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The Effect of Implicit Person Theory on Performance Appraisals

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Four studies examined whether implicit person theory (IPT) regarding the malleability of personal attributes (e.g., personality and ability) affects managers' acknowledgment of change in employee behavior. The extent to which managers held an incremental IPT was positively related to their recognition of both good (Study 1) and poor (Study 2) performance, relative to the employee behavior they initially observed. Incremental theorists' judgments were not anchored by their prior impressions (Study 3). In the 4th study, entity theorists who were randomly assigned to a self-persuasion training condition developed a significantly more incremental IPT. This change in IPT was maintained over a 6-week period and led to greater acknowledgment of an improvement in employee performance than was exhibited by entity theorists in the placebo control group.

Keywords: implicit person theory, self-persuasion, anchoring, performance appraisal

Dweck (1986) defined *implicit theories* as lay beliefs about the malleability of personal attributes (e.g., ability and personality) that affect behavior. A prototypical *entity* implicit theory assumes that personal attributes are largely a fixed entity, whereas an *incremental* implicit theory assumes that personal attributes are relatively malleable.

Implicit theory research, conducted with children and students by educational and social psychologists (e.g., Dweck & Leggett, 1988; Kamins & Dweck, 1999), has focused largely on the motivational implications of holding a primarily entity or incremental implicit theory. Within an organizational context, several studies have examined how implicit theories of ability influence aspects of self-regulation including the goals that people set (e.g., Wood & Bandura, 1989), their level of self-efficacy (e.g., Martocchio, 1994), the resilience of their self-efficacy following setbacks (e.g., Wood & Bandura, 1989), and their performance on complex decision-making tasks (e.g., Tabernero & Wood, 1999). However, no published studies, to our knowledge, have examined the effect of managers' implicit theories on their judgments of others.

Implicit theories can be domain specific, pertaining particularly to areas such as ability, morality, or personality. Chiu, Hong, and Dweck (1997) argued, however, that judgments about others are more likely to be influenced by a person's *implicit person theory* (IPT), that is, his or her domain-general implicit beliefs about the malleability of the personal attributes (e.g., ability and personality) that define the type of person that someone is, as well as how he or she behaves.

In the present series of studies we investigated the potential role of IPT in the revision of a manager's performance appraisal judgments. This is an important issue in organizational psychology because failure by managers to recognize a significant decrease in the performance of a medical surgeon, a paramedic, a security guard, an airline pilot, or a nuclear power plant operator, for example, could be catastrophic. Similarly, failure to acknowledge a significant improvement in the behavior of an employee can lead to employee frustration, resentment, and withdrawal.

Manzoni and Barsoux (1998) discussed how managers who observe initially poor performance may be hypervigilant for subsequent cases of unsatisfactory performance and thus unlikely to acknowledge an improvement in an employee's performance. Potential reasons for this phenomenon include (a) escalation of commitment (e.g., Bazerman, Beekun, & Schoorman, 1982; Schoorman, 1988), (b) assimilation (e.g., Murphy, Balzer, Lockhart, & Eisenman, 1985; Smither, Reilly, & Buda, 1988), and (c) prior impression effects (e.g., Baltes & Parker, 2000; Foti & Hauenstein, 1993). However, related research to date has largely ignored individual differences (Barnes-Farrell, 2001) and, in general, has yielded few theoretical or practical insights (Arvey & Murphy, 1998).

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Murphy (Morin & Murphy, 2002; Murphy & Cleveland, 1995) has repeatedly emphasized the need for research into the determinants of managers' motivation to provide appraisal ratings that reflect the behavior of the employee. A motivational variable found to influence the extent to which children and students revise their initial impressions of other people is their IPT (Dweck, 1999).

Given the present uncertainty about whether implicit theory research generalizes to behavioral judgments made by adults in a work context (Kanfer, 1990; VandeWalle, 1997), in our first study we explored whether IPT affects managers' recognition of improved employee behavior. In Study 2 we provide initial evidence regarding the role of IPT in the recognition of a decline in performance. In Study 3 we investigated competing explanations for the results of Studies 1 and 2, specifically, whether they are most likely to reflect consistency or anchoring effects. Last, in Study 4 we explored a critical issue in the implicit theories literature: whether an entity IPT can be modified and sustained over time, in light of the extant evidence that entity implicit theories are not readily modifiable (Tabernero & Wood, 1999). In summary, we undertook the present studies to expand both the theoretical scope and empirical foundation of implicit theory research by exploring the plasticity and role of IPT in the organizational context of managers' performance appraisal judgments.

IPT and Revision of Prior Judgments

Dweck (1999) theorized that entity theorists'[1] implicit belief that personal attributes are largely fixed leads them to quickly form strong impressions of others that they resist revising, even in light of contradictory information. Conversely, Dweck argued that incremental implicit theories lead people to appreciate the dynamic personal and situational determinants of behavior and thus reconsider initial impressions after receiving new information.

Initial research on the role of implicit theories in judgments of others was conducted by Erdley and Dweck (1993). After assessing children's implicit theory of personality, they showed a narrated slide show of a "new boy at school" who performed a variety of transgressions (e.g., trying to steal and cheat). Compared with children with incremental beliefs, entity theorists made more generalized and negative trait evaluations of the target (e.g., "bad," "mean," "nasty"). Entity theorists also predicted that after a few weeks, the new boy would be "somewhat the same"; the incremental theorists expected him to be "somewhat different." When subsequent information that the child was no longer mischievous or antisocial was provided, the entity theorists exhibited less adjustment of their trait judgments than did the incrementalists.

Chiu et al. (1997, Study 1) observed that in both the ability and social domains, entity theorist college students predicted that a person would act consistently across situations significantly more than did incremental theorists. Chiu et al. (Study 2) found that the probability of a personality trait (e.g., aggressiveness, conscientiousness, or shyness) being exhibited in a particular situation was estimated to be higher by entity theorists than by incremental theorists. Their third study found that entity theorists' belief that a person's moral character could be revealed by a single decontextualized action (e.g., "making one's bed on time," "stealing a car") was significantly greater than that held by incremental theorists. Chiu et al.'s. (Study 4) replication of this U.S.-based study in Hong Kong suggests that these findings are generalizable across cultures.

Levy, Stroessner, and Dweck (1998) reported that compared with undergraduate incremental theorists, those with an entity IPT more quickly generated extreme stereotypical traits to describe ethnic and occupational groups, and the students exhibited greater confidence in the limited information they had available for doing so. Entity theorists also considered stereotypes to be more predictive of future behavior than did incrementalists.

Gervey, Chiu, Hong, and Dweck (1999) found that trait-relevant information (e.g., the defendant's dress at a crime) had a marked effect on undergraduate entity theorists' verdicts regarding whether a hypothetical defendant was guilty. It had little effect on the verdicts of incremental theorists. In addition, incremental theorists were more likely than entity theorists to request additional character information. Last, Plaks, Stroessner, Dweck, and Sherman (2001) showed that compared with incremental theorists, undergraduate entity theorists paid more attention to information that reinforced their stereotypes.

Implications for Organizational Psychology

To the extent that these findings generalize beyond children and undergraduate college students, they suggest that IPT affects the extent to which managers give due consideration to all relevant information when conducting a performance appraisal. This variable may help to explain why training raters to be objective has been effective in some cases but not in others (Bernardin, Buckley, Tyler, & Wiese, 2000; Hauenstein, 1998). Managers with an entity IPT may be less likely than incremental theorists to appraise people on their actual performance once they have formed an impression of them, owing to their conviction that the personal attributes underlying behavior are stable. However, three characteristics of prior implicit theory research make it premature to draw this conclusion.

First, all previous IPT studies, to our knowledge, involved judgments of a person's traits. Several lines of research have found that trait ratings are more readily biased than behavioral ratings. For example, Fay and Latham (1982) reported that people are more susceptible to committing rating errors, such as first impression and contrast bias, when rating traits rather than behaviors. Dunning, Meyerowitz, and Holzberg (1989) reported that ratings of behaviors (e.g., "attends social functions") contained less error (e.g., inflation) than ratings of traits (e.g., "congenial"). Last, the ambiguity of traits led Dunnette (1993) to emphasize the imperative for performance appraisals to "stay close to behavior and . . .avoid the slippery surface of poorly defined trait descriptions" (p. 377). The psychometric limitations of trait ratings make them more likely than behavioral ratings to include idiosyncratic rater effects, which Scullen, Mount, and Goff (2000) found account for between 53% and 62% of the variance in managers' performance appraisal ratings. Thus, a requirement to rate specific behaviors could minimize, if not eliminate, the previously observed IPT effects on the revision of initial trait judgments. Consequently, research is needed to test whether the findings from trait-based IPT research generalize to behavioral appraisals.

[1] The terms *entity theorist* and *incremental theorist* are widely used in the literature for the sake of conveniently denoting those who subscribe primarily to either an entity or an incremental implicit theory. In reality, people hold implicit theories that lie somewhere along the continuum between the incremental and entity prototypes (Dweck, 1999).

Second, with the exception of the narrated slide show presented to children by Erdley and Dweck (1993), previous implicit theory studies have relied on ratings of "paper people" (i.e., vignettes). A meta-analysis by Murphy, Herr, Lockhart, and Maguire (1986) found that vignettes are a low-salience stimulus that consistently yield higher effect sizes than studies "in which ratings were based on the direct or indirect observation (e.g., via videotape) of ratee behavior" (p. 654). Similarly, Kinicki, Hom, Trost, and Wade (1995) observed priming effects on performance appraisal ratings of paper people, but not of video vignettes. Whether the findings from prior implicit theory studies can be replicated using a higher salience, video-vignette stimulus has yet to be empirically determined. Smaller or nonsignificant effects from such research would suggest that low-stimulus salience accounts for the IPT effects reported in the extant literature.

Third, the participants used in previous implicit theory studies have been either children or undergraduates, who performed tasks that were unrelated to their role as students. Although findings from well-designed laboratory experiments often generalize to field settings (Anderson, Lindsay, & Bushman, 1999), Locke (1986) highlighted the need to empirically examine whether research participants affect when generalizability occurs. There is reason to question whether implicit theory research findings generalize to managers.

