A Culture of Genius: How an Organization's Lay Theory Shapes People's Cognition, Affect, and Behavior

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Abstract

Traditionally, researchers have conceptualized implicit theories as individual differences—lay theories that vary between people. This article, however, investigates the consequences of organization-level implicit theories of intelligence. In five studies, the authors examine how an organization's fixed (entity) or malleable (incremental) theory of intelligence affects people's inferences about what is valued, their self- and social judgments, and their behavioral decisions. In Studies 1 and 2, the authors find that people systematically shift their self-presentations when motivated to join an entity or incremental organization. People present their "smarts" to the entity environment and their "motivation" to the incremental environment. In Studies 3a and 4, they show downstream consequences of these inferences for participants' self-concepts and their hiring decisions. In Study 3b, they demonstrate that the effects are not due to simple priming. The implications for understanding how environments shape cognition and behavior and, more generally, for implicit theories research are discussed.

It was a company that prized "sheer brainpower" above all else, where the task of sorting out "intellectual stars" from the "merely super-bright" was the top priority when making hires and promotions. It was an environment where one of the most powerful executives was described as being "so sure that he was the smartest guy in the room that anyone who disagreed with him was summarily dismissed as *just not bright enough* to 'get it.'"

—Description of Enron (McLean & Elkind, 2003)

In public statements, executives proudly described their CEO's growth and learning over 35 years—from sales rep to the head of the organization. Managers expected their workers to show a passion and love for learning and expanding knowledge. Instead of proving how smart a person or division was, the company's focus was on making a contribution, investing in the experiences and development of a larger portion of talent, and intense on-the-job learning.

—Description of Xerox (George & McLean, 2005; Vollmer, 2004; Knowledge@Wharton, 2005)

Imagine that you are employed by one of the two companies described above: a company that endorses a culture of genius and talent or one that endorses a culture of growth and development. What is it like to function in environments that endorse these views of intelligence? How do organizations that cultivate a culture of genius or a culture of growth affect people? This research examines how an organization's lay theory of intelligence motivates people's inferences about what is valued there. In four studies, we measure how these inferences affect people's self-presentations, their liking of the environment, and their downstream judgments of the self and others, including decisions about whom to hire.

Throughout this research, when we speak of an *organization's theory of intelligence,* we are referring to the shared beliefs of people within a setting that intelligence is either a fixed and stable trait or a malleable and expandable quality. The present work broadens the traditional notion of lay theories as an individual difference and demonstrates that when theories of intelligence characterize and organize a setting, they shape people's cognition, affect, and behavior in important ways. By measuring how people operate when they come into contact with fixed- and malleable-view

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environments—how they self-present, shift their self-concepts, and treat others—we can begin to understand how organizations' lay theories affect people's functioning.

Lay Theories of Intelligence

A lay (or implicit) theory of intelligence refers to the way an individual conceives of intelligence—one's personal philosophy about it (Dweck, 1996; Dweck & Leggett, 1988). People who hold an *entity theory* of intelligence view it as a fixed quantity that cannot be changed very much by effort and learning, whereas people who hold an *incremental theory* believe intelligence is malleable and expandable (Dweck, 1999; Dweck & Leggett, 1988). Until now, the literature has chiefly characterized people's implicit theories of intelligence as an individual difference (see Dweck, 1999). That is, people subscribe to either an entity or an incremental belief about the nature of intelligence. Studies, however, have also demonstrated that implicit theories can be experimentally induced, often by exposing participants to scientific articles that describe research supporting either an entity view or an incremental view (e.g., Nussbaum & Dweck, 2008). Thus, people find both entity and incremental views of intelligence plausible; however, they tend to personally endorse one theory more chronically than the other.

Personally subscribing to implicit theories of intelligence has been shown to have important consequences for motivation and behavior. For example, entity theorists tend to orient toward performance goals—aiming to demonstrate their ability. When they face challenges, entity theorists question their ability, exert less effort, and/or become defensive (Blackwell, Trzesniewski, & Dweck, 2007; Hong, Chiu, Dweck, Lin, & Wan, 1999; Nussbaum & Dweck, 2008). Conversely, incremental theorists orient toward learning goals—aiming to develop their ability. When incremental theorists face challenges, they become motivated to persist longer and attempt new strategies (Blackwell et al., 2007; Hong et al., 1999; Nussbaum & Dweck, 2008).

In addition to the personal consequences of subscribing to an entity or incremental theory, some research has examined the interpersonal consequences of implicit theories. Levy, Stroessner, and Dweck (1998) found that people's own lay theories influence their judgments of others, including the likelihood of stereotyping others. Also, studies have demonstrated that people use inferences about others' self-theories as guides to their own self-evaluations (Reich & Arkin, 2006). The present research took a different tack by examining how an organization's theory of intelligence may influence people's self-presentations, self-concepts, and judgments of others.

An Organization's Theory of Intelligence

Although much research has documented the consequences of personally endorsing a lay theory of intelligence, that work has neglected to study how people behave when they encounter an environment or organization that endorses an entity or incremental view of intelligence. Many environments—including academic, business, and other professional settings—can embrace, through shared norms or consensus, a fixed or malleable view of intelligence. For example, the description of the company Enron, provided above, portrays a professional organization that embodied a culture of genius. That is, people widely shared the belief that intelligence and talent were fixed; at Enron, individuals were either intelligent or not. Other environments (like Xerox, described above) embody a culture of development, endorsing the belief that intelligence and talent can be cultivated through growth, effort, and training.

The present studies examined how entity and incremental lay theories—held at a group level—shape people's inferences about the personal characteristics prized by an organization. For example, in an entity environment (i.e., one that views intelligence as a fixed quantity), people may expect genius and brilliance to be more highly valued relative to one's passion for growth and learning. However, in an incremental environment (i.e., one that views intelligence as malleable and expandable), people's motivation and willingness to learn might be more highly prized. In this research, we sought to document how organizations' theories shape people's inferences about the characteristics most valued in an entity or incremental environment and the cascading effects that follow.

Consequences for the Self and Others

Why are people's inferences about what is valued in a setting important? Self-presentation research has shown that when people wish to be accepted, they display the qualities that they believe others will value (Gardner & Martinko, 1988; Leary, 1995). For example, when people apply for a new job or when they are up for promotion, they are likely to infer the characteristics that are most valued by their employer and to do their best to demonstrate them. Similar to other self-presentation cues, if an environment's lay theory of intelligence affects the characteristics perceived to be most valued in a setting, it should also influence people's behavioral displays. The present research tests this hypothesis.

We also hypothesized that people's behavioral displays would affect their self-concepts. Previous work on motivated reasoning and self-perception has shown that when people perceive that certain traits are desirable, these perceptions influence their current self-concept (Kunda & Sanitioso, 1989; Schlenker & Wowra, 2003). Consistent with this research, if an environment's theory affects people's inferences about which characteristics (i.e., smarts or motivation) are valued, self-presentation of these characteristics is also likely to shift the content of people's self-concepts to reflect the environments' values.

