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"Meaningful" social inferences: Effects of implicit theories on inferential processes ☆

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Abstract

Perceivers' *shared* theories about the social world have long featured prominently in social inference research. Here, we investigate how fundamental *differences* in such theories influence basic inferential processes. Past work has typically shown that integrating multiple interpretations of behavior during social inference requires cognitive resources. However, three studies that measured or manipulated people's beliefs about the stable versus dynamic nature of human attributes (i.e., their *entity* vs. *incremental* theory, respectively) qualify these past findings. Results revealed that, when interpreting others' actions, perceivers' theories selectively facilitate the consideration of interpretations that are especially theory-relevant. While experiencing cognitive load, entity theorists continued to incorporate information about stable dispositions (but not about dynamic social situations) in their social inferences, whereas incremental theorists continued to incorporate information about dynamic social situations (but not about stable traits). Implications of these results for how perceivers find meaning in behavior are discussed.
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Social environments are often complex and confusing. Thus, people must frequently rely upon their fundamental assumptions, or *implicit theories*, about the workings of the social world to simplify and make sense of such environments (Kelly, 1955). But what, exactly, are the assumptions that people typically make about social behavior? This question has long occupied psychologists in a variety of different domains (see Morris, Ames, & Knowles, 2001; Wegener & Petty, 1998).

One area of research where interest in this question has been particularly strong and enduring concerns the inferences people draw from others' actions. In his seminal work on the topic, Heider (1958) argued that understanding perceivers' shared implicit theories about the general causes of

behavior is essential for understanding the meaningful interpretations they give to this behavior (an argument soon extended by others, e.g., Jones & Davis, 1965; Kelley, 1973). More recently, the idea that a common set of interpretations does typically arise from widely shared theories has inspired in-depth investigations of the precise mechanisms by which such interpretations are encoded and processed (e.g., Gilbert & Malone, 1995; Krull & Erickson, 1995a; Trope & Alfieri, 1997).

Examining the shared assumptions perceivers have about social actions has therefore done much to clarify the ways in which social inferences are formed. Yet, as productive as this line of research has been, even more might be learned by exploring how fundamental differences in perceivers' implicit theories alter social inference processes (Molden & Dweck, in press; Morris et al., 2001). For example, cross-cultural investigations have repeatedly illustrated that those with Western European cultural backgrounds analyze social interactions using a profoundly different set

of assumptions than those with East Asian cultural backgrounds; Westerners generally find greater meaning in the stable personality traits of those interacting, whereas Easterners generally find greater meaning in the shifting social environment in which the interaction occurs (Choi, Nisbett, & Norenzayan, 1999). Moreover, such variations in Westerners' and Easterners' implicit theories of social behavior have been found to produce dramatic variations in their processing and interpretation of social information.

In this article, we further explore how different implicit theories of social behavior affect social inference by examining the distinct theories that exist even among individuals with the same cultural background. We begin by (a) briefly elaborating upon both the nature of these distinct theories and the mechanisms of social inference, and (b) discussing how different implicit theories might systematically alter such mechanisms. We then present three studies which extend previous research in this area by (a) directly measuring and manipulating individuals' implicit theories, rather than inferring them from cultural backgrounds, and (b) examining how this alters both the processes and outcomes of judging others' actions. Finally, we conclude by discussing general frameworks for conceptualizing the role of implicit theories in social inference.

Entity and incremental theories of social behavior

In what ways can individuals vary in their implicit theories of the social world? Although there are certainly a number of important differences that exist (see Morris et al., 2001), we argue that one with particularly far reaching influence centers on people's basic beliefs about the stability or malleability of human attributes (Molden & Dweck, in press). Therefore, we focus here on the effects of these specific beliefs to illustrate the more general implications of implicit theories for social inference.

Much previous research has shown that *entity theorists*, who believe that people's basic attributes are fundamentally stable and incapable of change, find markedly different meaning in social behaviors than do *incremental theorists*, who believe that people's basic attributes are fundamentally dynamic and can be developed (see Dweck, Chiu, & Hong, 1995; Levy, Plaks, & Dweck, 1999). Consistent with the belief that people are fundamentally stable, entity theorists tend to be *trait-focused* and seek to assess individuals' unchanging psychological properties (i.e., fixed personality traits); when viewing others' actions, they typically look to encode and explain them in terms of such traits. However, consistent with the belief that people are fundamentally malleable, incremental theorists tend to be *process-focused* and seek to assess the dynamic psychological processes that arise from individuals' changing mental states and situations; when viewing others' actions, they typically look to encode and explain them in terms of such states and situations (e.g., Chiu, Hong, & Dweck, 1997; Levy, Stroessner, & Dweck, 1998; McConnell, 2001; Plaks, Stroessner, Dweck, & Sherman, 2001).

