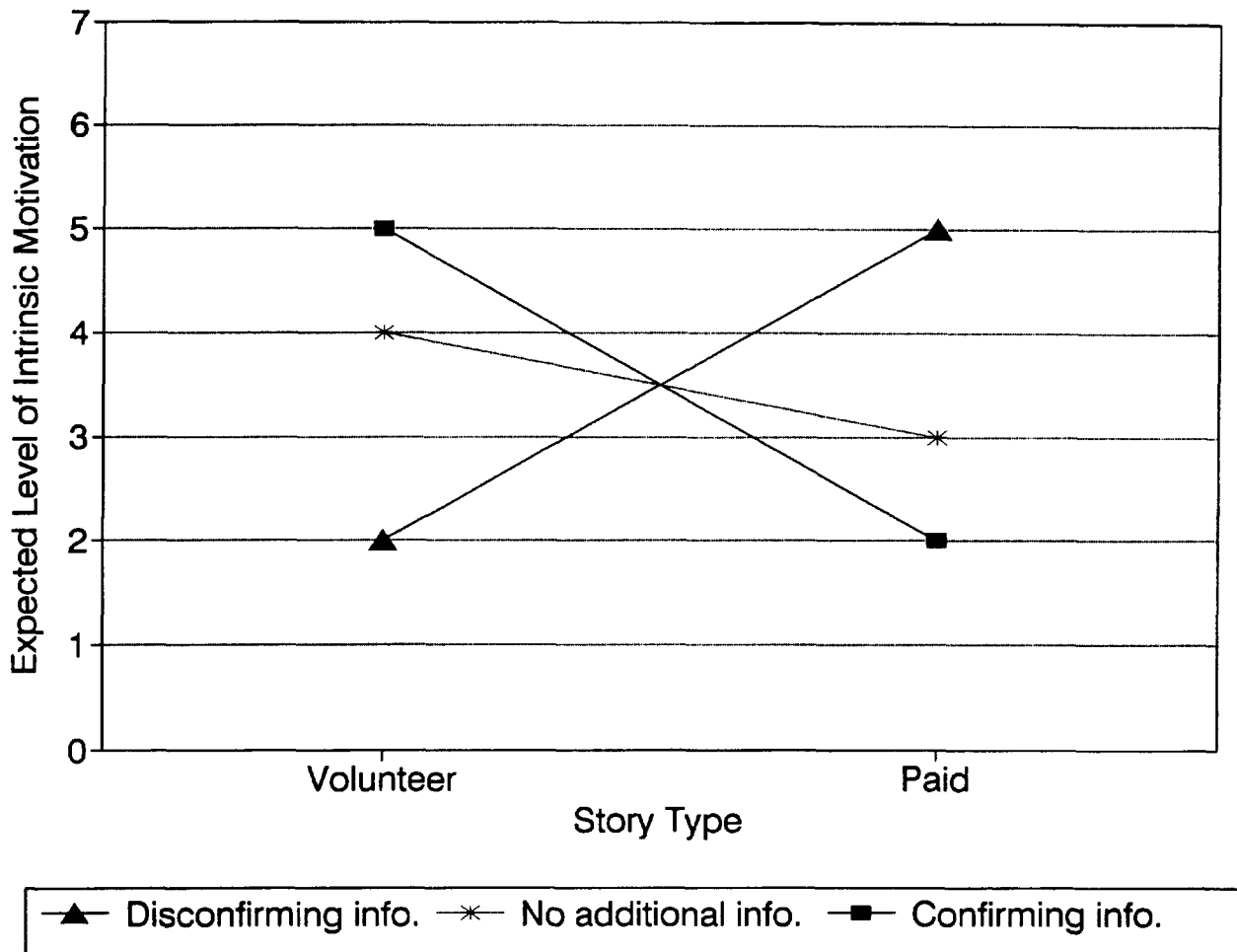


Figure 1 Hypothesized interaction between story type and additional information on expectancy formation, Study 1.