Finally, because self-presentation can lead people to internalize particular traits or characteristics (Gergen, 1965; Schlenker & Trudeau, 1990), we thought it possible that when people adapt to an environment in the short term—enacting the environment's values of intelligence or motivation—this behavior might have "sticky" effects for the way people later evaluate and treat others in an unrelated context. Self-presentation research has not to date demonstrated links between environmental cues, self-presentation, and people's subsequent judgments of others; we will investigate these holdover effects (Study 4). Taken together, this research explores the implications of group-level implicit theories for the content of people's self-presentations (Studies 1 and 2), their self-concepts (Studies 3a and 3b), and their assessments of others in an unrelated context (Study 4).

Study 1

Study 1 measured participants' inferences about which aspects of the self would be most valued by an organization that ascribed to a fixed or malleable view of intelligence. To evaluate people's inferences about these organizations, we created descriptions of two prestigious tutoring clubs and motivated participants to gain membership to the clubs. The *entity club* description emphasized the group's view that intelligence is a fixed, immutable quality. The *incremental club* description emphasized the group's view that intelligence is a malleable quality. We expected that participants would showcase the characteristics that they believed the club members would value[1]—demonstrating that they had the "right stuff" to fit in with the club even though they had no explicit indication about what that "stuff" might be. Our main interest focused on the inferences participants would make based on the organizations' theories. Although the descriptions detailed the groups' views of intelligence in general (whether intelligence is a fixed or malleable trait), we left it to participants to decide what these theories would imply for how the club members might judge them.

We hypothesized that participants would present more intellectual traits and abilities (such as grades, SAT scores, and IQ scores) when the club believed that intelligence is fixed but would present more motivation and growth-oriented aspects of the self (such as stories about overcoming personal hardship, motivation to learn, and passion for the endeavor at hand) when the club believed that intelligence is expandable through effort and learning.[2]

After applying for the club, participants were asked to report their liking of it. Because fixed or malleable views of intelligence are often endorsed by professional and business contexts, we were interested in measuring how much people enjoy these types of environments. In addition, it would be interesting if, in our later studies, we found that people took on the environments' values that they had enacted—even if these were values that prior participants did not particularly admire.

Method

Participants Forty participants, 22 women and 18 men, completed the study in exchange for university course credit.

Procedure Participants were told that the study's purpose was to examine how people complete applications for various organizations on campus. They were given a description of a tutoring club that ostensibly existed at the university. The club was described as prestigious; participants read that it had received numerous awards in the past and had garnered a reputation of being one of the most active volunteer organizations on campus.

After reading the club description, participants imagined that they wanted to join the club and anticipated completing a membership application. Before they completed it, however, they were asked to read the minutes of a recent club meeting to get more information about the members and how the club operated. The club's theory of intelligence was manipulated in these meeting minutes.

After reading the club minutes, participants indicated which traits and qualifications they would include on the club's membership application. They were then asked to rate how much the club appealed to them and their desire to apply to such a club in the future. When they had completed these items, they were debriefed, thanked, and assigned their course credit.

Materials

Club minutes. In one condition, the minutes highlighted the tutoring club's view that intelligence is a fixed quality. In the minutes, club members discussed an article they had recently read characterizing intelligence as largely hereditary—a trait that cannot be changed very much through effort. Afterward, the club members talked about teaming up for their next volunteer project with an organization that espoused this same fixed view of intelligence. All who spoke expressed their enthusiasm for working with an organization that endorsed such a philosophy. At the end of the minutes, the club members unanimously voted for teaming up with the fixed-view organization for their next volunteer project.

In the second condition, the minutes of the tutoring club were identical, except that the club endorsed an incremental theory of intelligence. The article discussed by club members characterized intelligence as a quality that could increase over time as a function of environmental factors and effort. Later, the members expressed their enthusiasm for teaming up for their next volunteer project with an organization that espoused the malleable view of intelligence. At the end of the minutes, just as in the fixed-view condition, club members unanimously voted for teaming up with the organization for their next volunteer project.

In neither tutoring club condition did the minutes mention any of the qualities that participants later self-presented. The minutes simply described whether the club viewed intelligence as primarily fixed or primarily malleable.

Dependent Measures

Self-presentation. The club application listed 14 qualifications that a person might include when applying for club membership. Six of the qualifications were related to intelligence and abilities, 6 were related to motivation and learning, and 2 were unrelated to these dimensions. Of the 14 qualifications, participants were asked to mark 3 of the 14 that they would include in their club application. Each of the 3 marked qualifications was counted as one self-presentation.

For each participant, a sum was created representing the number of intellectual skills and abilities that he or she marked. This "smarts" self-presentation index included items such as grade point average, IQ, awards received, and SAT score. Similarly, we created a sum of the number of motivation and learning items that participants included. This "motivation" self-presentation index included characteristics such as overcoming personal hardships, one's level of passion for tutoring, stories of personal improvement, and one's diversity of experiences.

Appeal of the two environments. To determine whether the two clubs differed in their attractiveness, participants were asked to rate the appeal of the club on a scale from 1 (not at all appealing) to 7 (extremely appealing). Using the same scale, participants reported how much they might, in the future, want to apply to a club similar to the one described in the study.

Results

Self-presentation. A mixed model ANOVA was conducted with the organization's theory of intelligence (entity vs. incremental) as the between-subjects factor and the type of characteristic endorsed on the club applications (smarts vs. motivation) as the within-subjects factor. Results revealed a main effect for self-presentation type such that, overall, participants displayed more motivation characteristics than smarts, $F(1, 38) = 11.79$, $p < .01$, $\eta_p^2 = .24$. This main effect, however, was qualified by the predicted interaction between environment and self-presentation, $F(1, 38) = 6.65$, $p = .01$, $\eta_p^2 = .15$ (see the first panel of Figure 1). Furthermore, t tests were used to decompose the interaction. As predicted, participants displayed significantly more qualities that revealed their intelligence—such as their grades, SAT scores, and IQ scores—when they applied to the entity club ($M = 1.04$, $SD = 1.11$) compared to the incremental club ($M = 0.24$, $SD = 0.44$), $t(38) = 2.84$, $p < .01$, $d = 0.97$. Conversely, participants presented their motivation—exhibiting their enthusiasm for growth and learning—marginally more to the incremental club ($M = 1.76$, $SD = 0.83$) than to the entity club ($M = 1.26$, $SD = 0.81$), $t(38) = -1.92$, $p = .06$, $d = 0.61$. Paired t tests showed that the types of self-presentations (smarts vs. motivation) did not significantly differ in the entity club condition, $t(22) < 1$, $p = ns$, but participants presented significantly more motivation than smarts in the incremental club condition, $t(16) = -5.35$, $p < .001$, $d = 2.39$, accounting for the self-presentation main effect above.

Appeal of the two environments. Independent of the application task, we were curious about how participants felt about the two environments. A t test demonstrated that participants found the incremental club significantly more appealing ($M = 4.71$, $SD = 1.16$) than the entity club ($M = 3.50$, $SD = 1.90$), $t(37) = -2.31$, $p = .03$, $d = 0.77$. In addition, participants reported significantly more desire to apply to a similar club in the future in the incremental club condition ($M = 4.65$, $SD = 1.00$) than in the entity club condition ($M = 3.43$, $SD = 2.02$), $t(38) = -2.27$, $p = .03$, $d = 0.77$.