Specifically, Kanfer (1990) considered the potential applicability of implicit theory research to work motivation. She concluded that adult conceptions of intelligence are probably more complex and differentiated than those of children, making them less likely to affect an adult's achievement striving. Consistent with her conclusion, VandeWalle (1997) reported much weaker relationships between adults' implicit theories of intelligence and work-domain outcome variables, such as a learning goal orientation (r = .14) and feedback seeking (r = .06), than those typically found for children and students (e.g., Dweck & Leggett, 1988; Hong, Chiu, Lin, Wan, & Dweck, 1999; Robins & Pals, 2002). We concur with Kanfer that compared with children, adults may have more highly differentiated conceptions of their own abilities. However, adults do not necessarily hold highly differentiated conceptions of the personal attributes that culminate in other peoples' behavior. Thus, it remains an empirical question whether adults hold broader "kind-of-person" (i.e., IPT) implicit beliefs that influence the flexibility with which they judge other people. With reference to the results of child- and student-based implicit theory research, Tabernero and Wood (1999, p. 124) similarly concluded that studies are needed "to establish if the same is true for adults."

Study 1

The first study examined whether a manager's IPT affects his or her appraisal of a positive change in an employee's initially poor performance. While IPT is generally unrelated to initial impressions (Dweck, 1999), evidence that incrementalism is positively related to childrens' change in trait ratings following positive behavioral change (Erdley & Dweck, 1993) provided the basis for Hypothesis 1.

> *Hypothesis 1:* After appraising an employee's poor performance, incrementalism will be positively related to a manager's acknowledgment of good performance.

Method

Participants

The participants were 82 managers from a public corporation that operates a combination of complex nuclear, fossil-fuel, and hydroelectric generating stations in Canada. There were 18 women and 64 men between 31 and 62 years of age (M = 47.4 years, SD = 6.6 years). These managers provide annual appraisals that need to recognize changes in employee performance in order to maximize safety, as well as the corporation's environmental and financial performance.

Materials

Stimulus video. Negotiation skills with peers, subordinates, and supervisors are a core competency for managerial effectiveness (Yukl, 2002). To hold employee performance constant, an "employee's" negotiating performance was shown on videotape. Lifson (1953) found that filmed performances are rated the same as live performances. Similarly, Ryan, Daum, Bauman, Grisez, and Mattimore (1995) found no difference in rating accuracy of a live versus a videotaped performance.

The video featured four incidents in which an employee exhibited poor performance in negotiating with his colleagues in the first two incidents, followed by good negotiation skills in two subsequent incidents. Consistent with Borman (1978), a pilot study was conducted in which subject matter experts (SMEs; n = 14) viewed each set of videos twice, took notes on their observations, and discussed them, before providing ratings using the performance rating scale described below. A two-tailed paired t test revealed a significant difference between the mean ratings of the employee's performance during the first (M = 1.59) and second (M = 4.06) pair of videos, $t(13) = 19.85$, $p < .01$. This provides evidence for the use of these video-taped incidents as exemplars of "poor" and "good" performance (Borman, 1978).

Performance rating scale. On the basis of Lax and Sebenius's (1986) as well as Bazerman and Neal's (1992) recommendations for negotiating effectively, three negotiation SMEs developed a 12-item behavioral observation scale (BOS) for appraising the employee's performance (Latham & Wexley, 1977). The BOS anchors were 1 (*almost never*) through 5 (*almost always*). Sample items included the following: "influences others in a way that results in agreement" and "adapts personal style to the needs of different situations." In the present study, the internal consistency of the performance rating scale data (α = .95) was high.

IPT scale. IPT was assessed using the eight-item, domain-general "kind-of-person" measure developed by Levy and Dweck (1997). This scale assesses implicit beliefs that cut across the domains of ability and personality, both of which are potentially relevant to employee performance. This scale, labeled *Beliefs About Human Nature*, has four items that measure entity beliefs and four that measure incremental beliefs. A sample entity belief item is as follows: "Everyone is a certain kind of person, and there is not much they can really change about that." A sample incremental belief item is as follows: "People can substantially change the kind of person they are." The test–retest reliability of this scale data over a 1-week period and over a 4-week period was .82 and .71, respectively (Levy & Dweck, 1997). Prior research has reported high internal consistency (α = .93; Levy et al., 1998), as well as construct validity (Dweck, 1999).

Participants rated each item on a 6-point Likert-type scale with the anchors 1 (*strongly disagree*) to 6 (*strongly agree*). Consistent with Levy et al. (1998), responses to the entity-worded items were reverse scored. A mean IPT score was calculated for each manager, such that high scores represented an incremental IPT. Reverse scoring the entity items to produce a single scale was guided by the substantial empirical evidence regarding the unitary nature of incremental and entity beliefs (Levy & Dweck, 1997). In the present study, the internal consistency of the IPT scale data (α = .94) was high.

Procedure

The managers were informed that the purpose of this study was to investigate how different managers evaluate an employee's work performance. Informed consent and demographic information regarding their age and sex were collected before the participants completed the IPT scale. Consistent with Wherry and Bartlett (1982), managers discussed the behaviors on the (BOS) before observing the employee's performance. To increase the salience of the appraisal process, and following the recommendations of Mero and Motowidlo (1995), participants were repeatedly instructed to give an evaluation "as if" they were being held accountable by their organization for providing an accurate appraisal of the employee.

After viewing two videotaped instances of poor performance (Time 1), the managers had 5 min to evaluate the employee's behavior. After viewing two examples of good performance (Time 2), the managers had another 5 min to appraise the same employee. Managers were then probed for their ideas as to the purpose of the study. None expressed any familiarity with IPT or the hypothesis being tested.

Results

Table 1 shows the means, standard deviations, and correlations among the variables. To test Hypothesis 1, we estimated two regression equations. First, the performance rating for Time 1 poor performance was regressed on IPT. The beta weight for IPT was not significant ($\beta = -.07$), $t(80) = 0.60$, $p = .55$, $R^2 < .01$, indicating that ratings of the initial poor performance were invariant across levels of IPT. Second, ratings of good performance at Time 2 were regressed on IPT. The beta weight for IPT was significant ($\beta = .55$), $t(80) = 5.84$, $p < .01$; $R^2 = .30$, indicating that there was a positive relationship between IPT and managers' rating of good performance (see Figure 1).

A Hotelling-Williams test[2] revealed that the two beta coefficients were significantly different, $t(79) = 5.78$, $p < .01$.[3] Thus, consistent with Hypothesis 1, after rating an employee's poor performance, incrementalism was positively related to managers' acknowledgment of good performance.

Discussion

IPTs appear to explain why some managers acknowledge an improvement in an employee's performance more than others. The present results provide evidence for the external validity of Dweck's (e.g., Erdley & Dweck, 1993; Plaks et al., 2001) findings with children and students, by showing that these findings generalize to managers performing role-salient behavioral rating tasks on the basis of observations of an employee. As Evans (2002) observed, "without replication, our findings are built on fragile foundations. They cannot be a robust guide for action. Until we as behavioral scientists and our audiences, especially organizational decision-makers, have confidence in our prescriptions, we will have minimal influence on the real world."

Table 1
Descriptive Statistics and Zero Order Correlations for Study 1

Variable	*M*	*SD*	1	2
1. IPT	3.62	1.20		
2. Time 1 BOS ratings	2.10	.49	−.07	
3. Time 2 BOS ratings	3.90	.59	.55**	.32**

Note. $N = 82$. IPT = implicit person theory; BOS = behavioral observation scale.
** $p < .01$.

Although the present study extended the generalizability of prior IPT research to performance appraisals by managers, the present design was limited by the fact that, similar to Erdley and Dweck (1993), it examined only the extent to which managers acknowledged a positive change in an employee's behavior. Erdley and Dweck called for research to "examine whether entity theorists are truly more rigid and (also) fail to integrate inconsistent negative information" (p. 877). To date, no study to our knowledge has examined the role of IPT in judgments of diminished performance. There are at least two reasons why this research is needed:

First, performance appraisal research suggests that different dynamics underlie the acknowledgment of performance improvement versus decline. Ascending performance is acknowledged more readily than descending performance (Karl & Wexley, 1989). Moreover, Gordon (1972), as well as Morin and Murphy (2002), found that ratings of poor performance tend to be systematically lenient. Thus, the present results may not generalize to situations where there is a decline in the employee's initially good performance. This is an important issue because managers need to recognize the occurrence of ineffective performance if they are to prevent disasters, as well as guide employees on ways to improve their knowledge and skill (Bernardin, Buckeley, et al., 2000).

Second, Erdley and Dweck (1993) observed that IPT predicts recognition of behavioral change. Dweck (1999, p. 88) subsequently concluded that compared with incremental theorists, "Simply put, entity theorists do not grant people the potential to grow." Thus, it is uncertain whether the evaluation of improved performance as a function of IPT in our Study 1, as well as in Erdley and Dweck, merely reflects (a) incremental theorists' willingness to recognize actual behavior that differs from what they initially observed or (b) incremental theorists' evaluation of others in a manner that is consistent with their belief in the potential of people to grow and improve. Consequently, research is needed to clarify the role of IPT when change does not involve improvement.

Study 2

The second study examined whether IPT affects managers' recognition of poor performance after having observed and evaluated good performance. Gervey et al. (1999) found that among university students making jury decisions, positive first impressions have a more enduring effect on the subsequent judgments by

[2] The Hotelling-Williams test (Williams, 1959) is a test of the equality of two dependent correlations. Given that the beta coefficients from the two-variable regression equations are equal to the dependent correlations, the test provides a proxy for a beta comparison.