Social inference processes

How, then, might holding an entity or incremental theory influence the processes by which social inferences are formed? One of the most broadly applicable accounts of such processes has been outlined by Krull and colleagues (Krull, 1993; Krull & Erickson, 1995a). In their view, perceivers assemble social inferences across a number of different stages (see also Gilbert, Pelham, & Krull, 1988; Trope & Alfieri, 1997). Upon observing someone's actions, people (a) decide what kind of action it is, (b) construct some meaningful interpretation of what this action signifies, and (c) consider whether there are any other meaningful interpretations that might also apply. That is, using the terminology favored by Krull et al., people *categorize* what type of behavior is being performed, *characterize* what this behavior may imply about either the persons or social situations involved, and then *correct* their initial characterizations in light of any possible alternatives (see Krull & Erickson, 1995a). Furthermore, according to this and other *correction models* of social inference (see Gilbert et al., 1988), these separate stages differ in the effort and cognitive resources they require. Behavior categorization and the formation of initial characterizations are thought to occur spontaneously and require minimal effort or cognitive resources (see also Ham & Vonk, 2003; Krull & Dill, 1996; Todorov & Uleman, 2002). In contrast, correcting for alternate characterizations is considered to be more deliberate and require both substantial effort and plentiful cognitive resources.[1]

Thus, correction models of inference suggest two primary routes through which perceivers' judgments of others' actions may diverge (i.e., assuming they are able to easily and unambiguously categorize what these actions are, which certainly is not always the case, see Trope & Alfieri, 1997). First, as illustrated in Fig. 1, when viewing behavior, people may, at times, begin with the question "What type of

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[1] It is important to note that Trope and colleagues (Trope & Alfieri, 1997; Trope & Gaunt, 2000) have developed an account of social inference that shares many of the same features as correction models, but also has several crucial distinctions as well. Like correction models, Trope's *integration* account divides the inference process into an earlier, effortless stage, where perceivers *identify* what type of behavior is being performed, and a later, effortful stage, where alternate interpretations of this behavior are considered. However, instead of a two-step process where an initial effortless characterization is followed by an effortful correction, Trope proposes that this later stage involves a unitary process of effortful hypothesis testing and integration. Although this difference can have important implications (see Trope & Gaunt, 2000), in many cases both correction and integration perspectives make identical predictions for social inference: in the absence of cognitive resources, people will rely more on their initial impressions of behavior (i.e., uncorrected characterizations or incompletely integrated hypotheses) and will not incorporate all of the available information. Thus, as discussed below, any factors that increase perceivers' attention to multiple pieces of information while under cognitive load represent an expansion of both correction and integration perspectives.
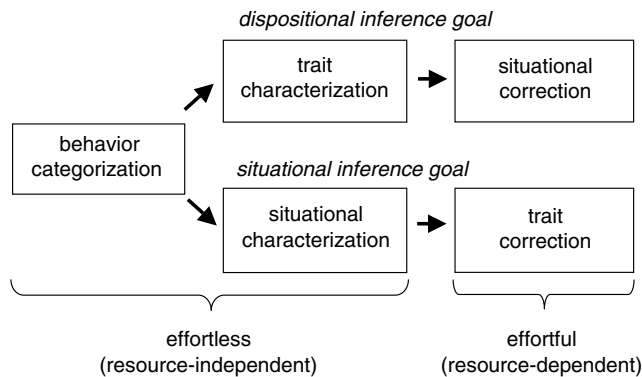
Fig. 1. Krull's (1993; Krull and Erickson, 1995a) correction model of social inference. Following their categorization of the type of behavior being performed, people effortlessly characterize this behavior as signifying something about a person's traits if they have a *dispositional* inference goal but as signifying something about a person's situation if they have a *situational* inference goal. People then effortfully correct these initial trait or situational characterizations for the respective situational or trait alternatives only if they have their full cognitive resources.

person is this?" (i.e., pursue a *dispositional inference goal*) and initially characterize the behavior in terms of that person's traits. However, at other times, people may begin with the question "In what type of environment is this behavior occurring?" (i.e., pursue a *situational inference goal*) and initially characterize the behavior in terms of that person's social situation. Second, as also illustrated in Fig. 1, people may, at times, be willing and able to dedicate the cognitive resources required to correct for alternate characterizations, and, at other times, they may not. When people do possess plentiful cognitive resources, they should be more likely to either correct their initial trait characterizations for any relevant situational characterizations, or their initial situational characterizations for any relevant trait characterizations. However, when their cognitive resources are depleted (i.e., they are experiencing *cognitive load*) people should be more likely to fail to perform this effortful correction. Multiple studies have confirmed that different inference goals and levels of cognitive load do have such effects on information processing during social inference (Gilbert et al., 1988; Krull, 1993; Krull & Erickson, 1995b; Lee & Hallahan, 2001; Trope & Alfieri, 1997).[2]

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[2] These are certainly not the only factors that have been found to play an important role in social inference. One other prominent influence is the extent to which people's actions are uncertain, hard to decipher, or consistent with multiple categorizations (i.e., *ambiguous*). This uncertainty often alters the processes depicted in Fig. 1, either (a) making the categorization of uncertain behaviors more effortful (Gilbert, McNulty, Giuliano, & Benson, 1992) and subject to disruption by cognitive load (Chun, Spiegel, & Kruglanski, 2003), or (b) allowing perceivers' knowledge about either the person performing the behaviors or the present social situation to influence their initial effortless categorizations as well as their later effortful corrections (see Trope & Alfieri, 1997). Yet, as noted, in the present investigations we confine ourselves to circumstances where people's actions are relatively easy to decipher (i.e., *unambiguous*) and where such additional mechanisms have been found to play little role (Trope & Alfieri, 1997; Trope & Gaunt, 2000).

Effects of entity and incremental theories on social inference processes

In light of these well established social inference mechanisms, there appear to be several ways in which holding an entity or incremental theory might influence this process. As previous research has indicated (see Levy et al., 1999), because entity theorists find stable traits particularly meaningful, they appear to generally choose dispositional inference goals and initially characterize others' actions largely in terms of personality traits. Similarly, because incremental theorists find dynamic states and situations particularly meaningful, they appear to generally choose situational inference goals and initially characterize others' actions largely in terms of environmental pressures (see Fig. 1). Yet, in addition to influencing the types of inference goals that are typically pursued, might implicit theories also at times influence the way in which these goals are carried out? In some circumstances *all* perceivers would be expected to initially seek either trait or situational characterizations of behavior (e.g., when evaluating someone as a potential business partner or when observing someone who is in an environment that one soon expects to personally experience, respectively; see Lee & Hallahan, 2001). In such circumstances, might entity and incremental theorists still differ in how readily they correct for alternate trait and situational characterizations of behavior (see Fig. 1)? This is the primary focus of the present article.