Discussion

Study 1 demonstrated that when participants were motivated to gain acceptance from an organization, they relied on the group's theory of intelligence to determine which aspects of themselves were appropriate to display. Participants inferred that emphasizing intellectual traits and skills—such as grades, SAT score, and IQ—would win them membership in a club endorsing a fixed, compared to a malleable, view of intelligence. By contrast, they expected that motivation and growth-oriented characteristics—such as stories of overcoming personal hardships and examples of personal improvement—would win them favor in an environment that endorsed a malleable view of intelligence.

It was intriguing that even though the clubs were identical in their tutoring missions, except for their theories of intelligence, participants judged the club endorsing a fixed view to be less appealing than the one endorsing a malleable view of intelligence. In addition, in the incremental club condition participants were more interested in applying to a similar tutoring club in the future.

Although Study 1 suggests that an environment's theory of intelligence guides people's inferences about which characteristics are valued in a setting, it did so by asking participants to choose from a limited set of qualifications, perhaps making some options more easily accessible than they might have otherwise been. Thus, Study 2 was designed to replicate people's inferences without this constraint.

Study 2

In Study 2, we hypothesized that when participants were unconstrained in their application responses, they would spontaneously generate and display characteristics of the self that demonstrated the perceived values of the entity and incremental clubs.

As a secondary question of interest, Study 2 further investigated why people were more attracted to the incremental (vs. entity) organization. Perhaps people felt that they might stand out, or not belong, in an environment primarily focused on intellectual traits and abilities. Elliot and Dweck (1988) have shown that when people adopt performance goals—which they are likely to do in an entity environment (Bandura
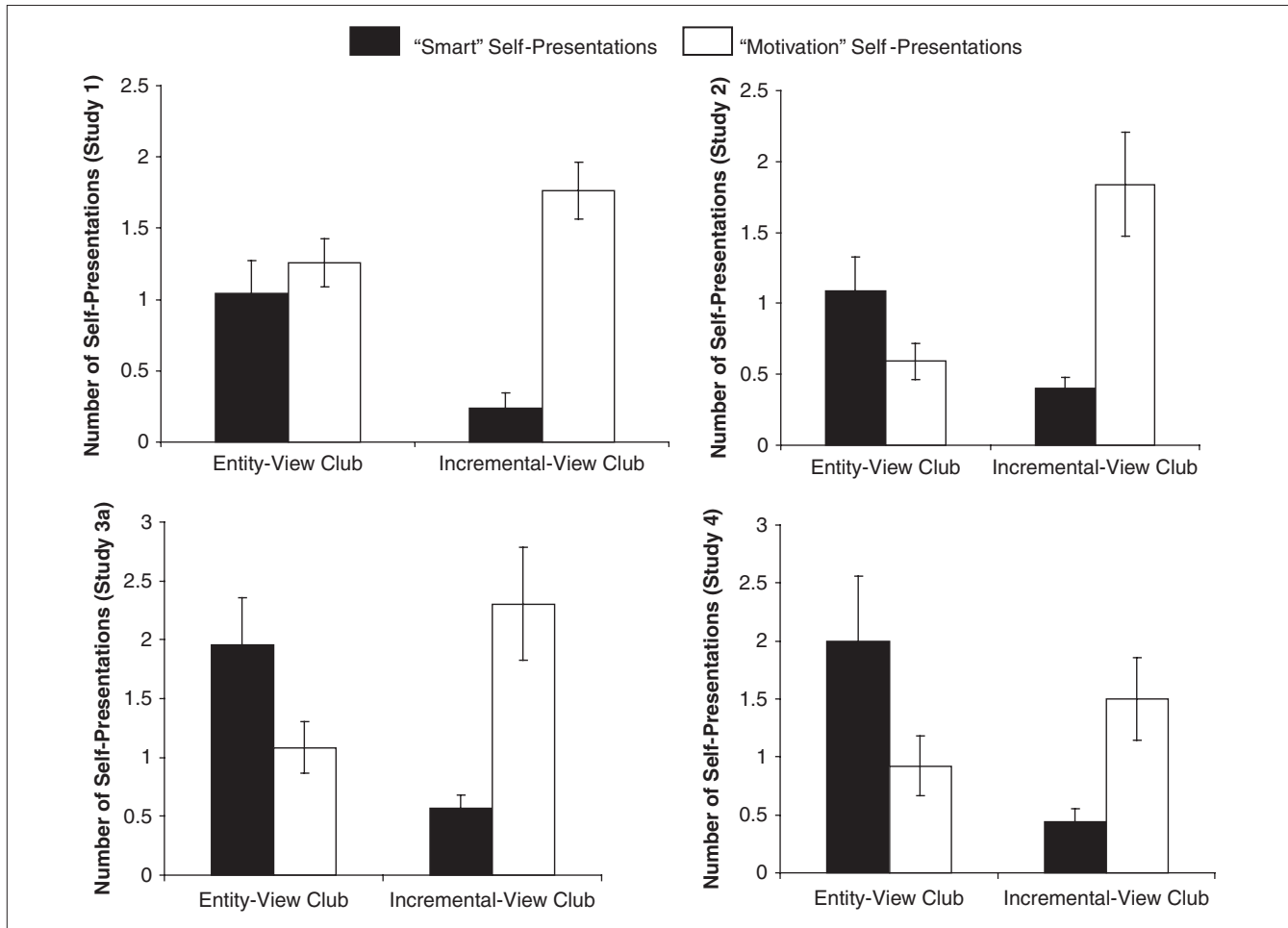
Figure 1. Self-presentations as a function of the organizations' theories of intelligence (Studies 1-4). Error bars represent standard errors.

& Dweck, 1985; Dweck & Leggett, 1988)—they fear that they might reveal evidence of their potential inadequacies and they worry about being identified as an imposter in the setting. Because we found this potential explanation compelling, we measured people's conspicuousness and sense of belonging in the two environments. We expected these measures would contribute to a better understanding of why people were more likely to reject the club that endorsed a fixed view of intelligence.

Method

Participants Forty-seven undergraduate students (25 men and 22 women) participated in exchange for course credit.Procedure. A procedure similar to that of Study 1 was implemented. Participants were told the study's purpose was to examine how people complete applications for various organizations on campus, and they were given the same tutoring club descriptions and minutes from Study 1.

After reading the club description and minutes, participants were asked to complete a free-response application for club membership where their self-characteristics were unconstrained. Next, they were asked to imagine that the club had accepted them as a member and to visualize their first few club meetings and interactions. They then completed a measure assessing their perceived sense of belonging in the club environment. Afterward, participants were debriefed, thanked, and assigned course credit.