[3] To facilitate interpretation continuity of our data analysis with the extant implicit theory literature, consistent with Levy and Dweck (1999) as well as Gervey et al. (1999), managers whose mean IPT score was above and below the scale midpoint (3.5) were classified as incremental theorists ($n = 41$) and entity theorists ($n = 41$), respectively. There was no significant difference between entity ($M = 2.12$) and incremental ($M = 2.07$) theorist managers' appraisals of poor performance at Time 1, $t(80) = 0.50$, $p = .62$, $d = .11$. At Time 2, consistent with Hypothesis 1, the incremental theorist managers provided significantly higher ratings of good performance ($M = 4.12$) than the entity theorists ($M = 3.68$), $t(80) = 3.72$, $p < .01$, $d = .82$.

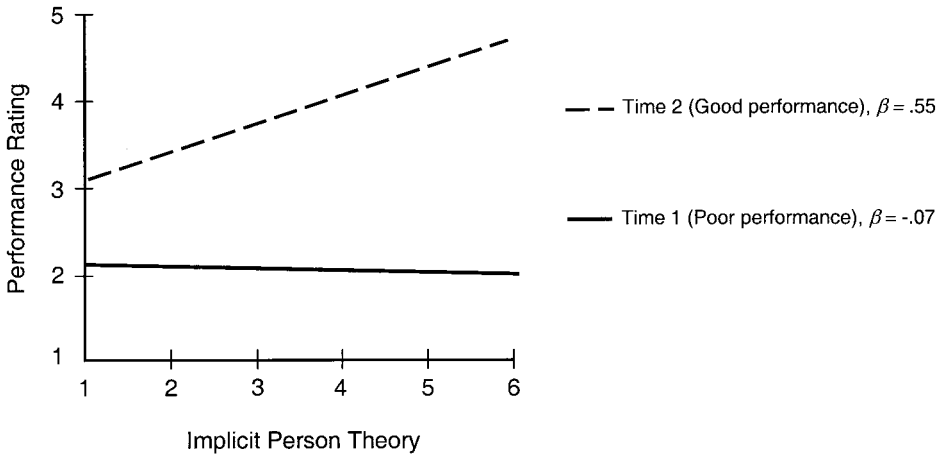

Figure 1. Performance ratings at Time 1 (poor performance) and Time 2 (good performance) regressed on implicit person theory.

entity theorists than incremental theorists. However, their study addressed only the general impression of guilt or innocence, rather than judgments following change in a person's performance. Plaks et al. (2001) found that in contrast to entity theorists, incremental theorists paid more attention to information that contradicted their positive stereotypes. However, they did not examine whether the patterns of attention allocation that they observed affected participants' subsequent judgments of others.

There are at least two reasons why incremental theorists may acknowledge deteriorated performance less than entity theorists. First, as outlined above, incremental theorists' growth-oriented beliefs and improvement focus might lead them to discount instances of diminished performance. Second, Butler (2000) found that ratings of ability as a function of implicit beliefs depend on the trend (i.e., improving or declining) in the performance being rated. However, Butler only collected a single global rating; she did not assess ratings before and after a change in performance, as a function of implicit beliefs.

Clarification of whether incremental theorists are more or less likely than entity theorists to recognize a decline in performance is an issue of both theoretical and practical importance. Empirical support for the possibility that managers overlook a performance decline as a function of their incrementalism would place a critical boundary condition on the usefullness of calls (e.g., Dweck, 1999; Levy et al., 1998; VandeWalle, 2001) to foster incremental implicit beliefs.

Consistent with Plaks et al.'s (2001) finding that students' incrementalism predicts the amount of attention they pay to information that contradicts their positive impressions of others, the following hypothesis was tested:

> *Hypothesis 2:* After appraising an employee's good performance, incrementalism will be positively related to a manager's acknowledgment of poor performance.

A finding contrary to the second hypothesis would suggest that the findings from Study 1 reflect managers with an incremental IPT increasing their initially low ratings to be consistent with their espoused belief in the capacity of people to grow and improve.

Method

Participants

The participants were 43 managers from the same Canadian power generation company as the participants in Study 1. None of them had participated in or had knowledge of the prior study. There were 9 women and 34 men between 30 and 62 years of age ($M = 46.5$ years, $SD = 6.8$ years).

Materials

The scales and videotape were the same as those used in Study 1.

Procedure

The procedure was identical to our prior study with the exception that the order of the change in the employee's performance was reversed; the managers observed and rated two instances of good negotiating performance, before observing and rating two instances of poor negotiating performance.

Results

Table 2 shows the means, standard deviations, and the correlations among the variables. The analytical procedure was parallel to that used for Study 1. First, the performance rating for Time 1 good performance was regressed on IPT. The beta weight for IPT was not statistically significant ($\beta = .02$), $t(40) = 0.11$, $p = .92$, $R^2 < .01$, indicating that the initial good performance ratings were invariant across IPT levels. Second, the Time 2 poor performance

Table 2
Descriptive Statistics and Correlations for Study 2

Variable	*M*	*SD*	1	2
1. IPT	3.39	1.12		
2. Time 1 BOS ratings	3.09	.75	.02	
3. Time 2 BOS ratings	1.67	.52	−.45*	.27

Note. $N = 42$. IPT = implicit person theory; BOS = behavioral observation scale.
* $p < .01$.

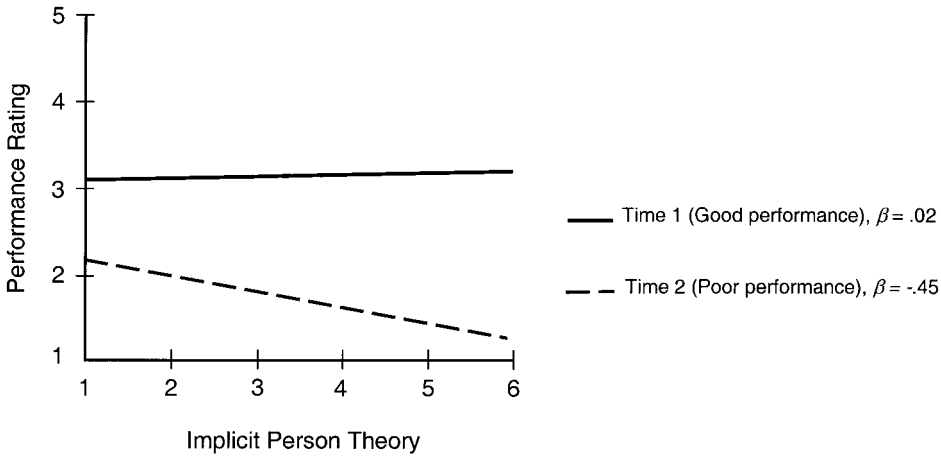

Figure 2. Performance ratings at Time 1 (good performance) and Time 2 (poor performance) regressed on implicit person theory.

ratings were regressed on IPT (see Figure 2). The beta weight for IPT was statistically significant ($\beta = -.45$), $t(40) = 3.21$, $p < .01$, $R^2 = .20$, indicating that the performance ratings decreased as incrementalism increased.

A Hotelling-Williams test revealed that the two beta coefficients were significantly different, $t(39) = 2.72$, $p < .01$.[4] Thus, consistent with Hypothesis 2, after appraising an employee's good performance, incrementalism was positively related to managers' acknowledgment of poor performance.

Discussion

These results show that Dweck's (1999) theory about people with an entity IPT being reluctant to revise their initial judgments also applies to cases when these initial judgments are positive. Together with Study 1, the results of Study 2 suggest that IPT provides a theoretical explanation for Hauenstein's (1998) observation that some managers recognize a change in performance more than others.

Incremental theorists' downward revision of their initial appraisals in this second study implies that the results of Study 1 are unlikely to reflect incremental theorists providing evaluations in accordance with their optimism about peoples' growth potential. Rather, the results appear consistent with Erdley and Dweck's (1993) explanation regarding entity theorists' adherence to their rigidly held initial impressions, whereas incremental beliefs appear to "enable individuals to remain more data driven" (p. 877).

Alternatively, perhaps the results of Studies 1 and 2, as well as those of Erdley and Dweck (1993), reflect individuals who have an incremental implicit theory trying to justify their views expressed on the IPT scale items by exaggerating the changes that they observe. Participants' unawareness of the purpose of Studies 1 and 2 suggests that this possibility is unlikely. Nonetheless, the concurrent design of the first two studies limits the insight they yield about whether, compared with entity theorists, incremental theorists are more overreactive, rather than data driven, when evaluating performance that differs from their initial impressions.

Study 3

Equal Employment Opportunity Commission (EEOC) guidelines (Malos, 1998), performance appraisal theory (Wherry, & Bartlett, 1982), and best practice guidelines (e.g., Latham & Wexley, 1994; Smither, 1998) concur that appraisal ratings should reflect nothing more than relevant employee performance. However, the evidence cited earlier regarding (a) escalation of commitment (e.g., Bazerman et al., 1982; Schoorman, 1988), (b) assimilation (e.g., Murphy et al., 1985; Smither et al., 1988), and (c) prior impression effects (e.g., Baltes & Parker, 2000; Foti & Hauenstein, 1993), as well as the results of the first two studies, highlight how performance appraisal ratings can be unduly influenced by information or judgments that occur prior to the focal employee performance.

It is premature to conclude that an incremental IPT prevents managers' appraisals from being anchored by their initial impression of an employee. No previous study, to our knowledge, has addressed the rival hypothesis that those with an incremental IPT overreact to behavioral changes to provide ratings that are consistent with their espoused belief that people can change.

Although the results of Studies 1 and 2 are inconsistent with this overreaction hypothesis, stronger evidence could be derived from additional research. Thus, we conducted a third study. In this experiment we used a longitudinal design, so that there was even less chance that participants would perceive a connection between completing the IPT scale and subsequently evaluating employee performance. An alternate source of prior information was also used because the effect of prior impressions on appraisal judgments depend on whether these impressions are formed directly, through video-recording, or indirectly, by reading a third-party assessment of the focal employee (Smither et al., 1988; Sumer & Knight, 1996). The importance of this aspect of our third study is underscored by evidence that managers sometimes rely more heavily on indirect performance information than direct observa-

[4] After classifying managers as either entity ($n = 28$) or incremental ($n = 14$) theorists, as in Study 1, we observed that the ratings of good performance by the entity ($M = 3.07$) and incrementalist ($M = 3.12$) managers' at Time 1 were not different, $t(40) = -0.20$, $p = .84$, $d = .07$. However, at Time 2, consistent with the second hypothesis, the incremental theorists provided significantly lower ratings of poor performance ($M = 1.42$) than did the entity theorists ($M = 1.79$), $t(40) = 2.26$, $p = .03$, $d = .81$.

tion of their employees, when conducting performance appraisals (Barnes-Farrell, 2001).