bach's $\alpha = .82$) measured expectations of how much the instructor enjoyed ASL teaching (e.g., "To what extent does Chris think/do you think that the teacher enjoys teaching ASL?") A Relatedness subscale (five items; $\alpha = .83$) tapped expectations about a warm and intimate relationship between instructor and student (e.g., "Chris would/I'd probably feel really distant from the instructor," negatively scored). An Enjoyment-Value of Learning subscale (six items; $\alpha = .83$) measured expectations of student enjoyment and value of learning ASL (e.g., "Chris/I would enjoy taking ASL lessons"). Finally, a Mood subscale (four items; $\alpha = .93$) assessed expectations of mood during activity engagement (e.g., "sad—happy"; "gloomy—cheerful").²

PRIMARY ANALYSES

There were no main effects or interactions for the rating perspective variable. Participants answered the same way whether they were making inferences about

the protagonist or whether they were reporting what their own expectations would be. Data were, therefore, collapsed across this factor. Figure 1 presents the hypothesized pattern of results that was examined in the primary analyses.

Under the volunteer story type, we predicted that (a) participants in the disconfirming-information condition would expect the lowest levels of intrinsic motivation, (b) participants in the confirming condition would expect intrinsic motivation to be highest, and (c) participants in the no-information condition would fall in between. Under the paid story type, we predicted the opposite pattern—that is, (a) participants in the disconfirming-information condition would expect intrinsic motivation to be highest, (b) participants in the confirming condition would expect it to be lowest, and (c) participants in the no-information condition would fall in between.

To provide a single test of the hypothesized pattern of six means depicted in Figure 1, we conducted a

TABLE 1: Mean Levels of Expected Intrinsic Motivation for the American Sign Language Instructor and Expected Quality of Interpersonal Relations, Study 1

Additional Information	Story Type	
	Volunteer	Paid
Enjoyment-Value of Teaching scale		
Confirming information	7.33	4.54
No information	6.62	5.99
Disconfirming information	5.71	7.49
Teacher-Student Relatedness scale		
Confirming information	6.02	4.07
No information	5.93	5.69
Disconfirming information	4.93	6.63

planned interaction contrast for each of the primary dependent measures by assigning coefficients for confirming, no additional, and disconfirming information within the volunteer (+1, 0, -1) and paid (-1, 0, +1) story types. This linear contrast by linear contrast comparison tested whether effects of additional information were the same under the two story types. Moreover, the reversal of the coefficients for confirming and disconfirming information in the planned comparison coefficients provided a single one-degree-of-freedom test for our accentuation and attenuation hypotheses, whereas the no-information conditions served as baseline controls.

Expectations about the teacher. The planned comparison evaluating the interaction contrast of the six means was significant for the Enjoyment-Value of Teaching scale, $F(1, 86) = 53.4, p < .001$. As shown in Table 1, under the volunteer story type, disconfirming information resulted in the lowest expected task enjoyment-value ($M = 5.7$), whereas confirming information resulted in the highest expected task enjoyment-value ($M = 7.3$). Conversely, under the paid story type, disconfirming information led to the highest task enjoyment-value ($M = 7.5$), whereas confirming information led to the lowest expected enjoyment-value ($M = 4.5$).

With regard to expected quality of interpersonal relations, the interaction contrast directly testing the accentuation/attenuation hypotheses was also reliable, $F(1, 86) = 25.5, p < .001$. Table 1 shows the predicted linear increase in relatedness for disconfirming information ($M = 4.9$), no information ($M = 5.9$), and confirming information ($M = 6.0$) under the volunteer story type and the opposite pattern under the paid story type ($M_s = 6.6, 5.7, \text{ and } 4.1$, respectively).