Materials

Self-presentation. The free-response application contained our measure of self-presentation as well as several demographic questions, including participant's major, gender, and year in school. Each participant was asked to write up to five personal characteristics that would impress the club's admission committee and win them admission to the club. The characteristics that participants provided were coded by two independent raters. Characteristics portraying intellectual traits and abilities were coded as smart self-presentations. These traits often took the form of nouns; examples included "leader," "thinker," awards received, good grades, high grade point average, and success on exams. Characteristics portraying growth-orientation and motivation were coded as

motivation self-presentations. These traits often took the form of verbs and adjectives; examples included "motivated," "passionate," "dedicated," "proactive," "interested in learning," "driven to make positive change."

Perceived sense of belonging. Participants answered four questions assessing their sense of belonging in the club environment: (a) how much they anticipated feeling that they belonged as a member of the club, (b) how comfortable and (c) how accepted they would feel during club meetings and activities, and (d) how much they thought they might stick out like a sore thumb during club meetings and activities (reverse scored). These items were averaged to create an index on perceived sense of belonging, ranging from 1 (*not at all*) to 7 (*extremely*). The index had acceptable internal reliability ($\alpha = .83$).

Results and Discussion

Free-response self-presentations. Two raters, blind to condition, coded the 47 applications according to the criteria above and achieved acceptable interrater agreement (79%). Disagreements were resolved through discussion. There were no condition differences in the number of characteristics participants listed, $t(45) = -0.156$, $p > .05$. On average, participants listed 4.47 characteristics ($SD = 0.97$), and on average 2.20 ($SD = 1.01$) of those characteristics were coded as either an entity or incremental self-presentation. Characteristics such as "fun," "dependable," and "caring" were not included in the coding because they did not directly relate to our constructs of interest.

A mixed model ANOVA again revealed a main effect for self-presentation type such that, overall, participants included more motivation characteristics than smarts on their applications, $F(1, 45) = 5.43$, $p < .05$, $\eta_p^2 = .11$. This main effect, however, was qualified by the predicted interaction between environment and self-presentation, $F(1, 45) = 23.14$, $p < .001$, $\eta_p^2 = .34$ (see the second panel of Figure 1). As hypothesized, participants listed more intellectual traits and abilities when they applied to the entity club ($M = 1.09$, $SD = 1.31$) than when they applied to the incremental club ($M = 0.40$, $SD = 0.58$), $t(45) = 2.40$, $p < .05$, $d = 0.75$. By contrast, participants listed more motivation and growth-oriented characteristics when they applied to the incremental club ($M = 1.84$, $SD = 0.99$) than when they applied to the entity club ($M = 0.59$, $SD = 0.67$), $t(45) = -5.01$, $p < .001$, $d = 1.49$. The difference between the types of self-presentation in the entity club condition was not statistically significant, $t(21) = -1.56$, $p = .13$; the difference between the self-descriptions in the incremental club condition was highly significant, $t(24) = 5.71$, $p < .001$, $d = 1.83$.

It is notable that in both Studies 1 and 2 the main effect for self-presentation of motivation traits appears to be robust. This interesting pattern of results is discussed more fully in the general discussion. Although people seem to present more incremental traits overall, our interests lie in the difference

between the groups in their perceptions of which characteristics are valued. Studies 3 and 4 went on to examine the consequences of these differences.

Perceived sense of belonging. A *t* test revealed reliable differences in participants' perceived sense of belonging as a function of experimental condition, $t(45) = -3.66$, $p = .001$, $d = 1.11$. Participants anticipated a greater sense of belonging in the incremental club ($M = 5.35$, $SD = 0.74$) than in the entity club ($M = 4.26$, $SD = 1.26$). That is, participants expected to be more comfortable, to feel that they belonged more, and to believe that they would be more accepted and less likely to stick out in the organization that endorsed a malleable (vs. fixed) view of intelligence.

It is, of course, interesting that we can predict how people will describe themselves depending on an environment's theory of intelligence. However, this phenomenon becomes all the more important if it holds consequences beyond self-presentational behaviors (see Leary, 1995). Thus, the remaining studies explored potential downstream consequences of people's environment-consistent behaviors. Study 3a investigated whether behaving in line with a group's theory has sticky effects, influencing the way one later conceives of the self. Consistent with motivated self-perception research (Kunda & Sanitioso, 1989), although people may be aware that they are self-presenting an environment's values as a means to an end, such behavior may inadvertently seep in. Consequently, people may begin to incorporate the environment's values (e.g., smarts vs. motivation) into their current self-concepts. Study 3a addressed the hypothesis that environment-consistent self-presentations may actually cause people to shift which characteristics they view as most central to their self-concepts.

Study 3a

We expected that behavioral displays congruent with an organization's lay theory would continue to affect the characteristics people rate as most central to their core sense of self, even though the displays were performed in a separate context for instrumental reasons (to gain admission to a tutoring club). That is, when an organization endorses a fixed view of intelligence, displaying characteristics consistent with its values might cause people to rate intellectual traits and abilities as more central to their self-concepts at a later time. By contrast, displaying aspects of the self that are valued by an incremental environment might cause people to rate motivation and growth-oriented characteristics as more central to their self-concepts.

Method

Participants. Forty-seven students (18 men and 29 women) participated in this study in exchange for course credit.

Procedure. As in the previous experiments, the study was described as an inquiry about how people complete applications for on-campus organizations they may want to join. Participants read the club descriptions and minutes and were told that they would complete a club application but not for several minutes—allowing enough time for them to fully process the club information and to think about what they would say on the club application. While they waited for this time to pass, participants were asked to take part in a second study and were led to another room by a different experimenter. All participants completed two questionnaires; the second was the self-concept centrality questionnaire. Afterward, participants completed the membership application. Our reasoning regarding the order of the self-concept and self-presentation tasks was as follows: If participants had actually completed the club application before the self-concept task—publicly describing the personal characteristics that would qualify them for club membership—they would likely anchor to those publicly endorsed characteristics and, because of consistency demands, rate them later as most central to their self-concept. To avoid these demands, participants simply thought about what they would write on their application but were not required to publicly endorse the environment's valued characteristics on the application before they completed the self-concept ratings. After participants completed the "second study," they returned to their original experimental room and completed the club application from Study 1. Finally, participants were asked a series of debriefing questions to assess whether they perceived the second experiment to be related to the first; no one reported any suspicion.

Materials

Self-concept ratings. The self-concept rating questionnaire asked participants to rate each personal characteristic according to "how much each characteristic is at the core of who you are." Given previous work demonstrating that the content of people's self concepts is quite flexible (Kunda & Sanitioso, 1989; Markus, 1977; Markus & Kunda, 1986), this measure taps the centrality of the rated characteristics to participants' current self-concepts. Participants were told that

> while many traits are likely to be descriptive of a person, some are more central to a person's core definition of self than others. Thus, characteristics marked as "extremely central" should be very descriptive of the essence of who you really are.

Six characteristics described traits or abilities related to intelligence (e.g., "smart," "brilliant," and "intelligent"). In addition, six characteristics were related to motivation and development (e.g., "enthusiastic," "inspired," and "passionate"). Eighteen filler characteristics did not relate to either concept (e.g., "gracious," "adventurous," "moral," and "unconventional").

Ratings were made on a scale from 0 (*not at all central*) to 8 (*extremely central*).