Another reason for conducting this third study is that research has yet to examine whether an entity IPT leads to anchoring effects when making a performance appraisal. Thus, the purpose of this third study was to examine whether (a) consistent with their espoused belief in a person's potential to change, incremental theorists exaggerate their ratings of apparent change in performance (consistency hypothesis), and/or (b) entity theorists' ratings are anchored by their initial impressions (anchoring hypothesis), as presumed by Dweck (Dweck, 1999; Erdley & Dweck, 1993).

In light of the nonsignificant relationship between IPT and ratings of initially good performance at Time 1 in Study 2, we tested the following hypothesis:

> *Hypothesis 3:* IPT will predict ratings of good performance only after exposure to a poor-performance anchor.

To explore whether a performance anchor more strongly influences entity or incremental theorists, the following supplementary hypotheses were tested:

> *Hypothesis 3a:* Incremental theorists will provide higher ratings of good performance when they are previously given a negative-performance anchor (consistency hypothesis).

> *Hypothesis 3b:* Entity theorists will provide lower ratings of good performance when they are previously given a negative-performance anchor (anchoring hypothesis).

Hypothesis 3a will be supported if incremental theorists' ratings of good performance are increased by providing them with negative prior-performance information. By contrast, if the results of Studies 1 and 2 reflect entity theorists exhibiting anchoring effects, the ratings of good performance by those with an entity IPT should be deflated by negative prior-performance information.

Method

Participants

The participants were 83 masters of business administration (MBA) students at a southwestern U.S. university. There were 25 women and 58 men who were between 22 and 43 years of age (M = 27.9 years, SD = 3.7 years). The participants had 5.2 years of work experience.

Procedures and Materials

Two weeks prior to the beginning of the academic semester, participants completed the eight-item IPT scale used in Studies 1 and 2. Six weeks later, the participants were randomly assigned to the treatment (n = 43) or control (n = 40) group. Both groups then completed the appraisal task used in Study 1. However, just before doing so, the treatment group was given negative background information, presented as, "just to give you a feel for the person whose performance you are about to observe and evaluate." Specifically, the treatment group received written text and a verbal announcement that included the following information:

> Collin is a junior manager. . .(who) hopes to become a senior manager. . .(though) has twice missed out on being promoted. . .Collin has made efforts to improve, though his manager is skeptical about whether Collin will ever have what it takes to move into a senior management role.

The participants in the control group did not receive this negative background information. The negotiation performance observation and appraisal protocol were identical to Study 1, except that those in the treatment group were told that their appraisal should be based only on the video-recorded performance they observed (i.e., not the background information).

All participants were subsequently probed for their ideas as to the purpose of the study. None expressed any familiarity with IPT or the hypotheses being tested.

Results

Table 3 shows the means, standard deviations, and the correlations among the variables. To test Hypothesis 3, we regressed performance rating on IPT for each condition (control vs. treatment). For the control group, the beta weight for IPT was not significant (β = .15), $t(38) = 0.975$, p = .34, R^2 = .02, indicating that the ratings for good performance were invariant across levels of IPT. For the anchor treatment group, the beta weight for IPT was significant (β = .45), $t(41) = 3.18$, $p < .01$, R^2 = .20, indicating that ratings of good performance were positively related to participants' incrementalism. To compare the two coefficients, we calculated the 95% confidence interval for the difference between regression coefficients from different groups (Cohen, Cohen, West, & Aiken, 2003). The calculated confidence interval (−.61 to −.03) did not include 0, so the regression coefficients from the treatment and control groups were statistically different. Thus, in support of Hypothesis 3, IPT predicts ratings of good performance only after exposure to a poor-performance anchor (see Figure 3).

To test the supplementary hypotheses, consistent with Studies 1 and 2, participants were subsequently classified as entity (n = 42) or incremental (n = 41) theorists. Contrary to Hypothesis 3a, the performance rating means for the incrementalists across the anchor treatment (M = 4.10, n = 20) and control (M = 4.13, n = 21) groups were not different, $t(39) = 0.18$, p = .86, d = .06. By contrast, entity theorists in the anchor treatment group (n = *23*) gave significantly lower performance ratings (M = 3.26) than those in the control group (M = 3.80, n = 19), $t(40) = 2.04$, p = .04, d = .65. Thus, Hypothesis 3b was supported.

Ratings were also compared with the SMEs' ratings (see Study 1). The ratings of good performance by incremental theorists in both the anchor treatment (M = 4.10) and control (M = 4.13) conditions were almost identical to those of the SMEs (M = 4.06). By contrast, although the mean rating of good performance by the entity theorists in the control condition (M = 3.80) was slightly lower than the SMEs, the mean rating of good performance by the

Table 3
Descriptive Statistics and Correlations for Study 3

Variable	M^1	M^2	M^3	SD	1	2
1. Condition (Anchor vs. control)			1.51	.50		
2. IPT	3.49	3.52	3.47	.85	−.03	
3. BOS ratings	3.80	3.97	3.65	.85	−.19	.33**

Note. M^1 = mean for control condition (n = 40); M^2 = mean treatment condition (n = 43); M^3 = combined mean (n = 83). SD indicates combined standard deviation. IPT = implicit person theory; BOS = behavioral observation scale.
** $p < .01$.

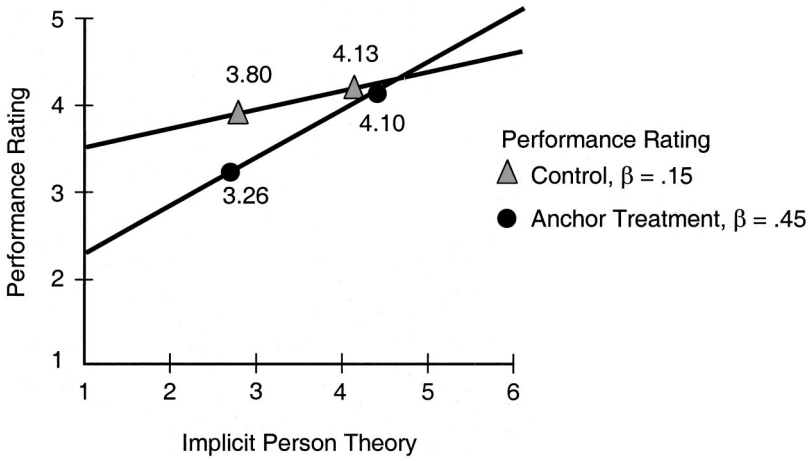

Figure 3. Regression lines for the (good) performance ratings of the control and anchor treatment conditions, as a function of implicit person theory. The two data points on each line, from left to right, are the mean performance ratings of the entity and incremental theorists, respectively.

entity theorists who were given the anchor treatment ($M = 3.26$) differed by 0.80 scale points from the SME rating. This result is also consistent with Hypothesis 3b.

Discussion

In this third study we assessed directly the role of IPT in the incorporation of irrelevant prior-performance information on subsequent appraisal ratings. Incremental theorists were relatively unaffected by negative prior-performance information. This suggests that holding an incremental IPT is unlikely to lead managers to exaggerate apparent changes in employee performance. By contrast, entity theorists' evaluation of good performance was deflated by background information about events that occurred prior to the performance that they were required to appraise. Thus, the present findings suggest that the results of Studies 1 and 2 are attributable to those with an entity IPT anchoring on their initial judgments. This anchoring effect occurs regardless of whether entity theorists' initial impressions are formed directly (Studies 1 and 2) or indirectly (Study 3). The results of these studies strengthen our confidence in the conclusion that IPT affects managers' acknowledgment of a change in performance, after an initial impression has been formed of an employee.

The relative rigidity of entity theorist managers' initial judgments suggests the need for a training intervention. However, three issues need to be addressed before this recommendation can be made: First, the basis for drawing a causal link between managers' IPT and their acknowledgment of change in an employee's behavior is limited. For example, the focus of the first three studies was on measured rather than manipulated IPT. Second, there is uncertainty about whether entity theorists can be trained to adopt incremental beliefs (Tabernero & Wood, 1999). Third, it is unknown whether any induced changes in entity theorists' IPT can be sustained over time. The following study addressed these issues.

Study 4

Evidence for the temporal stability of IPT has been provided by Robins and Pals (2002). They found that the corrected correlation between undergraduates' IPT from one year to the next was .72, and .64 over a 3-year period. On the other hand, incremental implicit beliefs have been experimentally induced through achievement attributions (Dweck & Leggett, 1988), task framing (Wood & Bandura, 1989), "scientific" testimonials (Chiu et al., 1997; Levy et al., 1998), and by providing process-oriented feedback after a successful performance (e.g., "You must have worked hard"), rather than trait-oriented feedback (e.g., "You must be smart"; Mueller & Dweck, 1998). However, a limitation common to these five studies is that they were each conducted during a single session. Hence, the durability of induced implicit theories is not known.

Sustainability of Induced Implicit Beliefs

Dweck (1999) argued that, "Some of these changes in 'mindset' may last as long as you are in the situation that is delivering the message, but long-term changes may also be induced by a compelling or continuing message" (p. 133). The only empirical study, to our knowledge, that examined whether induced incremental beliefs can be sustained over time was conducted by J. Aronson, Fried, and Good (2002). African American and White undergraduates in the experimental group were shown a film about how challenges, effort, and learning make people smarter, because the brain grows "like a muscle." This incremental message was reinforced by participants' writing letters to struggling grade-school children that emphasized how intelligence expands with work. They then reworked their letters into brief recorded speeches for use with at-risk children. Six weeks after the incremental intervention, the African American participants, unlike the White participants, exhibited a significant increase in incrementalism, compared with those in the control condition.