Expectations about the learner. The planned comparison designed to test the hypothesized pattern of six means depicted in Figure 1 revealed a marginally significant effect on learner enjoyment-value, $F(1, 86) = 3.00, p =$

TABLE 2: Mean Levels of Expected Intrinsic Motivation for the Learner during Task Engagement, Study 1

Additional Information	Story Type	
	Volunteer	Paid
Enjoyment-value		
Confirming information	7.25	6.43
No information	7.03	7.03
Disconfirming information	6.74	7.19
Mood		
Confirming information	6.72	5.77
No information	7.01	6.63
Disconfirming information	6.18	6.91

.087. As indicated in Table 2, disconfirming versus confirming information resulted in opposite effects on expected learner enjoyment under the paid ($M_s = 7.2 \text{ vs. } 6.4$) and volunteer ($M_s = 6.7 \text{ vs. } 7.3$) story types, respectively.

The planned comparison testing the accentuation and attenuation hypotheses was significant for expected mood during learning, $F(1, 86) = 4.59, p < .05$. Table 2 shows that disconfirming and confirming information resulted in opposite effects for expectations about mood under the volunteer ($M_s = 6.6 \text{ vs. } 4.1$) and paid ($M_s = 4.9 \text{ vs. } 6.0$) story types, respectively.

MEDIATIONAL ANALYSES

The primary analyses assume that perceptions of the interpersonal target's motivation mediates expectancy formation. However, to analytically establish mediation, three relationships must be demonstrated: (a) The independent variables (i.e., experimental conditions) influence the dependent variables (e.g., expectations about intrinsic motivation for teacher and student), (2) the independent variables must influence the mediator (e.g., perceived motivation of the interpersonal target), and (3) effects of the independent variables are negligible or substantially reduced when the effect of the mediator is controlled (Baron & Kenny, 1986).

The primary analyses demonstrated that the independent variables (story type and additional information) influenced expectancies about intrinsic motivation as predicted. Also, manipulation check data confirm that the independent variables influence the mediator (perceived motivation of the ASL instructor). Hierarchical multiple regression was used to test the third requirement for mediation. Specifically, we regressed teacher enjoyment-value, instructor-student relatedness, student enjoyment-value, and student mood (in separate regressions) onto story type, subsequent information, and perceived intrinsic motivation of the interpersonal target in Step 1, and then entered the Story Type \times Subsequent Information interaction term in Step 2. The

two-degrees-of-freedom interaction was carried by two effects-coded variables; one represented the planned comparisons among the six means described earlier, whereas the second effects-coded variable was an orthogonal complement to the interaction of interest.

Controlling for perceived intrinsic motivation of the interpersonal target completely removed, or substantially reduced, expectancy accentuation/attenuation effects for all dependent measures. Thus, percentage of variance accounted for by the interaction contrast (semipartial correlations squared) dropped from 34.6% to 5.0% for expected teacher task enjoyment-value, 21% to 1.4% for expected instructor-student relatedness, 3.2% to 0% for expected learner enjoyment-value, and 3.2% to 0% for expected learner mood when perceived motivation of the target was controlled. Moreover, for all but one of the primary dependent variables, the interaction contrast was not significant after removing variance due to perceived intrinsic motivation of the interpersonal target. Although the semipartial correlation for teacher enjoyment-value was still significant after controlling for perceived intrinsic motivation of the ASL instructor, the observed 85% drop in variance accounted for indicates substantial mediation. These analyses provide strong evidence that perceived intrinsic motivation of the interpersonal target mediated the accentuation/attenuation effects on expectancy formation for all dependent measures.

Discussion

The present results support the main argument underlying the study: Perceptions of an interpersonal target's motivation to engage in an activity systematically modify perceivers' expectations about how enjoyable that activity is likely to be, how much positive affect is likely to be associated with activity engagement, and quality of interpersonal relations. Thus, consistent with our expectancy accentuation hypothesis, people who received information confirming that a target is extrinsically motivated (a) believed that the target enjoyed and valued the activity less, (b) believed that there would be less psychological relatedness between the target and a student, (c) believed that engaging in the activity would be less enjoyable and valued, and (d) believed that engaging in the activity would be associated with less positive affect, in comparison with subjects who received information confirming that a target is intrinsically motivated.