How might an entity or incremental theory influence inferential corrections? Correction models of social inference suggest that perceivers should only engage in this relatively effortful process when they have their full cognitive resources (Gilbert et al., 1988; Krull, 1993; Krull & Erickson, 1995a). However, two more recent findings indicate ways in which perceivers' implicit theories might allow inferential corrections even while under cognitive load.

First, Knowles, Morris, Chiu, and Hong (2001) have proposed that individuals who find particular ways of characterizing behavior especially meaningful may become extremely well-practiced at incorporating these characterizations into their social inferences. Over time, this extensive practice could allow them to become highly efficient at these types of inferential corrections and to perform them even in the absence of cognitive resources (see Bargh, 1997; Wegener & Petty, 1998; cf. Smith & Lerner, 1986). To test this, Knowles et al. (2001) examined the social inferences of native Chinese individuals. As previously mentioned, these individuals should be culturally attuned to effects of situational pressures on people's actions, and therefore well practiced at correcting their social judgments in light of such pressures. Results revealed that Chinese perceivers did indeed correct their initial trait characterizations for situational influences even while under cognitive load. Since incremental theorists also find the influence of situational pressures on behavior highly meaningful, these individuals may also have had extensive practice at considering such pressures during social inference. They could thus similarly

show effortless correction of their initial trait characterizations. Conversely, since entity theorists find the influence of personality traits on behavior highly meaningful, they may have had extensive practice at considering such traits, and thus similarly show effortless correction of their initial situational characterizations (see Fig. 1).

Trope and Gaunt (2000) have also recently suggested that perceivers can correct their characterizations of behavior even in the absence of cognitive resources. They propose that, although considering and integrating multiple characterizations of behavior is indeed generally an effortful process, this process can be facilitated if one or more of these characterizations is highly salient or accessible (see also Chun et al., 2003). Consistent with this, Trope and Gaunt demonstrated that experimentally boosting the salience of situational influences on behavior also led perceivers to integrate these influences into their trait interpretations even while under cognitive load. The greater meaning incremental theorists find in situational interpretations of behavior could also make such interpretations especially salient and thus allow them to be more effortlessly integrated during the inference process. Conversely, the greater meaning entity theorists find in trait interpretations of behavior could also make these types of interpretations especially salient and thus allow them to be more effortlessly integrated during inference.

In sum, based on these recent findings, we propose that when judging others' actions, perceivers will effortlessly correct their initial characterizations of these actions if (and only if) these corrections involve information that is especially meaningful to them in light of their implicit theory of personality. Three studies were performed to test this possibility. Studies 1 and 2 sought to establish basic differences between individuals who are entity and incremental theorists in the cognitive resources required for trait versus situational corrections during social inference. Study 3 attempted to replicate these first two studies using a temporary induction of an entity or incremental theory. Beyond seeking to establish the causal role of implicit theories in altering perceivers' inference processes, this final study was also intended to allow a more in depth consideration of the practice and salience mechanisms that might be responsible for implicit theory effects.

Study 1

Study 1 examined how perceivers' implicit theories affect their correction of dispositional impressions of behavior for alternate situational interpretations. Entity and incremental theorists were shown a short video of a woman behaving anxiously and judged the extent to which they thought she was an anxious type of person. Some additionally received information that the situation in which the woman's behavior was recorded was somewhat anxiety-provoking whereas others were informed that the situation was not at all anxiety-provoking. Thus, some participants learned of situational influences that would be expected to weaken their

dispositional impressions (i.e., lead them to *discount* their trait inferences) whereas others learned of situational influences that would be expected to strengthen their dispositional impressions (i.e., lead them to *augment* their trait inferences, see Kelley, 1973), respectively. Furthermore, some formed their judgments while under cognitive load, whereas others formed their inferences without this load.

As discussed above, our primary prediction was that incremental, but not entity, theorists would always integrate situational influences into their dispositional impressions of the woman (i.e., show discounting and augmentation) even while under cognitive load. However, we did not expect entity theorists to be completely insensitive to situational influences (i.e., although entity theorists may emphasize the influence of traits on behavior, there is no reason to expect this to be the *only* influence they acknowledge). Therefore, we also predicted that, since compelling situational interpretations were explicitly presented, both entity and incremental theorists should integrate these alternatives into their judgments when they possessed their full cognitive resources (see also Plaks, Grant, & Dweck, 2005; Plaks et al., 2001). This would parallel the findings of Chiu, Morris, Hong, and Menon (2000), who demonstrated that people's cultural implicit theories only affected their inferences when their motivation to commit cognitive resources to the task was low.

Method

Participants

Participants were 238 university students who were paid $5 for volunteering. They participated in groups of 1–4 and completed the study at individual work-stations.

Procedure

Procedures for this study were adapted from those used by Gilbert et al. (1988). All materials and dependent measures were presented by computer. Participants watched a short, silent, video of a woman being interviewed. Everyone was informed that their task was to infer "…how anxious a person the woman is" from her behaviors. In the video, the woman displayed a number of anxious behaviors, including shifting in her seat, glancing off to the side, and biting her lip. Pre-tests confirmed that, overall, people viewed her as acting moderately anxiously ($M = 6.4$ on a scale from 1 [*not at all*] to 9 [*extremely*]).