Two noteworthy aspects of this study are the substantial attrition rate, as well as the way the implicit belief criterion was assessed. Specifically, an African American research assistant used a two-item scale administered over the telephone. This procedure could have produced unmeasured variation in the conversational context in which implicit beliefs were assessed. This potential source of

unsystematic variation might explain the significant differences in subsequent implicit theories of the African American and White participants.

A limitation common across the studies by J. Aronson et al. (2002), Dweck and Leggett (1988), Wood and Bandura (1989), Chiu et al. (1997), Levy et al. (1998), and Mueller and Dweck (1998) is that the participants were randomly assigned to conditions. Random assignment confounded the relative influence of the incremental induction methods on entity theorists, compared with incremental theorists. This is problematic because responses to implicit belief manipulations depend on participants' preexisting implicit beliefs (Tabernero & Wood, 1999). Did these incremental manipulations change entity theorists into incremental theorists, or did they simply make incremental theorists even more incremental? The mean entity versus incremental condition IPT scores reported in these studies do not reveal whether the incremental intervention significantly influenced entity theorists' IPT.

Malleability of Entity Implicit Theories

Using the same complex decision-making task as Wood and Bandura (1989), Tabernero and Wood (1999) gave entity theorists task instructions in which incremental cues were embedded (e.g., "skills. . .are developed through practice"; p. 114). They also gave incremental theorists instructions with entity cues embedded (e.g., "decision-making reflects the basic cognitive capabilities that people possess"; p. 114). Tabernero and Wood found that the incremental theorist undergraduate students adopted entity beliefs. However, the entity theorists did not adopt incremental beliefs. The authors stressed the need for additional research to establish whether entity-oriented adults can indeed be trained to adopt incremental beliefs. Insights for developing such an intervention may be found in the social psychological literature on persuasion.

Self-Persuasion

E. Aronson (Aronson, 1999; Pratkanis & Aronson, 2001) explained how changes in the beliefs and attitudes induced by direct persuasion from others are often small and short lived, relative to those that stem from self-persuasion. Methods of self-persuasion include counterattitudinal reflection (e.g., Gregory, Cialdini, & Carpenter, 1982), counterattitudinal idea generation (e.g., Miller & Wozniak, 2001), counterattitudinal advocacy (e.g., Gordijn, Postmes, & de Vries, 2001), and cognitive dissonance induction (e.g., Aronson, Fried, & Stone, 1991).

Pratkanis and Aronson (2001) concluded that self-persuasion is the most effective persuasion tactic, because the resulting message comes from a source that people almost always consider credible, trustworthy, respected, and liked, namely, themselves. A key finding in the self-persuasion literature is that inducing cognitive dissonance, by drawing attention to how people have not acted in accordance with the ideas they have espoused, serves to substantially increase the effectiveness of self-persuasion (Aronson et al., 1991; Dickerson, Thibodeau, Aronson, & Miller, 1992; Stone, Aronson, Crain, Lauren, & Matthew, 1994).

The one study, to our knowledge, that used self-persuasion methods to induce incremental beliefs was conducted by J. Aronson et al. (2002). In addition to a scientific testimonial (i.e., the film), they used counterattitudinal reflection, idea generation, as well as counterattitudinal advocacy, in the form of letter- and speech-writing and delivery tasks. However, they did not include a cognitive dissonance induction component. In addition, their study did not explicitly examine the effect of their incremental training program on entity theorists. The purpose of our fourth experimental study was to examine whether a self-persuasion incremental induction that includes a cognitive dissonance manipulation results in entity theorists' adopting an incremental IPT beyond the duration of the experimental session.

An entity induction condition was not included in this study for three reasons. First, Tabernero and Wood (1999) have already found that incremental theorists can be readily induced to adopt the implicit beliefs and behavioral tendencies of entity theorists. Second, extrapolating from the extant research with children and undergraduate students, inducing entity beliefs can be expected to have only negative consequences for participants (e.g., Wood & Bandura, 1989), their intimate relationships (e.g., Knee, Nanayakkara, & Vietor, 2001), and their social targets (e.g., Levy et al., 1998). Given the present longitudinal design, the ethical imperative to "do no harm" would not be met by an entity induction intervention. Previous studies (e.g., Chiu et al., 1997; Levy et al., 1998; Tabernero & Wood, 1999) avoided this ethical issue by debriefing all participants regarding the nature and prevalence of both entity and incremental beliefs immediately after the experimental sessions. This method of nullifying an entity IPT manipulation was not possible in the present study of whether induced IPT can be sustained over time. Third, no study, to our knowledge, has persuaded entity theorists to adopt enduring incremental beliefs. To test whether this occurred in the present study, the beliefs and behavior of entity theorists after they were given an incremental induction were compared with those participants given a placebo, rather than an entity induction.

Overview and Hypotheses

Entity theorists were identified and randomly assigned to either an incremental induction or a placebo control condition. Six weeks later, consistent with J. Aronson et al. (2002), the entity theorists in both conditions were asked to rate a video-recorded example of poor performance. This was done before they observed and rated this same individual exhibiting good performance.

We hypothesized that, compared with entity theorists in the control condition, entity theorists who are given a self-persuasion incremental intervention will exhibit the following:

> *Hypothesis 4a:* A relatively enduring increase in incrementalism
>
> *Hypothesis 4b:* A greater acknowledgment of improvement in an employee's performance

The focus of this experiment on acknowledgment of performance improvement was guided by our previous finding that IPT affects recognition of change, regardless of whether that change is positive (Study 1) or negative (Study 2).

Method

Participants

The participants were 115 executive MBA students at a Canadian university. This population was selected because of their demonstrated commitment to improve their managerial effectiveness by virtue of under-

taking an MBA degree. Because of the requirement for these participants to evaluate and coach peers in their respective study groups, as well as the employees they manage, the appraisal criterion task in the present study was role salient.

Sixty-two participants had a mean IPT of 3.0 or below. As in Chiu et al. (1997) and Butler (2000), they were designated as entity theorists. Because these entity theorists were the focus of the present study, the remaining 53 participants were excluded from the following analyses. Thirty of the entity theorists were women and 32 were men. Their ages ranged between 24 and 45 years (M = 31.7 years, SD = 4.5 years). Their mean managerial work experience was 5.1 years.

The participants were randomly assigned to either the incremental induction (n = 33) or the control (n = 29) condition. Two participants in the incremental induction condition and one in the placebo control did not complete the performance rating task, because they were working out of the country when these tasks were administered.

Procedure and Materials

Participants were informed that the purpose of this study was to investigate how managers evaluate and motivate employees. During the process of gathering informed consent, it was emphasized that participants were free to discontinue their participation at any time without penalty.

To identify the entity theorists who were the focus of this study, IPT was assessed using the eight-item IPT scale that was used in Studies 1, 2, and 3. Entity theorists were then randomly assigned to either the incremental induction or the placebo control workshop. A week later, both types of workshop were administered by a different experimenter, in a different room, than the assessment of IPT. This was done because temporal and contextual separation between pretest and treatment administration minimizes demand effects (Aronson, Ellsworth, Carlsmith, & Gonzales, 1990).

Incremental induction workshop. Consistent with previous self-persuasion interventions (e.g., Aronson et al., 1991; Dickerson et al., 1992; Stone et al., 1994), five self-persuasion principles were implemented in a 90-min workshop.

First, a scientific testimony was delivered through a written article plus the videotape used by J. Aronson et al. (2002). Modeled on the testimonial used by Chiu et al. (1997), this written article outlined findings from "recent psychological and management research" regarding how personal attributes can change. The videotape discussed how the brain, and hence intelligence, is capable of "growing like a muscle" and making new connections throughout life.

Second, counterattitudinal idea generation involved participants generating responses to the following question: "As a manager, what are at least three reasons why it is important to realize that people can develop their abilities? Include implications for both yourself and for the employees you (will) manage." This approach is consistent with Miller and Wozniak's (2001) finding that beliefs are altered by self-generating arguments.

Third, to induce counterattitudinal reflection, participants answered three 2-part reflection questions (e.g., "What is an area in which you once had low ability, but now perform quite well? How were you able to make this change?"). These questions are consistent with the evidence that self-reflection is an effective means of self-persuasion (Wilson, 1990).

Fourth, counterattitudinal advocacy involved participants acting as a mentor. They wrote an email offering advice to a struggling hypothetical protégé, "Pat," about how abilities can be developed. Consistent with J. Aronson et al. (2002), participants were encouraged to include anecdotes about how they have personally dealt with developmental challenges.

Fifth, the cognitive dissonance induction involved participants identifying three instances of (a) when they had observed somebody learn to do something that they had been convinced that this person could never do, (b) why they think this occurred, and (c) what may have been the implications. The persuasiveness of having people reflect on beliefs they have held that are inconsistent with those that they have just advocated is well established (e.g., Aronson et al., 1991; Dickerson et al., 1992; Stone et al., 1994).

Placebo control workshop. To minimize treatment effects being attributable to the time and attention given to participants in the incremental condition, participants in the control condition also engaged in a 90-min workshop. Consistent with E. Aronson et al. (1990), this workshop had an identical format to the incremental workshop. Following J. Aronson et al. (2002), the placebo workshop emphasized how people have multiple abilities with strengths and weaknesses in different areas.

At the end of both workshops, and again 2 weeks later, participants completed a workshop evaluation consisting of the three IPT and the four workshop satisfaction items described below.

IPT manipulation check. The three-item scale used by Chiu et al. (1997) and Levy et al. (1998) served as the postintervention measure of IPT. Consistent with E. Aronson et al. (1990), this abridged scale was used to minimize the demand effects that could have resulted from re-administering the eight-item IPT scale immediately after the IPT induction. This three-item IPT scale data have high internal consistency (α = .90–.96; Chiu et al., 1997) and the scale correlates highly with the eight-item scale (r = .83; Levy & Dweck, 1997). To further decrease the chance of the immediate and 2-week postintervention IPT reassessment creating demand effects, and consistent with E. Aronson et al. (1990), the three IPT items were embedded within workshop satisfaction items.