Consistent with our expectancy attenuation hypothesis, expectations about task engagement and quality of interpersonal relations were reversed when people received disconfirming information about the motivation of the other person. Specifically, people who received additional information that disconfirmed the extrinsic motivation of an interpersonal target (a) believed that

the target enjoyed and valued the activity more, (b) believed that there would be more psychological relatedness between the target and a student, (c) believed that engaging in the activity would be more enjoyable and valued, and (d) believed that task engagement would be associated with more positive affect, in comparison with people who received information that disconfirmed initial perceptions of intrinsic motivation. Effects of interpersonal cues on expectancies related to intrinsic motivation are indeed malleable, depending on additional construals of the interpersonal target's motivation.

Mediational analyses confirmed that effects of social perception on expectancy formation depended on perceived motivation of the interpersonal target. Thus, accentuation and attenuation of respondents' expectations about deleterious effects on task enjoyment-value, mood, and quality of interpersonal relations were eliminated or substantially reduced when perceived intrinsic motivation of the target was controlled. Thus, social perceivers closely calibrated their expectations about task enjoyment and mood on the basis of perceptions of the interpersonal target's motivational orientation toward the activity.

In sum, interpersonal cues about someone else's motivation to engage in an activity strongly constrain the perceiver's own expectations regarding task engagement and quality of interpersonal relations. These results are consistent with our process model linking social perception with expectancies related to intrinsic motivation and lend credence to our speculation that the mere perception effects of interpersonal cues on interest and enjoyment in activities (Cellar & Wade, 1988; Wild et al., 1992) arise because of expectancies formed during social perception.

STUDY 2: MERE PERCEPTION AND THE SOCIAL "INFECTION" OF MOTIVATIONAL ORIENTATIONS

Our second study moved beyond expectancy formation processes to examine another aspect of the social perception model presented earlier—namely, links between interpersonal cues and actual quality of task involvement, as indexed by systematic changes in people's real-time enjoyment and mood while engaging in activities. The first goal of the study was to rule out alternative explanations of mere perception effects due to the nature of the activity and to establish the robustness of the phenomenon. To do this, we attempted to conceptually replicate the Wild et al. (1992) study using a different task. Consistent with that study and the results reported in Study 1, we hypothesized that merely perceiving a teacher as extrinsically motivated would undermine students' task enjoyment and interest in further learning. The second goal of the study was to extend work in this

area by examining the social impact of perceiving others as intrinsically or extrinsically motivated. Specifically, we examined whether expectancy-driven changes in task involvement could spontaneously spread from person to person during social interaction. To do this, we used a serial teaching-learning procedure to test the hypothesis that attenuation of task involvement initiated merely on the basis of social perception would be transmitted to a second learner in an educational chain—without providing task labels for the participants.

Method

OVERVIEW

A confederate (serving as an instructor) taught a magic trick to a participant (S1) while another participant (S2) completed a filler questionnaire. Next, S1 was asked to teach S2 the skill, and after a 10-min transmission session, both participants completed a questionnaire assessing task enjoyment, interest in learning, mood during their learning session, and perceptions of their teacher.

PARTICIPANTS

Participants were 76 undergraduates who were fulfilling an introductory psychology course requirement. Participants were randomly assigned to be a first- or second-generation learner (23 females and 15 males in each of the S1 and S2 roles).

PROCEDURE

The researcher seated S2 and instructed him or her to fill out a questionnaire and to await further instructions. He then met S1 and the confederate outside an adjacent room, invited them in, seated them at a table, and explained that the research topic concerned “how people create techniques for teaching new skills to each other” and that magic tricks had been selected because the study was examining manual dexterity skills. S1 was introduced to the confederate, told that she or he would be taught a novice-level magic trick, and that a videotape would be made so that the teaching process could be examined. Finally, the researcher indicated that the teacher and the learner would each fill out a questionnaire after the session.

The researcher handed an agenda sheet to the confederate and said, “This is the schedule for the remainder of the session. Would you just follow through these steps? The procedure is exactly as I practiced it with you last week.” After reviewing the sheet, the confederate retrieved the teaching materials from a secretary’s office, which ensured that the confederate remained blind to the manipulation. The researcher (seated across a table from S1) opened a file folder that was visible to S1, revealing one of two randomly assigned sets of materials

that had been prepared in advance. Until this time, the researcher had been blind to condition. The folder contained either \$25 (cuing the paid-teaching condition) or a letter (cuing the volunteer-teaching condition), as well as a page from a local newspaper’s classified ads.