Situational information and cognitive resource manipulations. Before watching the video, everyone was given additional information about the context of the woman's behavior. Some were informed that the topic of the interview was highly *stressful* (i.e., that she was talking about her most embarrassing moments) and some were informed the topic was rather *mundane* (i.e., that she was talking about her favorite books, see Gilbert et al., 1988). Independent of this, some participants were placed under cognitive load while judging the woman's behaviors. Those in this

load condition were given an additional visual monitoring task and instructed to watch for appearances of the number 16, which had been spliced into the video at random intervals. Each time this occurred, they were to press the spacebar on the computer as quickly as possible. The remaining participants in the *non-load* condition were told that they had been assigned to the control condition and could ignore the appearance of the 16s. Note that in this paradigm, introducing the situational information *before* participants watch the video allows everyone to integrate this information on-line while forming their dispositional impressions. The more cognitive resources this integration requires, however, the more it should be disrupted by cognitive load, and the less the interview topic should influence participants' judgments these conditions (see Gilbert et al., 1988).

Dependent measures. After the video, all participants were asked to rate, "How anxious a person is the woman in the video?," "How anxiously did the woman appear to be acting in the video?," and "How anxious do you think the woman would be if she were asked to give an impromptu presentation in a seminar?," all on 1 (*not at all*) to 9 (*extremely*) scales. The questions were always presented in the same order, and the first and third questions assessed participants' dispositional impressions. In contrast, the second question assessed participants' categorization of the woman's behavior (i.e., the extent to which they encoded her behaviors as *anxious*). Categorizations were measured to assess possible differences in participants' early encoding of behavior and ensure that any variations in judgment could be attributed to differences at later stages of inference (see Fig. 1). Following this, everyone reported the topic of the interview in which the woman was participating to ensure they did indeed have the appropriate situational interpretations available when making their inferences.

Finally, all participants completed a series of individual-difference questionnaires, one of which assessed their implicit theories and the rest of which were filler. The implicit theory measure consisted of eight items, four describing an entity theory of personality (e.g., "The kind of person someone is something very basic about them and it can't be changed very much"), and four describing an incremental theory of personality (e.g., "People can substantially change the kind of person they are", for reliability and validity information see Levy et al., 1998). Participants rated their agreement with these statements on a scale from 1 (*strongly agree*) to 6 (*strongly disagree*).

Results

Nine participants (4%) incorrectly reported the interview topic, and five (2%) did not complete all of the materials. These individuals were evenly distributed across experimental conditions. Four additional participants (2%) did not follow the cognitive load instructions. Data from all of the above, who did not systematically differ from the remaining sample in their implicit theories, were dropped, leaving the responses of 220 individuals for analysis.

A principal components analysis performed on the implicit theory questionnaire revealed a single factor which explained 64.4% of the variance. Participants' ratings were therefore recoded and combined into an index where high scores indicated stronger beliefs in the malleability of personality and low scores indicated stronger beliefs in the stability of personality. The entire range of possible scores was represented in this sample and the median score fell at the exact midpoint of the scale.

Implicit theory scores were first centered, and then entered into a series of hierarchical regressions in which participants' categorizations of the woman's behavior and their ratings of her trait anxiety were predicted from (a) the implicit theory index, (b) two contrast-coded variables representing the interview topic (1 = stressful, −1 = mundane) and cognitive load (1 = load, −1 = non-load) manipulations, and (c) all possible two- and three-way interactions (see Aiken & West, 1991). Although participants' implicit theories were represented by a continuous measure in all analyses, for ease of exposition we will continue to refer to those with higher scores as *incremental theorists* and those with lower scores as *entity theorists*.[3]

Categorization of the target's anxious actions

Did participants differ in their perceptions of the woman's actions as "anxious"? As in pretests, these behaviors were, on average, rated as moderately anxious ($M = 6.0$). Neither the experimental manipulations nor participants' implicit theories had any simple or higher-order effects on these ratings (F's < 2.1, p's > .15). Furthermore, including these categorizations as a covariate in all of the analyses reported below did not alter the significance of any of the results. As intended, any variations in judgments about the woman's dispositions can thus be attributed to differences at later stages of the inference process (see Fig. 1).

Judgments of the target's dispositional anxiety

Did participants differ in their impressions of the woman's dispositional anxiety? As noted earlier, in the original Gilbert et al. (1988) study, participants corrected their dispositional impressions for possible situational influences when they had their full cognitive resources, but not when these resources were depleted (resulting in an interview topic × load interaction). While we expected that this pattern of results would hold for entity theorists, we