Self-presentation. After their self-concept ratings, participants completed the club application from Study 1 to fulfill the stated purpose of the study. They indicated three characteristics that they would present to the club in order to gain membership in it. The rankings were coded as before.

Results and Discussion

Self-concept ratings. A mixed model ANOVA revealed a marginal main effect for self-concept type, $F(1, 45) = 2.55$, $p = .12$, and a significant interaction between organization and self-concept type, $F(1, 45) = 13.37$, $p < .01$, $\eta_p^2 = .23$. A pair of t tests revealed the predicted pattern of results for the self-concept ratings of intellectual traits and abilities. Participants indicated that traits and abilities related to their own intelligence were significantly more central to their self-concepts after anticipating an application to the entity (vs. incremental) club ($M = 4.77$, $SD = 1.02$, vs. $M = 3.73$, $SD = 0.57$), $t(45) = 4.28$, $p < .001$, $d = 1.30$. In addition, participants showed a strong trend toward reporting that motivation and growth-oriented characteristics were more central to their self-concepts after anticipating an application to the incremental (vs. entity) club ($M = 4.96$, $SD = 1.04$, vs. $M = 4.29$, $SD = 1.32$), $t(45) = -1.93$, $p = .06$, $d = 0.57$. Paired t tests showed that the difference between people's self-concepts in the entity club condition was not statistically significant, $t(23) = 1.31$, $p = ns$; the mean difference in the incremental club condition was highly significant, $t(22) = -4.33$, $p < .001$, $d = 1.53$.

Self-presentation. A mixed model ANOVA revealed a main effect for self-presentation type; participants displayed more motivation characteristics than smart characteristics, $F(1, 45) = 5.89$, $p < .05$, $\eta_p^2 = .12$. Again, this main effect was qualified by an interaction between the environments and people's self-presentations, $F(1, 45) = 53.86$, $p < .001$, $\eta_p^2 = .55$ (see the third panel of Figure 1). Furthermore, t tests were used to decompose the interaction. As in Studies 1 and 2, participants presented more intellectual traits and abilities (e.g., grades, SAT score, and IQ) when they anticipated applying to the entity club ($M = 1.96$, $SD = 0.75$) than to the incremental club ($M = 0.57$, $SD = 0.51$), $t(45) = 7.42$, $p < .001$, $d = 2.20$. By contrast, participants showcased their enthusiasm and passion for growth when they anticipated applying to the incremental club ($M = 2.30$, $SD = 0.70$) than when applying to the entity club ($M = 1.08$, $SD = 0.78$), $t(45) = -5.65$, $p < .001$, $d = 1.65$. Paired t tests showed that the difference between the types of self-presentations made (smarts vs. motivation) in both the entity club condition, $t(23) = 3.15$, $p < .01$, $d = 1.15$, and the incremental club condition, $t(22) = 7.91$, $p < .001$, $d = 2.86$, were statistically significant.

Taken together, the results of Study 3a illustrate that an environment's theory of intelligence not only serves as a cue to the particular traits that are valued by the environment but also affects people's views of their core self. Our interpretation
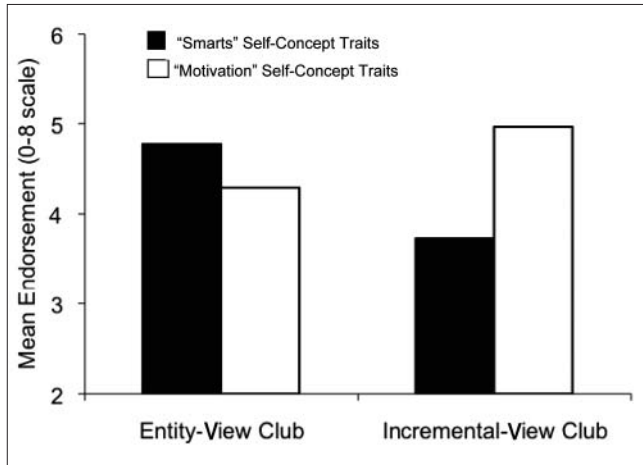
Figure 2. Self-concept traits endorsed as a function of the organizations' theories of intelligence (Study 3a)

of the data—consistent with past self-presentation findings and hypotheses (Schlenker & Trudeau, 1990; Schlenker & Wowra, 2003)—is that as people prepared to display the organization's values, they incorporated them into their current self-concepts. However, an alternative explanation could be that simply reading about the environments' theories is sufficient to cause people to rate the club's values as more central to themselves—that anticipated self-display to the environment is not necessary to affect people's self-concept shifts. Past research, in fact, employs materials like scientific articles describing intelligence as fixed or malleable to manipulate people's own implicit theories (e.g., Hong et al., 1999; Plaks & Stecher, 2007). So, perhaps, simply being exposed to the environment's entity or incremental theory of intelligence may be enough to affect people's later self-concepts. We do not think this explanation is likely, however, because our materials were not nearly as extensive in their description of the lay theories and in their evidence for the theories as manipulation articles used in past studies (e.g., Nussbaum & Dweck, 2008). In the present case, we expect that it is the process of actively engaging and anticipating a behavioral display to an organization that produces the self-concept shift. Nevertheless, Study 3b was conducted to test whether simple exposure to the two organizations resulted in similar self-concept shifts.

Study 3b

Participants and Procedure

Seventy-seven students completed the study in exchange for $10 or course credit. Participants were told that the study measured people's memory for details about various on-campus organizations. The rest of the procedure matched that of Study 3a except that participants did not anticipate making self-presentations to the club. Instead, they were asked to read

the club minutes and answer questions regarding details about the meeting described. This procedure, therefore, drew participants' attention to the theory information in the materials. As in Study 3a, participants were then asked to complete two additional questionnaires, the second of which was the self-concept measure.

Results and Discussion

Self-concept ratings. A mixed model ANOVA revealed a main effect of self-concept type such that, overall, people were more likely to endorse characteristics related to motivation (vs. smarts), $F(1, 75) = 13.60$, $p < .001$, $\eta_p^2 = .15$. The interaction between environment and self-presentation type, however, was not significant, $F(1, 75) = 0.33$, $p > .05$. Thus, simply being exposed to the entity and incremental environments did not affect the degree to which participants rated intelligence or motivation characteristics as central to their self-concepts, $t(75) = –0.12$, $p > .05$, and $t(75) = 0.45$, $p > .05$, respectively.

The results of Study 3b show that without the expectation of displaying one's qualifications to the environments, the groups' implicit theories of intelligence did not affect people's self-concepts. Thus, the self-concept shifts do not seem to be the result of simple priming. Instead, we find that when people merely anticipate displaying the values put forth by an organization's theory of intelligence, some of the values may carry over to affect their self-concepts (Study 3a). A second test of whether participants take on the organization's values involves measuring whether people continue to act in ways consistent with them in an unrelated context. We investigated this question in Study 4.

Study 4

Study 4 tested whether, after inferring and displaying an entity or incremental organization's values, people would be guided by those values when evaluating another person in a separate, unrelated context. In this experiment, we went beyond past self-presentation work to investigate whether displays of an organization's values would seep in to affect people's assessments of others—whether people would judge and make decisions about others according to the original environment's standards.