Workshop satisfaction. Following Levy et al. (1998), four Likert-type scale items assessed participants' satisfaction from 1 (*strongly disagree*) to 5 (*strongly agree*) on the extent to which the workshop they attended was "useful," "interesting," "thought-provoking," and "worthwhile." This scale had acceptable internal consistency immediately (α = .80) and 2 weeks later (α = .86).

To facilitate temporal comparability with J. Aronson et al. (2002), the performance rating task and final IPT assessment were administered 6 weeks after the workshops. These were conducted in a group setting by a different experimenter and in a different room to the workshops. This was done to reduce the potentially biasing effect of participants' desire to "look good" to the experimenter who had conducted the training (Aronson et al., 1990).

Performance rating task. Consistent with E. Aronson et al. (1990), a cover story was used to reduce potential demand effects resulting from (a) participants striving to guess the hypotheses of the study as well as (b) participants' personal evaluation apprehension and other self-image concerns. The participants' help was sought to evaluate the usefulness of a BOS for making appraisal ratings and providing feedback to employees.

The procedure for administering the performance appraisal task was identical to that used in Study 1, except that it concluded with a survey in which the three-item IPT manipulation check was embedded. The participants were probed for their ideas regarding the purpose of the study; none revealed any knowledge of the hypotheses being tested. Last, the rationale for the study and the nature of the two "motivation workshops" were explained, together with the importance of using all relevant information when providing a performance appraisal.

Results

The preintervention IPT of the entity theorists who were assigned to the incremental induction condition (M = 2.50, SD = 0.49) was not significantly different from the pretreatment IPT of those assigned to the placebo condition (M = 2.62, SD = 0.38), $t(60) = 1.11$, $p = .27$, $d = .27$.

A 2 × 2 repeated measures analysis of variance (ANOVA) revealed no significant differences in satisfaction with the incremental induction and placebo control workshops, either between conditions, $F(1, 55) = 0.01$, $p = .92$, partial $\eta^2 = .00$, or over time, $F(1, 55) = 0.50$, $p = .48$, partial $\eta^2 = .01$. Table 4 shows the means, standard deviations, and correlations among the study variables.

The between-condition differences in IPT were significant immediately, $t(60) = 5.84$, $p < .01$, $d = 1.48$; 2 weeks, $t(55) = 2.60$,

Table 4
Descriptive Statistics and Correlations for Entity Theorists

Variable	M^1	M^2	M^3	*SD*	1	2	3	4	5	6
1. Pretreatment IPT	2.50	2.62	2.56	.44						
2. Condition (Incremental vs. placebo)			1.53	.50	−.14					
3. Immediate Posttreatment IPT	4.62	3.53	4.11	.91	−.02	.60**				
4. Two-week posttreatment IPT	4.03	3.34	3.71	.04	−.03	.33*	.50**			
5. Six-week posttreatment IPT	4.45	3.17	3.82	.10	.08	.59**	.48**	.42**		
6. Time 1 BOS ratings	1.72	1.75	1.73	.49	.02	−.03	−.13	.03	−.05	
7. Time 2 BOS ratings	4.23	3.48	3.86	.77	−.04	.50**	.38**	.22	.55**	.28*

Note. $N = 62$ at immediate posttreatment, $N = 57$ at 2 weeks posttreatment, $N = 59$ at 6 weeks posttreatment. M^1 = mean for incremental induction condition; M^2 = mean for placebo control condition; M^3 = combined mean. *SD* indicates combined standard deviation. IPT = implicit person theory; BOS = behavioral observation scale.
* $p < .05$. ** $p < .01$.

$p = .01$, $d = .70$; and 6 weeks, $t(57) = 5.46$, $p < .01$, $d = 1.42$, after the respective workshops. Similarly, a 2×3 repeated measures ANOVA revealed that the IPT of entity theorists who engaged in incremental self-persuasion was significantly more incremental than the IPT of entity theorists in the placebo control, $F(2, 52) = 31.19$, $p < .01$, partial $\eta^2 = .38$. Thus, as predicted by Hypothesis 4a, the incremental intervention led to a relatively enduring increase in entity theorists' incrementalism.

ANOVAs were used to compare entity theorists' mean performance ratings as a function of condition (treatment vs. control). There was no significant difference at Time 1 ratings of poor performance in the treatment ($M = 1.72$) and control ($M = 1.75$) groups, $F(1, 57) = 0.04$, $p = .84$, partial $\eta^2 = .01$. Consistent with Hypothesis 4b, however, the IPT treatment group evaluated the good performance ($M = 4.22$, $SD = 0.47$) higher than the control group ($M = 3.48$, $SD = 0.83$), $F(1, 57) = 18.10$, $p < .01$, partial $\eta^2 = .24$. The results are shown in Figure 4.

Discussion

Prior to the present study, it was not known whether entity beliefs could be modified (Tabernero & Wood, 1999). Ilgen (1986) observed that, "There are times when the research question of interest deals with the need to demonstrate that some event, condition or process *can* occur, in contrast to demonstrating that it does occur in the settings to which generalization is of interest" (p. 264, italics in original). In the present study we established that, through self-persuasion, entity theorists can be trained to adopt an incremental IPT.

We also clarified the issue of whether induced incremental beliefs can be sustained beyond an experimental session, by addressing three limitations of J. Aronson et al.'s (2002) research. Specifically, we examined the sustainability of entity theorists' induced incremental beliefs; the 6-week postintervention attrition rate was only 5% (rather than 27%), and the IPT criterion was assessed in a standardized manner. The resulting evidence suggests that although IPT is a relatively stable individual difference that consistently predicts an array of judgments about others (Chiu et al., 1997; Gervey et al., 1999; Levy et al., 1998), an entity IPT can be systematically modified in a manner that endures over a 6-week period.

Consistent with Hypothesis 4b, entity theorists who received the incremental intervention subsequently acknowledged a change in an employees' performance more so than those who received the placebo training. This finding provides further support for the results obtained in Studies 1, 2, and 3.

General Discussion

Advances in industrial–organizational (I/O) psychology are likely to come from adopting well-developed concepts and methods from other subdisciplines of psychology (Latham & Heslin, 2003; Latham & Seijts, 1997). Using this cross-disciplinary approach, in the present series of studies we replicated and extended the theoretical framework of IPT from the education and social psychology literatures to the I/O psychology domain of performance appraisal. Specifically, these four studies show that IPT affects acknowledgment of changes in employee performance, apparently by reducing anchoring effects (Study 3). Study 4 also shows that entity theorists can be self-persuaded to adopt relatively enduring incremental beliefs. In doing so, the four present studies broaden the nomological network of IPT and, thus, the construct itself.

Implications for IPT

Hesketh (2004) argued cogently that, "We need more replications and extensions in I/O psychology." The findings of Studies 1 and 2 empirically show that IPT affects assessments of others, even when the assessments are made by managers performing the role-salient task of appraising observed job behaviors. Thus, the external validity of Dweck's (1999) theory does not appear to be bounded by the student samples, trait scales, or written stimuli commonly adopted in previous IPT research.

Study 2 provides the first empirical evidence, to the our knowledge, that Dweck's (1999) theory regarding how IPT affects judgments of others' behavioral change is invariant to whether the direction of that change is positive or negative. Thus, Study 2 expands the scope of the empirical basis for Dweck's theory and establishes that the findings of Study 1 are unlikely to be attributable to incremental theorists' belief in employees' growth potential. The results from Study 3 suggest that the results from Studies 1 and 2 are not attributable to consistency effects that led incremental theorists to overstate behavioral changes; rather, they appear to reflect entity theorists being anchored by their initial impressions when making subsequent performance appraisal judgments.

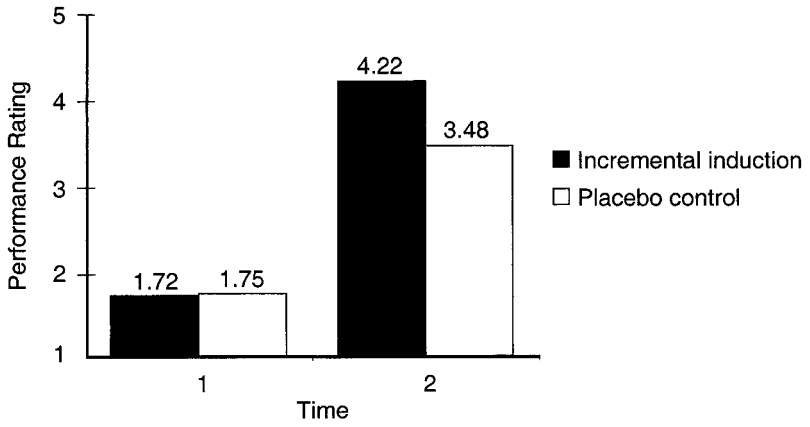

Figure 4. Treatment and control groups' mean performance ratings at Time 1 (poor performance) and Time 2 (good performance).

Jones (1990) observed that, "Anything that we want to call a disposition would seem to have, almost by definition, some degree of built-in resistance to change" (pp. 69–70). Tabernero and Wood (1999) concluded that replacing entity beliefs probably requires "more than an exhortation" (p. 124). The results of Study 4 show that by using self-persuasion techniques that include a cognitive dissonance induction, it is possible to train entity theorists to adopt an incremental IPT that is sustained over time. These findings have potential implications for organizational scholarship on decision making, stereotyping, and performance appraisals.

Implications for Behavioral Decision Theory

Behavioral decision theorists have documented anchoring effects in contexts such as selection interviews (Kataoka, Latham, & Whyte, 1997), negotiations (Whyte & Sebenius, 1997) and jury decision making (Englich & Mussweiler, 2001). Whereas anchoring effects are pervasive and highly robust (Mussweiler, 2001), little is known about their antecedents (Chapman & Johnson, 1999) or how to reduce them (Mussweiler & Strack, 2001). Research is needed to explore whether IPT provides a useful theoretical explanation, predictor, and basis for reducing entity theorists' anchoring on initial judgments of other people, within the contexts studied by behavioral decision theorists.