Paid-teaching condition. The researcher tapped his finger on the newspaper and said, “I don’t know if you happened to see our ad in the newspaper, but that’s how we hired [confederate’s name] to do your lesson today. Just bear with me, and I’ll get her money ready.” The researcher then signed a payment letter and put the money and letter in an envelope, on which he wrote the teacher’s name. When the confederate returned, she was given the envelope. The confederate looked inside, and, seeing the letter and money, said, “Thanks,” in a neutral tone.

Volunteer-teaching condition. The researcher tapped his finger on the newspaper and said, “I don’t know if you happened to see our ad in the newspaper, but that’s how [confederate’s name] came to volunteer to do your lesson today. Just bear with me while I sign the department’s thank you letter for her.” A letter of appreciation was signed and was placed in an envelope, on which he wrote the teacher’s name. To keep the confederate blind, \$25 had been placed in this envelope by an assistant before the session so that when she looked in the envelope, all that was seen was money and a letter. This ensured that the confederate would not know which condition was being run. The researcher made sure that S1 did not see the money in the volunteer condition. As in the paid condition, after reentering the room, the confederate was handed the envelope, and, after looking inside, said, “Thanks,” in a neutral tone.

Although the confederate saw the same letter and money in both conditions, the manipulation ensured that participants would think that the teacher was saying thanks for the money in the paid condition but for only the letter of acknowledgment in the volunteer condition. The researcher then ostensibly turned on the video camera, again gave the agenda sheet back to the confederate, reminding her that it outlined the procedures to be followed during and after the lesson, and left the room.

First teaching session. A magic trick was selected as the learning activity because pilot testing revealed that virtually no one already knew the skill. Extensive rehearsal ensured that the confederate administered a standardized set of instructions to perform a rope restoration illusion. This standard stage trick involves apparently cutting a 1 m piece of heavy rope at the midpoint, tying the two pieces together, and then in a flourish “magically” showing the rope to be restored to a single piece and the knot to have disappeared. After

demonstrating the trick once, the teacher recited a brief history of the illusion.

The Wild et al. (1992) procedure was replicated exactly with respect to lesson style (i.e., wording of the lesson was scripted and delivered verbatim from memory). The script was free of language that suggested either controlling or noncontrolling intentions by the instructor. Delivery style and vocal quality were similarly practiced and standardized for uniformity. For lesson elements that varied depending on performance, neutral contingency statements were delivered to correct performance without expressing excessive disapproval or approval. For example, when a lesson element was completed correctly, the confederate used one of a sequence of scripted statements, such as "good" or "that's correct." Alternatively, the teacher used different scripted statements (e.g., "OK, your hand should cover the concealed loop. Let's try that again, please"). These procedures were designed to create the same perceptions of teaching style and teacher expertise between conditions.

The confederate demonstrated each step of the trick once, followed by an attempt by S1 to duplicate it. A skill acquisition criterion of performing the illusion twice without error was established in advance to determine when the lesson had been successfully taught.

Second teaching session. After meeting the skill acquisition criterion, the confederate ostensibly turned off the video camera, consulted the agenda sheet, and said, "According to this, I'm supposed to ask you a question at this point. Would you be willing to go next door now and teach another person the magic trick you learned?" All participants agreed to engage in a transmission teaching session. The confederate escorted S1 to the adjacent room, inquired about S2's name, introduced them, and explained that S1 had just learned a magic trick and had agreed to teach S2 the skill. After leaving the room briefly to obtain additional rope and scissors, the confederate asked for questions and left the room. S1 then taught the rope restoration to S2.