Method

Participants. Thirty-one undergraduate students (12 men, 19 women) completed the study for course credit.

Procedure. Although the procedure in Study 4 was a conceptual replication of the ones previous, it was designed to increase external validity and to engage participants at a deeper level. Again, participants were informed that the study measured how people interview for extracurricular

organizations on campus. The study was described as an online competitive group interview with two other students who were also trying to gain membership in the tutoring club. Two club members would serve as online interviewers, and all interviewees would receive feedback about whether they were accepted or rejected for membership in the club at the end of the interview. In reality, the interviewers and the two other participants were confederates of the experimenter and followed a script throughout the chat.

Participants were given the descriptions and minutes of the club meeting. After reading them, they logged into a chat room and began the online competitive group interview via an internet relay chat program called mIRC. Throughout the interview, the confederates—acting as interviewers and applicants—followed a script and relayed predetermined questions and answers. Participants were always prompted to answer questions first so that their answers would not be influenced by the confederates' answers. Nevertheless, confederates' answers were unrelated to either theory. This ensured that participants were not exposed to any particular incremental or entity characteristics. During the interview, the interviewer asked all applicants to describe up to four characteristics about themselves that would make them good candidates for the tutoring club. This allowed participants four opportunities to display personal attributes to club members. After participants answered this question and several other filler questions, the interviewers always chose the participant for membership in the club and the chat interview was completed. The characteristics participants provided during the interview were later coded as in Study 2.

A second experimenter then entered the room and asked participants to help with three brief studies that needed more student participation. All agreed and were taken to another experimental room to complete these "additional studies." In order to increase the time between the online interview and the evaluation task, two of the tasks were filler tasks lasting approximately 30 minutes. The third task was ostensibly about how people make hiring decisions when choosing from several applications. Participants were told that a student services center on campus was seeking to hire a program coordinator—a job consisting primarily of administrative tasks—and that the experimenter was interested in how people chose among several applicants for the position. They were asked to read and evaluate the four applications provided and to choose one from the group to hire. One of the applications was designed to portray a candidate who presented her smarts, whereas a second application portrayed a candidate who presented her motivation. The other two applications depicted less-qualified candidates so that participants would be more likely to choose between the two target candidates. After participants made their choices, they were probed for suspicion about the tasks and the relation between the first experiment and any of others. No one expressed suspicion. When participants completed the debriefing they were thanked for their participation and given course credit.

Materials

Self-presentation. During the online interview, participants were asked to describe up to four characteristics that would make them attractive candidates for membership in the tutoring club. Each characteristic mentioned was counted as one self-presentation and was coded along our dimensions of interest.

Hiring decision. In this part of the study, participants were given four program coordinator applications to review. All candidates were women. As noted, the position was described as one that consisted of primarily administrative duties. One candidate's application described her intellectual traits and abilities, whereas another candidate detailed her motivation and passion for learning. All other qualifications of the two target candidates, such as degree attained, grade point average, prestige of degree-awarding university, and previous work experience, were pretested by a different group of participants and matched so that the candidates were judged as equally qualified. The remaining two candidates did not self-present along the implicit theory dimension and were not as highly qualified as the two target candidates.

Our hypothesis was that the environment's perceived entity and incremental values, which participants were expected to display during the interview, would have a "spillover" effect when they evaluated another person later in the session. Similar spillover effects have been hypothesized by Schlenker and his colleagues (e.g., Schlenker & Wowra, 2003). We expected this effect even though the person participants were evaluating and the duties of the job itself were unrelated to the tutoring club environment. Finally, we expected that participants' self-presentations would mediate the environment's effect on their subsequent candidate choices.

Results

Self-presentation. A mixed model ANOVA revealed a main effect of organization; participants displayed more characteristics overall to the entity club than to the incremental club, $F(1, 29) = 7.02$, $p = .01$, $\eta_p^2 = .20$. This main effect was qualified by the predicted interaction between organization and self-presentation, $F(1, 29) = 23.78$, $p < .001$, $\eta_p^2 = .45$ (see Figure 1). As hypothesized, when they interviewed with the club that endorsed a fixed (vs. malleable) view of intelligence, participants mentioned significantly more intellectual traits and abilities ($M = 2.00$, $SD = 0.82$ vs. $M = 0.44$, $SD = 0.51$), $t(29) = 6.52$, $p < .001$, $d = 2.44$. By contrast, when participants interviewed with the incremental club, they showed a trend toward displaying more motivation and growth-oriented characteristics ($M = 1.50$, $SD = 1.04$ vs. $M = 0.92$, $SD = 0.64$), $t(29) = -11.76$, $p = .09$, $d = 0.66$. The difference between the types of self-presentations was significant in both the entity club condition, $t(12) = -3.09$, $p < .01$, $d = 1.48$, and the incremental club condition, $t(17) = 3.86$, $p < .01$, $d = 1.37$.
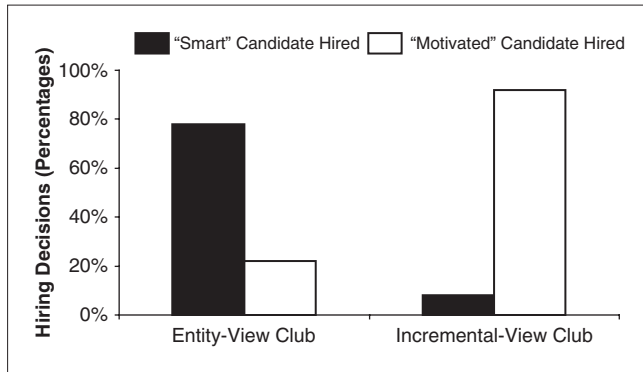
Figure 3. Candidate choice as a function of the organizations' theories of intelligence (Study 4)

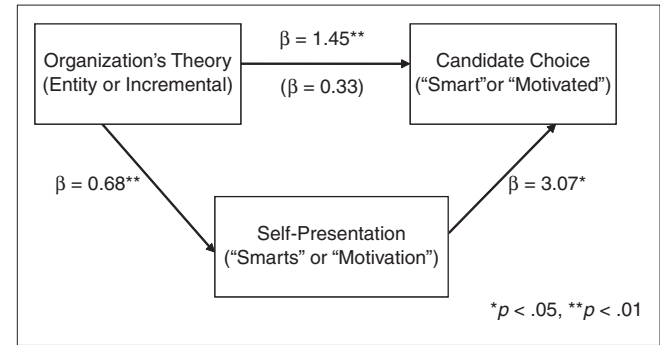**Figure 4.** Mediational analysis of the impact of self-presentation on candidate choice (Study 4)

Hiring decision. As predicted, participants who applied to the entity club hired the candidate who highlighted her smarts significantly more often (78% of the time) than the candidate who highlighted her motivation (22% of the time), $\chi^2(1, N = 13) = 3.78$, $p = .05$ (see Figure 3).[3] That is, the candidate who showcased her intelligence was more than 3 times as likely to be hired if the participant had previously applied to the entity club rather than the incremental club. By contrast, participants who had applied to the incremental club hired the candidate who presented her motivation significantly more often (92% of the time) than the candidate who presented her smarts (8% of the time), $\chi^2(1, N = 13) = 9.31$, $p < .01$. Thus, the candidate displaying her passion for learning was more than 10 times as likely to be hired if the participant had previously applied to the incremental club rather than the entity club. In both cases, participants' candidate choices were predicted by their own environment-consistent displays to the two clubs.