Implications for Reducing Stereotyping in Organizations

Stereotyping that is based on factors such as age, gender, ethnicity, and sexual orientation is a substantial and intractable problem in many organizations (Operario & Fiske, 2001). By weakening peoples' belief in the fixed, innate traits that often lie at the core of negative stereotypes, cultivating incremental beliefs decreases both children's' (Levy & Dweck, 1999) and students' (Levy et al., 1998) stereotype formation and maintenance. Research is needed on the role of IPT in stereotyping within organizations, as well as whether the present incremental induction procedure can reduce stereotyping and related dysfunctional organizational dynamics, such as prejudice, discrimination, and intergroup conflict. Such initiatives may be particularly useful in contexts where people with an entity IPT are responsible for managing and developing traditionally stigmatized workers, such as older workers or those with minimal formal education.

Implications for Performance Appraisal

Ilgen, Barnes-Farrell, and McKellin (1993) called for research regarding "methods of ensuring the systematic sampling of information about ratees" (p. 358). Hauenstein (1998), as well as Mount and Scullen (2001), similarly suggested that new theories and methods are needed for identifying and potentially retraining managers who provide distorted ratings. The results of the present series of studies suggest that IPT is a motivational variable that predicts the extent to which managers acknowledge change in employee behavior.

Useful psychological theories facilitate prediction, explanation, and behavioral change (Bandura, 1986; Latham & Crandall, 1991). IPT not only predicts appraisal ratings—similarly to other individual differences such as agreeableness and conscientiousness (Bernardin, Cooke, & Villanova, 2000)—it also provides a theoretical explanation and a new avenue for intervention vis-à-vis managers whose appraisal ratings contain anchoring/first-impression effects. Thus, the present studies provide a theoretical and practical contribution to the call by Scullen et al. (2000), as well as Bernardin, Buckley, et al. (2000), for research regarding how to identify and train managers who provide idiosyncratic performance appraisal ratings. Field research is now warranted on whether appraisal accuracy and fairness within organizations, as perceived by employees, can be improved by training entity theorist managers to recognize the malleability of human behavior.

Future Research

Two other areas for future research are suggested. First, just as excessive self-efficacy can lead to negative consequences, such as escalation of commitment (Whyte, Saks, & Hook, 1997), future research may fruitfully explore (a) whether extremely high incrementalism has liabilities as well as (b) possible benefits of holding an entity IPT (Petersen, 1995). Research along these lines may discover boundary conditions to the substantial extant evidence regarding the utility of incremental implicit beliefs.

Second, the present studies established the role of IPT in managers' ratings after a single change in performance. Further research may fruitfully examine how IPT affects numerous performance appraisals over time, such as when managers need to provide multiple ratings of variable performances or those that consistently differ in quality to the one they initially observed.

Limitations

Three potential concerns with the external validity of the present studies are noteworthy. First, the participants provided appraisal ratings after viewing only brief samples of behavior. Chiu, Morris, Hong, and Menon (2000) found, however, that IPT dominates perceptions when individuals are under time pressure, and Barnes-Farrell (2001) reported that managers often complete performance appraisals in an information- and time-scarce context.

A second limitation is that the participants were not responsible for the performance of the "employee" whom they evaluated. Nevertheless, because increasing perceived accountability has been shown to enhance rating accuracy (Mero & Motowidlo, 1995), the participants in the present three studies were repeatedly instructed to provide ratings "as if" they were accountable for providing an accurate appraisal.

Third, the participants did not interact with the employee. However, a quantitative review of meta-analytic studies in social and I/O psychology by Anderson et al. (1999) concluded that the "correspondence between lab- and field-based effect sizes of conceptually similar independent and dependent variables was considerable" (p. 3). This suggests that the present results will generalize to organizational settings. Nevertheless, replication of the present findings is desirable using managers who have an ongoing working relationship and responsibility for the performance of the employees whose performance they appraise.

References

Anderson, C. A., Lindsay, J. J., & Bushman, B. J. (1999). Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science, 8,* 3–9.

Aronson, E. (1999). The power of self-persuasion. *American Psychologist, 54,* 873–890.

Aronson, E., Ellsworth, P. C., Carlsmith, J. M., & Gonzales, M. H. (1990). *Methods of research in social psychology.* New York: McGraw-Hill.

Aronson, E., Fried, C., & Stone, J. (1991). Overcoming denial and increasing the intention to use condoms through the induction of hypocrisy. *American Journal of Public Health, 81,* 1636–1638.

Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38,* 113–125.

Arvey, R. D., & Murphy, K. R. (1998). Performance evaluation in work settings. *Annual Review of Psychology,* 49, 141–168.

Baltes, B. B., & Parker, P. (2000). Reducing the effects of performance expectations on behavioral ratings. *Organizational Behavior and Human Decision Processes, 82,* 237–267.

Bandura, A. (1986). *Social foundations of thought and action.* Englewood Cliffs, NJ: Prentice Hall.

Barnes-Farrell, J. L. (2001). Performance appraisal: Person perception processes and challenges. In M. London (Ed.), *How people evaluate others in organizations* (pp. 135–153). Mahwah, NJ: Erlbaum.

Bazerman, M. H., Beekun, R. I., & Schoorman, F. D. (1982). Performance evaluation in a dynamic context: A laboratory study of the impact of a prior commitment to the ratee. *Journal of Applied Psychology, 67,* 873–876.

Bazerman, M. H., & Neal, M. (1992). *Negotiating rationally.* New York: Free Press.

Bernardin, H. J., Buckley, M. R., Tyler, C. L., & Wiese, D. S. (2000). A reconsideration of strategies in rater training. *Research in Personnel and Human Resource Management, 18,* 221–274.

Bernardin, H. J., Cooke, D. K., & Villanova, P. (2000). Conscientiousness and agreeableness as predictors of rating leniency. *Journal of Applied Psychology, 85,* 232–236.

Borman, W. C. (1978). Exploring upper limits of reliability and validity in job performance ratings. *Journal of Applied Psychology, 63,* 135–144.

Butler, R. (2000). Making judgments about ability: The role of implicit theories of ability in moderating inferences from temporal and social comparison information. *Journal of Personality and Social Psychology, 78,* 965–978.

Chapman, G. B., & Johnson, E. J. (1999). Anchoring, activation, and the construction of values. *Organizational Behavior and Human Decision Processes, 79,* 115–153.

Chiu, C., Hong, Y., Dweck, C. S. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology, 73,* 19–30.

Chiu, C., Morris, M. W., Hong, Y., & Menon, T. (2000). Motivated cultural cognition: The impact of implicit cultural theories on dispositional attribution varies as a function of need for closure. *Journal of Personality and Social Psychology, 78,* 247–259.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences.* Mahwah, NJ: Erlbaum.

Dickerson, C. A., Thibodeau, R., Aronson, E., & Miller, D. (1992). Using cognitive dissonance to encourage water conservation. *Journal of Applied Social Psychology, 22,* 841–854.

Dunnette, M. D. (1993). My hammer or your hammer. *Human Resource Management, 32,* 373–384.

Dunning, D., Meyerowitz, J. A., & Holzberg, A. D. (1989). Ambiguity and self-evaluation: The role of idiosyncratic trait definitions in self-serving assessments of ability. *Journal of Personality and Social Psychology, 57,* 1082–1090.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040–1048.

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development.* Philadelphia, PA: Psychology Press.

Dweck, C. S., & Leggett, E. L. A. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95,* 256–273.

Englich, B., & Mussweiler, T. (2001). Sentencing under uncertainty: Anchoring effects in the courtroom. *Journal of Applied Social Psychology, 31,* 1535–1551.

Erdley, C. A., & Dweck, C. S. (1993). Children's implicit personality theories as predictors of their social judgments. *Child Development, 64,* 863–878.

Evans, M. (2002, August). *Making scholarship matter in the world.* Paper presented at the annual meeting of the Academy of Management, Denver, CO.

Fay, C. H., & Latham, G. P. (1982). Effects of training and rating scales on rating errors. *Personnel Psychology, 35,* 105–116.

Foti, R. J., & Hauenstein, N. M. (1993). Processing demands and the effects of prior impressions on subsequent judgments: Clarifying the assimilation/contrast debate. *Organizational Behavior and Human Decision Processes, 56,* 167–189.

Gervey, B. M., Chiu, C., Hong, Y., & Dweck, C. S. (1999). Differential use of person information in decisions about guilt versus innocence: The role of implicit theories. *Personality and Social Psychology Bulletin, 25,* 17–27.

Gordijn, E. H., Postmes, T., & de Vries, N. K. (2001). Devil's advocate or advocate of oneself: Effects of numerical support on pro- and counter-attitudinal self-persuasion. *Personality and Social Psychology Bulletin, 27,* 395–407.

Gordon, M. E. (1972). An examination of the relationship between the accuracy and favorability of ratings. *Journal of Applied Psychology, 56,* 49–53.

Gregory, W. L., Cialdini, R. B., & Carpenter, K. M. (1982). Self-relevant scenarios as mediators of likelihood estimates and compliance: Does imagining make it so? *Journal of Personality and Social Psychology, 43,* 89–99.

Hauenstein, N. M. A. (1998). Training raters to increase the accuracy of appraisals and the usefulness of feedback. In J. M. Smither (Ed.), *Performance appraisal: State of the art in practice* (pp. 404–442). San Francisco: Jossey-Bass.

Hesketh, B. (2004, April). Discussant for K. Kraiger (Chair). *Advancements in technology-delivered instruction: Research synthesis and novel approaches.* Symposium conducted at the annual meeting of the Society of Industrial and Organizational Psychology, Chicago.

Hong, Y. Y., Chiu, C. Y., Lin, D. M. S., Wan, W., & Dweck, C. S. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology, 77,* 588–599.