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[3] In Studies 1 and 2 implicit theory measures were completed at the end of the experiment so that explicitly reporting their theories of personality would not alter participants' consideration of the target's behavior. In each study ANOVAs were performed using the implicit theory questionnaire as a dependent variable to ensure responses to this questionnaire were not influenced by preceding inference goal, cognitive load, or target information manipulations. None of these manipulations affected participants' reports of their implicit theories (F's < 1.6, p's > .20).
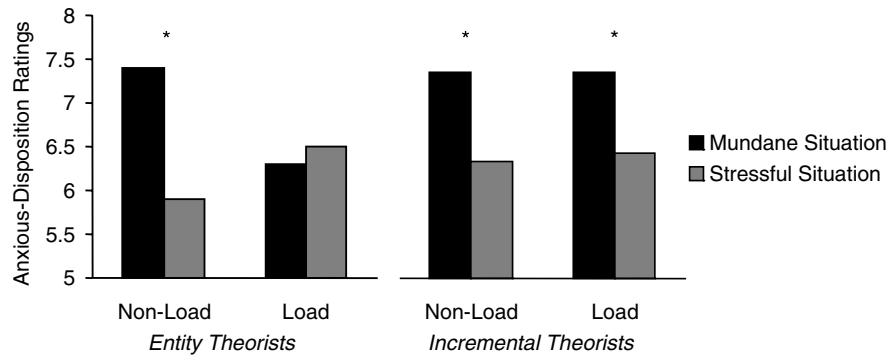
Fig. 2. Participants' ratings of the target's dispositional anxiety as predicted by the target's situation, degree of cognitive load, and participants' chronic implicit theories, as well as all higher-order interactions. Higher predicted values indicate greater perceived dispositional anxiety. Asterisks denote a significant (p < .05) simple effect for the target's situation at the indicated values of the other factors.

expected that situational influences would affect incremental theorists' dispositional judgments regardless of their cognitive resources (resulting in only a topic main effect). Overall, analyses should therefore show a theory × topic × load interaction.

Regression analyses first revealed a significant main effect of the interview topic ($\beta = -.24$, $t(215) = 3.70$, $p < .001$) and a marginal main effect of implicit theory ($\beta = .11$, $t(215) = 1.7$, $p = .09$). However, these main effects were qualified by a significant topic × load interaction ($\beta = .13$, $t(212) = 1.98$, $p < .05$), which replicates Gilbert et al.'s (1988) findings. Finally, all of these effects were further qualified by the predicted theory × topic × load interaction ($\beta = -.44$, $t(211) = 1.95$, $p = .05$).[4]

Fig. 2 presents predicted values for participants' trait ratings calculated from the full regression equation. All ratings and simple slopes were estimated at scores of -1 SD and $+1$ SD from the mean of the implicit theory index, which represented moderate overall agreement with an entity or incremental theory, respectively. As can be seen, this pattern of predicted ratings further supported our expectations. Simple slope analyses performed within each level of implicit theory and cognitive load (see Aiken & West, 1991) confirmed that, for entity theorists, learning that the target was behaving in a stressful vs. a mundane situation decreased their ratings of the woman's trait anxiety when they had their full cognitive resources ($\beta = -.46$, $t(211) = 3.7$, $p < .001$) but not when they were experiencing

cognitive load ($\beta = .06$, $t(211) = .46$, $p = .65$). Thus, entity theorists' ratings indeed reflected the predicted topic × load interaction ($\beta = .26$, $t(211) = 2.79$, $p < .01$). In contrast, for incremental theorists, information about the influence of a stressful vs. a mundane situation decreased their trait-anxiety ratings both in the load ($\beta = -.26$, $t(211) = 1.97$, $p = .05$) and non-load conditions ($\beta = -.26$, $t(211) = 1.98$, $p < .05$). Thus, incremental theorists' ratings indeed reflected only a main effect of the interview topic ($\beta = -.26$, $t(211) = 2.79$, $p < .01$).

Discussion

Overall, Study 1 provides initial support for the influence of distinct implicit theories of social behavior on people's social inferences. When forming dispositional impressions of someone's actions, incremental theorists considered alternate situational interpretations of these actions even when their cognitive resources were depleted. In contrast, entity theorists considered these alternate interpretations only when they possessed their full cognitive resources. That is, when explicit situational influences were present and they were able to dedicate their full attention to impression formation, entity theorists considered these influences just as much as incremental theorists. However, when their impression formation was hampered by cognitive load, entity theorists no longer considered situational influences, whereas incremental theorists continued to do so.

These results also illustrate how processing differences associated with perceivers' implicit theories can create important differences in social judgment when cognitive resources are depleted. In these circumstances, the present study showed that when an observed behavior appeared to be consistent with potential situational explanations, incremental theorists made slightly weaker dispositional judgments than entity theorists. That is, when a stressful interview topic could also have produced the woman's anxious behavior, incremental theorists were somewhat more likely to "subtract out" this plausible situational influence from their trait impressions, an

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[4] Ideally, all of the studies presented in this article would have included a separate manipulation check for the cognitive load procedures to ensure that all participants in the load conditions were monitoring the video for the appearance of the 16s with equal vigilance. However, software limitations prevented us from recording reaction times to these appearances. Despite this, several factors provide some reassurance that our procedures were indeed effective. First, these procedures were virtually identical to those that have been used successfully to manipulate cognitive load in the past (e.g., Krull & Erickson, 1995b). Second, as noted, our results perfectly replicate the cognitive load effects found in previous studies. Finally, as discussed further below, when results of all the present studies are considered, the pattern of findings is inconsistent with the possibility that one group of perceivers was systematically affected by the load manipulation more than another.

effect often shown in past research (see Levy et al., 1999). However, when an observed behavior appeared to contradict possible situational explanations, incremental theorists made significantly *stronger* dispositional judgments than entity theorists ($\beta = .30$, $t(211) = 2.2$, $p < .05$). That is, when a mundane interview topic would have been expected to produce calmer rather than more anxious behavior, incremental theorists were more likely to "add in" the fact that the woman's anxious disposition must have overcome the opposing situational influence, which has not been shown previously. Thus, this study also demonstrates how a careful consideration of the processing differences between entity and incremental theorists reveals that they do not reduce to a simple difference in the tendency to reach dispositional versus situational impressions, respectively.