Mediation. Mediational analyses were conducted to test whether the effect of the groups' lay theories on participants' hiring decisions was explained by participants' own self-presentations. The results are depicted in Figure 4.

Before running the analyses, the predictor and outcome variables were effects coded: The entity club condition and the choice of a candidate who presented her smarts were assigned a score of –1, whereas the incremental club condition and the choice of the candidate who presented her motivation were assigned a score of 1.

To test whether the effect of the environment's theory on participants' hiring decisions was mediated by participants' self-presentations, we first conducted a logit regression to predict candidate choice from the organization's theory. As hypothesized, the group's theory significantly influenced participants' candidate choices. When the organization endorsed a malleable (vs. fixed) view of intelligence, the odds of choosing a candidate who showcased her motivation (vs. her smarts) increased by a factor of 4.28, $p < .01$.

Next, a linear regression tested the organization's effect on participants' own self-descriptions. When people were exposed

to an entity or incremental club, they produced significantly more environment-consistent displays, showcasing the smarts or motivation they believed the group would value, $\beta = .68$, $t(29) = 4.94$, $p < .001$.

In the third step, when both the organization's theory and participants' displays were entered as predictors of candidate choice in a logit regression, the effect of organization's theory on candidate choice dropped below significance (the odds of choosing a motivated—versus smart—candidate dropped to 1.39, $p > .05$) and participants' displays significantly predicted candidate choice (the odds of choosing a candidate consistent with one's own displays increased by a factor of 21.62, $p < .05$). Sobel's (1982) test for the drop in significance between the predictor and outcome variable was statistically significant, $Z = 2.01$, $p < .05$. Taken together, the organization's theory of intelligence predicted how likely people were to present characteristics consistent with the perceived values of the group, which in turn predicted their choices of job candidate in the hiring task.

Discussion

Study 4 showed that displaying the values implied by a group's implicit theory of intelligence can affect subsequent behavior toward others. Participants who interviewed with a club that endorsed a fixed view of intelligence not only displayed their smarts during the interview but also enacted the fixed-view philosophy when choosing a candidate in an unrelated hiring task. In fact, participants chose the candidate who featured her smarts 78% of the time when they themselves had previously applied to the entity club. Similarly, participants who interviewed for membership to a club that espoused a malleable theory of intelligence showed a strong trend toward displaying more motivational characteristics and went on to hire the motivated candidate 92% of the time.

The mediational analysis demonstrated that people's enactments of the environments' values mediated their later hiring decisions. Although individuals may have initially displayed the characteristics believed to be cherished by a

group in order to gain its acceptance, these displays had spillover effects—affecting people's behaviors toward others in an unrelated context. It is important to remember that the organization's lay theory only described whether its members endorsed the view that intelligence was fixed or malleable in a broad sense; the fixed or malleable philosophy gave no indication about how to choose candidates in the future or which particular characteristics would be best for one's own self-presentation. It is also important to recall that participants were strongly encouraged to impress the club in order to gain admission—they did not necessarily embrace or believe in the environment's theory at a personal level. In fact, previous participants found the entity organization to be quite unattractive (Study 1 and 2). In light of this, it is interesting that after assessing the environment to discern what it might value in its applicants (smarts vs. motivation), people still went on to apply the environment's values to another person in a later context.

General Discussion

Five studies explored how group-level theories of intelligence shape people's affect, behavior, and cognition. Results from each study demonstrate that an organization's implicit theory guides people's inferences about the characteristics valued among potential joiners. Specifically, people inferred that displaying one's smarts—their academic achievements, grade point average, SAT scores, and IQ—would win them acceptance in an environment that fostered a culture of genius, that is, in an environment that endorsed the belief that intelligence is fixed. Similarly, people inferred that displaying one's motivation and passion for learning would win them favor in a culture of development that viewed intelligence as malleable and expandable. These findings might help explain why people self-display as they do in professional environments that appear to endorse and use these implicit theories as an organizing feature of their activities, work, and hiring (e.g., Enron, Xerox). Moreover, it may be the adaptive thing to do in such settings; once participants had molded themselves to an environment, they later rewarded others for self-displaying in the same manner (Study 4). These data provide initial support for the intuitive notion that at least during the early stages of interpersonal interaction, such as during job interviews, one might do well to mold oneself to an environment.

Whereas Studies 1 and 2 measured what people believed the entity and incremental organizations would value, Studies 3a and 4 demonstrated that displays of these perceived values had downstream consequences for how people view the self and evaluate others. In Study 3a, environments' theories of intelligence shaped people's working self-concepts. Study 3b demonstrated that this self-concept shift was not due to simple priming; participants who read about the two environments—with no expectation that they would engage

or apply to them—did not show similar effects. Thus, when people inferred a group's values from its theory of intelligence, they shifted their perceptions of the content of their current self-concepts.

Study 4 extended the self-presentation literature by demonstrating that when people display a group's perceived values—inferred from its implicit theory of intelligence—it carries over and affects how they later evaluate others. Thirty minutes after people applied to the entity club, they hired a job candidate for an unrelated administrative position who presented her smarts (78% of the time) rather than one who presented her motivation. Conversely, people who applied to the incremental tutoring club later preferred the candidate who presented her motivation (92% of the time) rather than her smarts. Thus, people's displays of an entity or incremental organization's values overwhelmingly influenced how they later evaluated and chose among people applying for a job in an unrelated context.

Two interesting and unanticipated patterns of results emerged across the studies. First, the data suggest that, overall, people favored self-presentation of incremental traits over entity ones, as indicated by the consistent main effects found across studies. This could be due to several factors. First, the organization's main objective—tutoring schoolchildren—might have encouraged participants to display at least some incremental traits in both settings, as the role of tutor might seem to require motivation and dedication. In addition, the act of tutoring may elicit the idea of growth and learning. To be accepted, then, people might have felt compelled to prove their commitment to the tutoring endeavor and to the idea of learning. Second, participants might have tried to balance entity characteristics (smarts, IQ, good grades) with incremental characteristics (motivation, passion) in the belief that presenting oneself as "all smarts" may be off-putting to others. Perhaps a modesty norm exists that restricts people from bragging solely about their smarts and encourages them to display a more well-rounded self. Indeed, when people consider social norms, they tend to self-enhance less (Kruger, 1998). This preference for incremental self-presentation is particularly interesting in light of the fact that entity and incremental theorists are about evenly distributed in the population (Dweck, 2006) and that participants were randomly assigned to conditions. Thus, the differences in self-presentation are more likely due to judgments about how to best present to an environment and less likely to be a consequence of one's personal theory.