Ilgen, D. R. (1986). Laboratory research: A question of when, not if. In E. A. Locke (Ed.), *Generalizing from laboratory to field settings* (pp. 257–279). Lexington, MA: Lexington Books.

Ilgen, D. R., Barnes-Farrell, J. L., & McKellin, D. B. (1993). Performance appraisal process research in the 1980s: What has it contributed to appraisals in use? *Organizational Behavior and Human Decision Processes, 54,* 321–368.

Jones, E. E. (1990). Constrained behavior change and self-concept change. In J. M. Olsen & M. P. Zanna (Eds.), *Self inference processes: The Ontario Symposium on Personality and Social Psychology* (pp. 69–86). Hillsdale, NJ: Erlbaum.

Kamins, M. L., & Dweck, C. S. (1999). Person versus process praise and criticism: Implications for contingent self-worth and coping. *Developmental Psychology, 35,* 835–847.

Kanfer, R. (1990). Motivation and individual differences in learning: An integration of developmental, differential and cognitive perspectives. *Learning and Individual Differences, 2,* 221–239.

Karl, K. A., & Wexley, K. N. (1989). Patterns of performance and rating frequency: Influence on the assessment of performance. *Journal of Management, 15,* 5–20.

Kataoka, H. C., Latham, G. P., & Whyte, G. (1997). The relative resistance of the situational, patterned behavior, and conventional structured interviews to anchoring effects. *Human Performance, 10,* 47–63.

Kinicki, A. J., Hom, P. W., Trost, M. R., & Wade, K. J. (1995). Effects of category prototypes on performance-rating accuracy. *Journal of Applied Psychology, 80,* 354–370.

Knee, C. R., Nanayakkara, A., & Vietor, N. A. (2001). Implicit theories of relationships: Who cares if romantic partners are less than ideal? *Personality and Social Psychology Bulletin, 27,* 808–819.

Latham, G. P., & Crandall, S. R. (1991). Organizational and social factors affecting training effectiveness. In J. E. Morrison (Ed.), *Training for performance: Principles of applied human learning* (pp. 259–285). Oxford, England: Wiley.

Latham, G. P., & Heslin, P. A. (2003). Training the trainee as well as the trainer: Lessons to be learned from clinical psychology. *Canadian Psychology, 44,* 218–231.

Latham, G. P., & Seijts, G. (1997). Overcoming mental models that limit research on transfer of training in organizational settings. *Applied Psychology: An International Review,46,* 371–375.

Latham, G. P., & Wexley, K. N. (1977). Behavioral observation scales for performance appraisal purposes. *Personnel Psychology, 30,* 255–268.

Latham, G. P., & Wexley, K. N. (1994). *Increasing productivity through performance appraisal.* Reading, MA: Addison-Wesley.

Lax, D. A., & Sebenius, J. K. (1986). *The manager as negotiator.* New York: Free Press.

Levy, S. R., & Dweck, C. S. (1997). *Implicit theory measures: Reliability and validity data for adults and children.* Unpublished manuscript, Columbia University, NY.

Levy, S. R., & Dweck, C. S. (1999). The impact of children's static versus dynamic conceptions of people on stereotype formation. *Child Development, 70,* 1163–1180.

Levy, S. R., Stroessner, S. J., & Dweck, C. S. (1998). Stereotype formation and endorsement: The role of implicit theories. *Journal of Personality and Social Psychology, 74,* 1421–1436.

Lifson, K. A. (1953). Errors in time-study judgments of industrial work pace. *Psychological Monographs, 67*(355), 14.

Locke, E. A. (1986). Generalizing from laboratory to field: Ecological validity or abstraction of essential elements. In E. A. Locke, (Ed.), *Generalizing from laboratory to field settings* (pp. 1–9). Lexington, MA: Lexington Books.

Malos, S. B. (1998). Current issues in performance appraisal. In J. W. Smither (Ed.), *Performance appraisal: State of the art in practice* (pp. 49–94). New York: Jossey-Bass.

Manzoni, J. F., & Barsoux, J. L. (1998, March–April). How bosses create their own poor performers: The set-up-to-fail syndrome. *Harvard Business Review,* pp. 101–113.

Martocchio, J. J. (1994). Effects of conceptions of ability on anxiety, self-efficacy, and learning in training. *Journal of Applied Psychology, 79,* 819–825.

Mero, N. P., & Motowidlo, S. J. (1995). Effects of rater accountability on the accuracy and the favorability of performance ratings. *Journal of Applied Psychology, 80,* 517–524.

Miller, R. L., & Wozniak, W. (2001). Counter-attitudinal advocacy: Effort vs. self-generation of arguments. *Current Research in Social Psychology, 6,* 46–55.

Morin, D., & Murphy, K. R. (2002, April). Effects of raters goal-directed behaviors on rating inflation. In K. R. Murphy & T. Kinney (Chairs), *Contextual and motivational influences in performance appraisal.* Symposium conducted at the annual meeting of Society for Industrial/Organizational Psychology, Toronto, Ontario, Canada.

Mount, M. K., & Scullen, S. E. (2001). Multisource feedback ratings: What do they really measure? In M. London (Ed.), *How people evaluate others in organizations* (pp. 155–176). Mahwah, NJ: Erlbaum.

Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology, 75,* 33–52.

Murphy, K. R., Balzer, W. K., Lockhart, M. C., & Eisenman, E. J. (1985). Effects of previous performance on evaluations of present performance. *Journal of Applied Psychology, 70,* 72–84.

Murphy, K. R., & Cleveland, J. N. (1995). *Understanding performance appraisal: Social, organizational, and goal-based perspectives.* Thousand Oaks: Sage.

Murphy, K. R., Herr, B. M., Lockhart, M. C., & Maguire, E. (1986). Evaluating the performance of paper people. *Journal of Applied Psychology, 71,* 654–661.

Mussweiler, T. (2001). The durability of anchoring effects. *European Journal of Social Psychology, 31,* 431–442.

Mussweiler, T., & Strack, F. (2001). The semantics of anchoring. *Organizational Behavior and Human Decision Processes, 86,* 234–255.

Operario, D., & Fiske, S. T. (2001). Causes and consequences of stereotypes in organizations. In M. London (Ed.), *How people evaluate others in organizations* (pp. 45–62). Mahwah, NJ: Erlbaum.

Petersen, C. (1995). Entity and incremental world views: Some lessons from learned helplessness theory, and research. *Psychological Inquiry, 6,* 307–311.

Plaks, J. E., Stroessner, S. J., Dweck, C. S., & Sherman, J. W. (2001). Person theories and attention allocation: Preferences for stereotypic versus counterstereotypic information. *Journal of Personality and Social Psychology, 80,* 876–893.

Pratkanis, A., & Aronson, E. (2001). *Age of propaganda: The everyday use and abuse of persuasion.* New York: Freeman.

Robins, R. W., & Pals, J. (2002). Implicit self-theories of ability in the academic domain: A test of Dweck's model. *Self and Identity, 1,* 313–336.

Ryan, A. M., Daum, D., Bauman, T., Grisez, M., & Mattimore, K. (1995). Direct, indirect, and controlled observation and rating accuracy. *Journal of Applied Psychology, 80,* 664–670.

Schoorman, F. D. (1988). Escalation bias in performance appraisal: An unintended consequence of supervisor participation in hiring decisions. *Journal of Applied Psychology, 70,* 58–62.

Scullen, S. E., Mount, M. K., & Goff, M. (2000). Understanding the latent structure of job performance ratings. *Journal of Applied Psychology, 85,* 956–970.

Smither, J. W. (1998). Lessons learned: Research implications for performance appraisals and management practice. In J. W. Smither (Ed.), *Performance appraisal: State of the art in practice* (pp. 537–547). New York: Jossey-Bass.

Smither, J. W., Reilly, R. R., & Buda, R. (1988). Effect of prior performance information on ratings of present performance: Contrast versus assimilation revisited. *Journal of Applied Psychology, 73,* 487–496.

Stone, J., Aronson, E., Crain, A., Lauren, W., & Matthew, P. (1994). Inducing hypocrisy as a means of encouraging young adults to use condoms. *Personality and Social Psychology Bulletin, 20,* 116–128.

Sumer, H. C., & Knight, P. A. (1996). Assimilation and contrast effects in performance ratings: Effects of rating the previous performance on rating subsequent performance. *Journal of Applied Psychology, 81,* 436–442.

Tabernero, C., & Wood, R. E. (1999). Implicit theories versus the social construal of ability in self-regulation and performance on a complex task. *Organizational Behavior and Human Decision Processes, 78,* 104–127.

VandeWalle, D. M. (1997). Development and validation of a work domain goal orientation instrument. *Educational and Psychological Measurement, 57,* 995–1015.

VandeWalle, D. M. (2001, August). *Attribution theory reconsidered: The case of implicit theory beliefs and performance management.* Paper presented at the annual meeting of the Academy of Management, Washington, DC.

Wherry, R. J., & Bartlett, C. J. (1982). The control of bias in ratings: A theory of rating. *Personnel Psychology, 35,* 521–551.

Whyte, G., Saks, A. M., & Hook, S. (1997). When success breeds failure: The role of self-efficacy in escalating commitment to a losing course of action. *Journal of Organizational Behavior, 18,* 415–432.

Whyte, G., & Sebenius, J. K. (1997). The effect of multiple anchors on anchoring in individual and group judgment. *Organizational Behavior and Human Decision Processes, 69,* 75–85.

Williams, E. J. (1959). *Regression analysis.* New York: Wiley.

Wilson, T. D. (1990). Self-persuasion via self-reflection. In J. M. Olson & M. P. Zanna (Eds.), *Self-inference processes: The Ontario Symposium on Personality and Social Psychology* (Vol. 6, pp. 43–67). Hillsdale, NJ: Erlbaum.

Wood, R. E., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology, 56,* 407–415.

Yukl, G. A. (2002). *Leadership in organizations.* Upper Saddle River, NJ: Prentice Hall.

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