After 10 min, the confederate reentered the room, explained that she was instructed to give each subject a questionnaire about the learning experience, and that the researcher wanted them to fill out the items in their original rooms. Each subject then filled out a questionnaire that assessed the dependent variables: task enjoyment, interest in the learning experience, mood following the lesson, and perceptions of the lesson and teacher. The researcher waited for 10 min, entered S2's room, escorted him or her to the main teaching room, and conducted a suspicion probe and debriefing for both participants. None of the participants expressed aware-

ness of the research hypotheses or suspicion regarding the confederate.

Results

DATA REDUCTION

To provide a valid test of our hypotheses, participants who did not correctly recall or correctly guess the teacher's status were excluded from the analyses. This, combined with missing data, yielded analyses for 33 experimental sessions (18 paid, 15 volunteer).³

EQUIVALENCE OF PERCEIVED TEACHER EXPERTISE AND TEACHING STYLE

Tests of our hypotheses also depended on uniform perceptions of teacher expertise and teaching style between conditions. Two questionnaire items assessed perceptions of the confederate's expertise: "How well would you say the person performed the magic trick when giving you the lesson?" and "How expert in general would you say the person is at magic tricks?" There was no treatment effect for either item ($t(31) < 1$, *ns*). Five additional items on the questionnaire asked S1 participants to rate the confederate's teaching style with respect to (a) lesson enjoyment, (b) enjoyment of magic (in general), (c) willingness to teach during the lesson, (d) pressure during the lesson, and (e) spontaneity during the lesson. No treatment effects were found for any of these measures ($t(31) < 1$, *ns*). Thus, the lesson standardization procedures successfully created the same perceptions of the confederate's teaching style and expertise between conditions.

EFFECTS ON FIRST-GENERATION LEARNERS

As shown in Table 3, S1 participants who believed that their instructor was a volunteer indicated a greater interest in further learning ($M = 7.8$) than participants who believed that their instructor was paid ($M = 6.4$). The other item asked participants to indicate the extent to which they would like to learn other magic tricks. Although not reliably different, the means (volunteer, $M = 7.9$; paid, $M = 6.7$) were in the predicted direction. Two additional items asked S1 participants how much they enjoyed performing the trick when they learned it and how much they enjoyed the magic lesson. Participants enjoyed performing the trick more if they thought the instructor was a volunteer ($M = 7.8$) than if they thought the instructor was paid ($M = 6.7$). Participants in the volunteer condition also enjoyed the lesson more ($M = 8.2$) than participants in the paid condition ($M = 7.5$), although this was a marginal effect. Finally, S1 participants rated their mood after the lesson on four 9-point bipolar scales (sad vs. happy, gloomy vs. cheerful, bad vs.

TABLE 3: Effects of Perceived Teacher Motivation on Task Involvement, Study 2

Variable	Condition		
	Volunteer	Paid	t(31)
First-generation learner (S1)			
Interest in learning			
Would learn other tricks	7.8	6.4	2.43**
Like to learn other tricks	7.7	6.7	ns
Task enjoyment			
Enjoyed performing trick	7.8	6.7	2.18**
Enjoyed lesson	8.2	7.5	1.70*
Affective reactions			
Sad-happy	6.7	6.9	ns
Gloomy-cheerful	7.0	7.4	ns
Bad-good	7.2	7.0	ns
Depressed-elated	6.9	6.5	ns
Second-generation learner (S2)			
Interest in learning			
Would learn other tricks	6.7	5.0	2.43***
Like to learn other tricks	7.1	4.8	3.23***
Task enjoyment			
Enjoyed performing trick	7.1	5.9	2.39**
Enjoyed lesson	7.6	7.5	ns
Affective reactions			
Sad-happy	7.6	6.3	3.93***
Gloomy-cheerful	7.5	5.9	3.54***
Bad-good	7.7	5.8	3.80***
Depressed-elated	7.0	5.4	3.31***

NOTE: Interest in learning and task enjoyment items used a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). Affective reaction items used 9-point bipolar scales anchored by each adjective. Tests of affective reaction items were based on $df = 23$, due to missing data.

* $p < .09$. ** $p < .05$. *** $p < .01$.

good, depressed vs. elated). There were no treatment effects for any of these measures.