Study 2

Study 1 examined the correction of dispositional impressions for alternate situational interpretations. Extending this, Study 2 examined how perceivers' implicit theories affect their correction of situational impressions for alternate dispositional interpretations (see Fig. 1). Using similar procedures as before, entity and incremental theorists were shown a video of a woman behaving anxiously and were asked to infer the extent to which she was experiencing an anxiety-provoking situation. Some additionally received information that the woman was dispositionally anxious, whereas others were informed that she was dispositionally calm. Thus, analogous to Study 1, some participants learned of a dispositional influence that would be expected to weaken their situational impressions (i.e., lead them to discount their situational inferences) whereas others learned of a dispositional influence that would be expected to strengthen their situational impressions (i.e., lead them to augment their situational inferences; see Kelley, 1973), respectively. Furthermore, some again formed their inferences while under cognitive load, whereas others formed their inferences without this load.

Our primary prediction for this study was that entity, but not incremental, theorists should always integrate dispositional influences into their situational impressions of the woman (i.e., show discounting and augmentation), even while under cognitive load. However, as before, we did not expect incremental theorists to be completely insensitive to dispositional influences, and predicted that both entity and incremental theorists should integrate these alternatives into their judgments when they possessed their full cognitive resources (see Chiu et al., 2000; Plaks et al., 2001, 2005).

Method

Participants

Participants were 235 university students who were paid $5 for volunteering. They participated in groups of 1–4 and completed the study at individual work-stations.

Procedure

Procedures for this study were adapted from Krull and Erickson (1995b) and were highly similar to Study 1. All materials and dependent measures were presented by computer. Participants again watched the short video of the woman being interviewed, but in this study everyone was informed that their task was to infer "…how anxiety-provoking the topic of the interview is."

Dispositional information and cognitive resource manipulations. Before watching the video, everyone was given additional information about the woman. Some were informed she was a generally *anxious* person (i.e., that she had received a particularly high score on a clinical measure of anxiety) and some were informed that she was a generally *calm* person (i.e., that she had received a particularly low score on this clinical measure). Independent of this, some participants were placed under cognitive load while judging the woman's behaviors, using the same secondary visual monitoring task as in Study 1, and some were not. Thus, as before, introducing dispositional information before participants watched the video gave everyone the opportunity to integrate this information on-line while forming situational impressions. Again, the more cognitive resources this integration required, the more it should have been disrupted by cognitive load, and the less alternate dispositional interpretations should influence participants' judgments under these conditions (see Gilbert et al., 1988; Krull & Erickson, 1995b).

Dependent measures. After the video, all participants were asked "How anxiety-provoking was the interview topic?", and "How anxiously did the woman appear to be acting in the video?". Questions were answered on a 1 (*not at all*) to 9 (*extremely*) scale and were always presented in the same order. The first question assessed participants' impressions of the woman's situation, whereas the second question assessed their categorization of the woman's behavior as *anxious*. As in Study 1, categorizations were measured to assess and control for possible differences in participants' early encoding of behavior and ensure that any variations in judgment could be attributed to differences at later stages of inference (see Fig. 1). Following this, everyone reported whether the woman in the video was an anxious or calm person to ensure they did indeed have the appropriate dispositional interpretations available when making their inferences. Finally, participants filled out a series of individual difference questionnaires, one of which was the implicit theory measure and the rest of which were filler.

Results

Twelve participants (5%) incorrectly reported the woman's personality, and six (3%) did not complete all of the materials. These individuals were evenly distributed across experimental conditions. Three additional participants (1%) did not follow the cognitive load instructions.

Data from all of the above, who did not systematically differ from the remaining sample in their implicit theories, were dropped, leaving the responses of 214 individuals for analysis.

As in Study 1, a principal components analysis performed on the implicit theories questionnaire revealed a single factor which explained 65.2% of the variance. Participants' ratings were therefore recoded in the same way as before. Also as before, this sample included the entire range of possible scores and the median score fell at the exact midpoint of the scale.

Implicit theory scores were centered and then entered into a series of hierarchical regressions in which participants' categorizations of the woman's behavior and ratings of the interview topic were predicted from (a) the implicit theory index, (b) two contrast-coded variables representing the trait ($1 =$ anxious, $-1 =$ calm) and cognitive load ($1 =$ load, $-1 =$ non-load) manipulations, and (c) all possible two- and three-way interactions (see Aiken & West, 1991). As in Study 1, although participants' implicit theories were represented by a continuous measure in all analyses, we refer to those with higher scores as *incremental theorists* and those with lower scores as *entity theorists*.

Categorization of the target's actions

Did participants in this study differ in their perceptions of the woman's actions as "anxious"? As in Study 1, on average, participants categorized the woman's behaviors as moderately anxious ($M = 6.0$). Participants' implicit theories did not have any simple or higher-order effects on these categorizations. However, in this study, there was an effect of the information provided about the woman's dispositions ($\beta = .32$, $t(210) = 4.9$, $p < .001$). Although those who learned the woman was a calm person still categorized her actions as moderately anxious ($M = 5.5$), those who learned that she was an anxious person categorized her actions as indicating even greater anxiety ($M = 6.6$). While this type of encoding effect has been found in many previous studies, it could potentially obscure participants' later correction of their situational impressions for dispositional influences (see Trope & Alfieri, 1997). Therefore, following the proce-

dures established by Trope and colleagues, all analyses reported below include participants' categorizations as a covariate. All predicted values reported have been adjusted and any remaining variations in judgment can thus be attributed to differences at later stages of the inference process.