Second, we found that the within-subjects effects in the entity club condition varied between studies. That is, in some studies people presented significantly more smarts than motivation to the entity club, whereas in others, their self-presentations were more balanced. This could be due to the varying methods employed in the study. Studies 3a and 4 were significantly more involving from the participants' perspectives. It is plausible that the effects of the manipulation were

stronger—that is, participants' self-presentations were even more influenced by the environments' theories—because participants were more deeply involved and because they took more time to consider the groups' views in these studies. The goal of the present research was to compare people's responses to entity and incremental environments. However, investigations of factors that affect the balance of self-presentations within each type of environment would be interesting.

Taken together, the present studies contribute to research on implicit theories by reconceptualizing them as factors that often operate at the group level, shaping people's psychology and behavior. By using self-presentation and self-perception theories to illuminate the interpersonal effects of group-level lay theories, this work extends previous research on implicit theories. The results also underline the dynamic nature of the self and illustrate two effects of the self's flexibility. First, people have access to many self attributes that they perceive to be differentially valued by entity and incremental organizations (i.e., smarts and motivation), and they draw from these attributes depending on the organization's lay theory. Second, even when people do not particularly like an environment's lay theory or practices (as in Studies 1 and 2), their displays of an environment's values can result in sticky effects, influencing their current self-concepts (Study 3a) and their evaluations of others (Study 4). It is interesting that even though people disliked, and anticipated, a lower sense of belonging in the entity organization, they were not protected from the sticky effects of its fixed theory of intelligence.

Do Environments' Implicit Theories Affect People's Personal Theories?

Where do individuals get their lay theories of intelligence? Could engaging with entity or incremental environments help create and sustain people's chronically held theories? Studies have demonstrated that entity and incremental mindsets are relatively malleable and can be manipulated experimentally (see Aronson, Fried, & Good, 2002; Blackwell et al., 2007; Plaks & Stecher, 2007), and although simple exposure to organizations' lay theories did not shape people's self concepts (Study 3b)—as we might expect if our manipulation acted as a personal theory induction—it remains an open question whether organizations' theories, over time, affect people's chronically endorsed self-theories. Moreover, future work should examine whether such potential theory change is accompanied by the whole range of theory-related outcomes, including helpless or mastery-oriented behaviors. It is difficult to imagine that, as people habitually interact with others in an entity or incremental environment, their own theories would not be affected by the group's views through modeling, persuasion, cognitive dissonance, and self-perception processes. Distinguishing between individual- and group-level implicit theories allows researchers to examine how these theories interact to affect important personal, interpersonal, and cultural outcomes.

Benefits and Costs of Incremental and Entity Environments

When—and for whom—are organizations that endorse incremental lay theories better than ones that endorse entity theories, and vice versa? Our work suggests that, overall, people are more attracted to incremental (vs. entity) organizations. In addition, the research we reviewed earlier suggests that incremental theorists often cope more effectively with challenges and setbacks. However, studies have found that, in practice, people might not always find incremental environments more congenial. Plaks and Stecher (2007) demonstrated that when people's lay theories are violated by the outcomes they experience in a setting (e.g., entity theorists experiencing sudden improvement), they show increased anxiety and decreased motivation. Therefore, although people report preferences for incremental organizations, in reality entity theorists (who remain entity theorists) might sometimes find these settings uncomfortable, just as incremental theorists (who remain incremental theorists) might find entity organizations uncomfortable.

In addition, research shows that personally subscribing to an entity theory is not itself maladaptive. Entity theorists often do not exhibit motivational problems until they encounter a challenge or failure (Dweck & Leggett, 1988). Similarly, because many theories about the self propose that people are motivated to seek feelings of self-worth and esteem (Swann, Griffin, Predmore, & Gaines, 1987), people might enjoy an entity environment when they are performing well—believing that they are one of the smart ones—that is, until their abilities falter or are questioned by those in the environment. This was certainly the case at Enron where the culture of genius was celebrated until its focus on smarts and talent fatefully affected employees' behaviors (see McLean & Elkind, 2003).

However, even without adversity, environments' lay theories may affect the goals pursued by people in the environments. In particular, entity organizations that endorse a culture of genius may encourage people to pursue performance goals (Dweck & Leggett, 1988; Elliott & Dweck, 1988). These goals often block learning and lead to extreme competition that may foster behaviors such as cheating and misrepresentation as people try to prove their smarts (cf. Mueller & Dweck, 1998). Moreover, just as personally subscribing to an entity theory can become problematic when people feel that they must prove their adequacy, an entity environment might cause people to ignore, avoid, or abandon potentially valuable learning opportunities (Dweck & Leggett, 1988; Nussbaum & Dweck, 2008).

Conversely, incremental organizations—like Xerox—that endorse a culture of growth and development may encourage people to pursue learning goals. These goals, fostered by the environment, may not only equip people to deal with setbacks but may also result in mastery-oriented behaviors such as seeking opportunities for challenge and learning (Dweck & Leggett, 1988; Elliott & Dweck, 1988; Heyman & Dweck, 1994; Nussbaum & Dweck, 2008). These are questions we are currently pursuing.

In conclusion, the present work demonstrates how environments' implicit theories shape people's cognition, affect, self-views, and assessments of others. In 1890, William James famously stated that a person "has . . . as many different social selves as there are distinct groups of persons about whose opinion he cares" (p. 294). Our research illustrates this point by showing that groups' implicit theories of intelligence indeed serve this function: shaping how we portray ourselves, affecting the way we conceive of ourselves, and significantly affecting how we behave toward others.

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Notes

1. Throughout the article, we suggest that participants understood what the organizations valued in their potential members—and used this knowledge as a guide to inform the qualities that they self-presented. However, we did not directly test this assumption in Studies 1 and 2. Therefore, a separate study ($N = 33$) was conducted to directly test our assumption that participants would perceive the entity and incremental clubs as differentially valuing smarts versus motivation in its potential members. Participants read the same club descriptions described in Study 1 and were asked to rate the same list of personal characteristics. Instead of asking participants to imagine applying to the club, we asked them to indicate the degree to which they believed that the club members would value the qualities in potential applicants. Participants rated each quality on a 7-point scale (anchored by *the club would value this characteristic extremely much* to *the club would not value this characteristic at all*). Consistent with our assumption, a mixed-model ANOVA revealed an interaction between the environment's theory and the types of traits perceived to be valued by the environments, $F(1, 31) = 28.94$, $p < .001$, $\eta_p^2 = .48$. People perceived that qualities like grades, awards, and IQ would be more valued by the entity (vs. incremental) club, $t(31) = 2.73$, $p = .01$, $d = 0.96$, whereas qualities such as overcoming hardship and personal improvements would be more valued by the incremental (vs. entity) club, $t(31) = -6.65$, $p < .001$, $d = 2.52$.

2. A note about the clubs we designed: Although it may seem strange to have a tutoring club that endorses a fixed view of intelligence, it merits noting that such organizations exist; Mensa-like tutoring clubs, found in most states, are an example. It is not to say that such organizations believe people cannot learn new things. However, in these environments intelligence is characterized as a quality that is more stable and innate. This is the philosophy that was described in our entity club description.

3. Five participants' data were not included in the analyses because of experimenter error—participants' hiring choices could not be matched to their assigned conditions.

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