EFFECTS ON SECOND-GENERATION LEARNERS

Parallel items were used on the S2 questionnaire. As Table 3 shows, second-generation participants who interacted with a teacher who had previously learned from a volunteer reported greater interest in learning more about magic tricks ($M = 6.7$) than participants in the paid condition ($M = 5.0$). Second-generation participants in the volunteer condition also indicated that they would like to learn other magic tricks more ($M = 7.1$) than subjects in the paid condition ($M = 4.8$). In addition, second-generation learners enjoyed performing the trick more if they interacted with a teacher who had previously learned from a volunteer ($M = 7.1$) as opposed to a paid instructor ($M = 5.9$), but there was no treatment effect on rated enjoyment of the lesson. Also, S2 participants rated their mood after the lesson on four 9-point bipolar scales (sad vs. happy, gloomy vs. cheerful, bad vs. good, depressed vs. elated). Analyses revealed the predicted treatment effect for all mood scales. Specifically, second-generation learners in the volunteer condition

consistently reported more positive affect than those in the paid condition. Finally, of the five items on the questionnaire asking participants to rate S1's teaching style, only the item asking participants to indicate the extent to which S1 enjoyed teaching the magic trick showed a treatment effect such that S2 participants who were taught by a person who had previously been taught by a volunteer instructor judged S1 to enjoy giving the lesson more ($M = 6.9$) than subjects in the paid condition ($M = 6.0$).

Discussion

The first hypothesis of the study was that perceiving a teacher as extrinsically motivated would undermine the perceiver's task enjoyment, mood, and interest in further learning. Results generally supported these predictions: First-generation participants were less interested in learning and enjoyed performing the task less when they were taught by an ostensibly paid teacher than by a supposedly volunteer instructor, although there was no support for the predicted undermining of mood during task engagement. These results conceptually replicate the mere perception effects of interpersonal cues on intrinsic motivation in a learning situation reported by Wild et al. (1992) using a different task.

The second hypothesis was that attenuation of task enjoyment and interest in learning, elicited merely on the basis of differential perceptions of a teacher's motivation, would be spontaneously transmitted to a second learner in a serial teaching-learning procedure. The present results provided strong support for this hypothesis. Specifically, diminution of learners' task enjoyment and interest in learning, elicited via interpersonal cues, led S1 participants to teach in a way that caused the second set of learners to also enjoy the task less, to take less interest in learning, and to be in a poorer mood. These results extend our reasoning about the social impact of interpersonal cues to the "infection" of motivational orientations in a new generation of learners who have no direct experience with the original teacher.

Several aspects of the study limit the generality of the findings and indicate directions for further research. First, motivational effects of social perception were found only for self-reported task enjoyment and interest in learning. Further work is needed to replicate the findings of Wild et al. (1992) that perceived teacher motivation also affects exploratory activity (but not duration of activity engagement) following a lesson. Second, although the study found that perceiving a teacher as extrinsically motivated undermines task enjoyment and interest in learning across two generations of learners, further research should examine verbal and nonverbal behavior exhibited during skill transmission to identify the locus of this effect. In that regard, recall that

second-generation learners perceived S1 as enjoying the lesson less when S1 had been previously taught by a paid confederate. It is likely that first-generation learners who had been taught by an extrinsically motivated instructor said or did something specifically to demonstrate low levels of enjoyment and interest in the second teaching session, thus communicating an extrinsically motivated orientation toward the activity to the second-generation learner. Alternatively, first-generation learners might have acted in a more controlling or more disaffected manner as a consequence of their relatively less effective learning experience. In either case, it is likely that these cues initiated the same perception-based attenuation of intrinsic motivation for second-generation learners as occurred for the first-generation participants.