Judgments of the anxiety provoked by the target's situation

Did participants differ in their impressions of the anxiety provoked by the woman's situation? As discussed above, in the original Krull and Erickson (1995b) study, participants corrected their impressions of situational effects on behavior in light of possible dispositional influences when they had their full cognitive resources, but not when these resources were depleted. While we expected that this pattern would hold for incremental theorists (resulting in a disposition × load interaction), we expected that dispositional influences would affect entity theorists' situational judgments regardless of their cognitive resources (resulting in only a disposition main effect). Thus, analogous to Study 1, our analyses should therefore show a theory × disposition × load interaction.

Regression analyses first revealed a main effect of the woman's dispositions ($\beta = -.10$, $t(209) = 1.91$, $p = .06$). However, this main effect was qualified by the predicted theory × disposition × load interaction ($\beta = .72$, $t(205) = 2.12$, $p < .05$). Fig. 3 presents predicted values for participants' ratings of the interview topic calculated from the full regression equation. All ratings and simple slopes for entity vs. incremental theorists were estimated at scores of -1 *SD* and $+1$ *SD* from the mean of the implicit theory questionnaire, which again represented moderate overall agreement with each respective theory. As can be seen, the pattern of predicted ratings further supported our expectations. Simple slope analyses performed within each level of implicit theory and cognitive load (see Aiken & West, 1991) confirmed that for incremental theorists, learning that the woman had an anxious vs. a calm disposition decreased their ratings of the anxiety produced by the interview topic when they had their full cognitive resources ($\beta = -.23$, $t(205) = 2.29$, $p < .05$) but not when they were experiencing
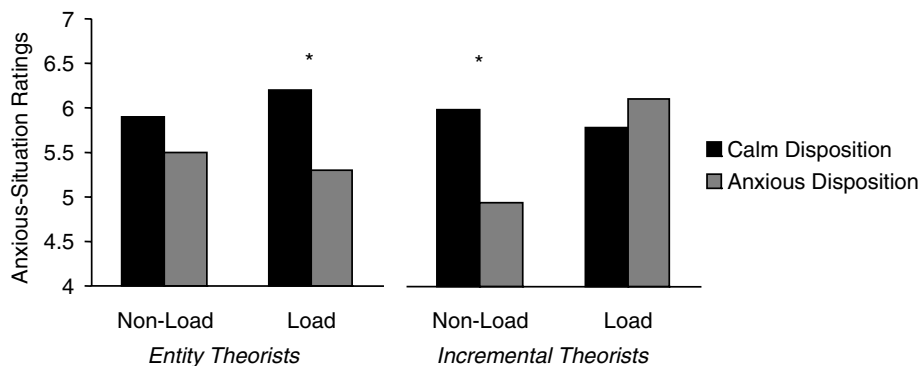

Fig. 3. Participants' ratings of the anxiety provoked by the target's situation as predicted by the target's dispositions, degree of cognitive load, and participants' chronic implicit theories, as well as all higher-order interactions. Higher predicted values indicate greater perceived anxiety provoked by the situation. Asterisks denote a significant ($p < .05$) simple effect for the target's dispositions at the indicated values of the other factors.

cognitive load ($\beta = .11$, $t(205) = 1.0$, $p = .33$). Thus, incremental theorists' ratings indeed reflected the predicted disposition × load interaction ($\beta = .17$, $t(205) = 2.40$, $p < .05$). In contrast, for entity theorists, information about the woman's anxious vs. calm disposition decreased perceptions of the anxiety produced by the interview topic in both the load conditions ($\beta = -.19$, $t(205) = 1.96$, $p = .05$) and the non-load conditions (although this latter slope did not reach significance, $\beta = -.10$, $t(205) = .92$, $p = .36$. This finding is addressed in more detail below). Thus entity theorists' ratings indeed reflected only a main effect of the woman's dispositions ($\beta = -.15$, $t(205) = 2.00$, $p < .05$).

Discussion

Overall, Study 2 thus provides additional support for the influence of distinct implicit theories of social behavior on people's social inferences. When forming impressions of the situation surrounding someone's actions, entity theorists considered alternate dispositional interpretations of these actions, even when their cognitive resources were depleted. In contrast, incremental theorists considered these alternate interpretations only when they possessed their full cognitive resources. That is, analogous to Study 1, when explicit dispositional influences were present and they were able to dedicate their full attention to impression formation, incremental theorists considered these influences just as much as entity theorists. However, when their impression formation was hampered by cognitive load, incremental theorists no longer considered dispositional influences, whereas entity theorists continued to do so.

Despite the generally good support for our implicit theory hypotheses in Study 2, there was one problematic finding. Although entity theorists showed a tendency to consider dispositional influences in their situational impressions in the non-load conditions, differences between those who believed the woman had an anxious vs. a calm disposition were not reliable. In order to examine further whether this dispositional effect is indeed paradoxically smaller for entity theorists when they have their full cognitive resources, we recruited another sample of 97 participants from the same student population and conducted an exact replication of the non-load conditions.