Finally, the present results, in conjunction with the Wild et al. (1992) study, have general implications for studies of education. There is considerable evidence that extrinsic constraints on teachers can produce harmful motivational effects on students directly through changes in teaching effectiveness (Garbarino, 1975) and teaching style (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982); Grolnick & Ryan, 1987; Ryan & Grolnick, 1986). These results confirm that, independently of teaching activities per se, merely perceiving a teacher as extrinsically motivated is sufficient to undermine students' task enjoyment and interest in learning. This phenomenon may reflect an unacknowledged source of variation with respect to fostering an active and interested learning set among students. Also, preliminary evidence was obtained that negative consequences of perceiving a teacher as extrinsically motivated can spread from student to student, perhaps infecting students with low levels of enjoyment and interest in the learning process.

GENERAL DISCUSSION

For more than 20 years, experimental studies of intrinsic motivation have been dominated by a single methodology in which people are the direct recipients of manipulations reflecting variables hypothesized to affect enjoyment and interest in activities. Thus, participants are or are not constrained—by rewards, task labels, performance feedback, surveillance, activity goals, activity choice, and so on—and then are assessed to determine motivational effects of these autonomy-supportive or controlling social events. The present research has two important implications for studies of intrinsic motivation that prompt a reconsideration of the generality and ecological validity of this approach. First, direct constraints on individuals appear to be sufficient, but not necessary, to undermine intrinsic motivation. Instead, all that is required to undermine interest and enjoyment

in activities are perceptions that others are extrinsically motivated. Study 1 showed that interpersonal cues strongly constrain expectations about task involvement and quality of interpersonal relations, whereas Study 2 showed that the social impact of interpersonal cues can spontaneously spread from person to person during social interactions, in this case, undermining task involvement across two generations of learners. In both studies, the social perceiver was not directly rewarded, constrained, and so forth, and yet the familiar undermining effects on task involvement occurred. The present studies support the idea, implicit in our social perception model, that interpersonal cues about others' motivation to engage in an activity cause people to self-generate beliefs about expected quality of task engagement and expected quality of interpersonal relations, which, in turn, affect the actual quality of involvement experienced during activity engagement.

Indirect constraints conveyed through cues and information about others' motivation represent a potentially widespread, but understudied, social influence on motivational processes. To the extent that effects on motivation of interpersonal cues are general, they have important implications for understanding the motivational dynamics of parenting, education, counseling, and other interpersonal activities. Additional work is needed, however, to establish boundary conditions of the mere perception phenomenon. In particular, effects of perceived motivation demonstrated in Study 2 and by Wild et al. (1992) were found in a particular type of relationship—that is, between teachers and students. An interesting question for future research is whether indirect contextual effects on motivational processes might depend to some degree on the power distribution implicit between individuals in that relationship. Perhaps in this type of situation, motivation of the other is a more salient aspect of social interactions than would be the case in interactions among peers.

A second implication of the present research for studies of intrinsic motivation is that it further reinforces the notion that there is no simple one-to-one mapping between social events and motivational processes. Instead, to understand when intrinsic motivation is undermined, construal processes mediating between social events and motivational outcomes require systematic examination (Enzle & Anderson, 1993; Harackiewicz, 1979; Koestner et al., 1984; Ryan et al., 1983). Earlier studies (Porac & Meindl, 1982; Sansone et al., 1989; Tang & Baumeister, 1984) demonstrated that task labels ascribed to activities systematically alter motivational processes. The present research broadens this literature by showing that perceptions of others as intrinsically or extrinsically motivated are another important type of contextual influence on motivational processes. Specifi-

cally, the present results suggest that the functional significance of social events (Deci & Ryan, 1985, 1987) is in part affected by expectancies formed during social perception. These findings underscore the important role of interpersonal cues in shaping perceptions of one's social context as being coercive (thus undermining intrinsic motivation) or as supportive of personal autonomy (thus supporting intrinsic motivation).

NOTES

1. Copies of the experimental materials are available on request.

2. The other 18 items formed interpretable and internally consistent subscales but were excluded from further analyses because they did not directly measure the primary dependent measures (instructor and student task enjoyment, mood, and quality of interpersonal relations). Copies of all empirically derived subscales are available on request.

3. None of the substantive conclusions altered when results for the reduced sample size were compared with results from the larger sample size.

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