In this new sample, hierarchical regression analyses revealed only a main effect for the woman's dispositions ($\beta = -.19$, $t(92) = 3.08$, $p < .01$). In addition, simple slope analyses for both entity theorists ($\beta = -.22$, $t(92) = 2.56$, $p = .01$) and incremental theorists ($\beta = -.16$, $t(92) = 1.95$, $p = .05$) revealed that information about the woman's anxious vs. calm disposition decreased perceptions of the anxiety produced by the interview topic, as is consistent with our hypotheses. Moreover, a meta-analytic comparison (see Rosenthal, 1991) between the significance levels and effect sizes for entity theorists in this new sample ($Z = 2.5$, $r = .26$) and the first sample reported above ($Z = .93$, $r = .06$) showed no reliable differences ($Z = 1.11$, $p = .27$ and $Z = 1.6$, $p = .11$, respectively). Moreover, the combined results

across both samples of entity theorists show a reliable overall effect of the woman's disposition ($Z = 2.4$, $p = .01$). Finally, across the two samples the average effect size for the entity theorists ($r = .16$) was not reliably different from the average effect size for the incremental theorists ($r = .19$, $Z = .28$, $p = .78$). Therefore, in sum, although the simple slope for entity theorists in the non-load conditions did not reach conventional levels of significance in Study 2, additional data indicates that the effect of the dispositional information on participants' judgments in these conditions (a) is statistically significant in a meta-analysis including an additional sample, and (b) does not differ in size from the similar effects observed for incremental theorists in the same conditions.

Thus, as in Study 1, the cumulative results reported here further illustrate how the processing differences associated with perceivers' implicit theories can create important differences in social judgment when cognitive resources are depleted. In these circumstances, when an observed behavior appeared to be consistent with potential dispositional explanations, entity theorists made somewhat weaker situational judgments than incremental theorists (see Fig. 3). That is, when an anxious disposition could also have produced the woman's anxious behavior, entity theorists were more likely to subtract out this plausible dispositional influence from their situational impressions, an effect often shown in past research (see Levy et al., 1999). However, when an observed behavior appeared to contradict possible dispositional explanations, entity theorists made marginally *stronger* situational judgments than incremental theorists ($\beta = -.15$, $t(205) = 1.44$, $p = .15$). That is, when a calm disposition would have been expected to produce calmer rather than more anxious behavior, entity theorists were somewhat more likely to add in the fact that the interview topic must have overcome the opposing dispositional influence. Thus, this study further demonstrates how a careful consideration of the processing differences between entity and incremental theorists reveals that they should not always simply be expected to form more dispositional versus situational impressions, respectively.

Finally, when considered together with Study 1, the results of Study 2 illustrate several other important points. Across both studies, entity and incremental theorists each at times displayed relatively complex, efficient, and thorough information processing, but only when this information was particularly meaningful in terms of their respective theory. This specificity indicates that perceivers' implicit theories do not lead them to (a) become generally practiced at integrating different behavioral interpretations, (b) perceive greater salience in *all* types of behaviorally relevant information, or (c) be more or less generally susceptible to cognitive load manipulations. Furthermore, consistent with previous work (see Dweck et al., 1995; Levy et al., 1998), it also indicates that entity and incremental theorists do not differ greatly on broader variables such as their general cognitive complexity, enjoyment of cognitive activity, or need for clarity and certainty. Instead, it indicates that

perceivers' implicit theories selectively enhance judgmental processes that are particularly meaningful in light of those theories.

Study 3

Studies 1 and 2 provide initial support for our primary hypotheses concerning the effects of distinct implicit theories on the social inference process. One primary objective of Study 3 was to solidify this support by replicating the important theory differences in impression formation under cognitive load. Another objective of Study 3 was to further explore the two possible mechanisms (i.e., increases in perceivers' efficiency at inferential correction through frequent practice versus increases in the perceived salience of personally meaningful information) that we invoked as potential explanations for these differences. Results of the two previous studies, where people's chronic theories were measured, are consistent with both alternatives. However, if extensive practice is *necessary* (as opposed to merely sufficient) for the observed implicit theory effects, a short-term experimental induction of an entity or incremental theory should not replicate these effects. Yet, if the results of previous studies are replicated following this type of induction, it suggests that salience mechanisms, where momentary increases in perceivers' focus on certain types of information can facilitate inferential integration (Chun et al., 2003; Trope & Gaunt, 2000), could also be responsible.

To test this possibility, Study 3 combined the basic procedures of the first two studies with a few modifications. Participants first received an experimental induction of either an entity or incremental theory. They next viewed a woman's anxious behavior, and were either asked to form dispositional impressions in light of a stressful or mundane situation or to form situational impressions in light of her anxious or calm disposition. Because in previous studies the crucial differences between entity and incremental theorists emerged only when their cognitive resources were depleted, all participants in this study made their inferences under cognitive load to conserve time and resources.

Methods

Participants

Participants were 174 university students who were paid $5 for volunteering. They participated in groups of 1–4 and completed the study at individual work-stations.

Procedure

Participants first completed an exercise designed to temporarily induce either an entity or incremental theory of personality. They were given an article, ostensibly published in a recent psychology journal, describing a growing scientific consensus either concerning the fact that personality is fixed or that personality is malleable (see below). Following this, as part of a "separate study," some participants were asked to form dispositional impressions and

received all of the materials, manipulations, and dependent variables from Study 1, whereas others were asked to form situational impressions and received all of the materials, manipulations, and dependent variables from Study 2. The one change in procedure from the previous two studies was that all participants in both of these conditions formed their impressions while under cognitive load from the secondary visual monitoring task. Finally, after completing a number of filler questionnaires, participants answered several questions related to the theory manipulation.

Implicit theory induction. The articles used to manipulate people's implicit theories were constructed to consistently support either an entity (i.e., people are fixed and stable over time) or an incremental (i.e., people are malleable and can change and grow) view. These articles have successfully been used to temporarily induce different implicit theories in past research (Chiu et al., 1997; Levy et al., 1998; McConnell, 2001; Plaks et al., 2001). The entity article was entitled "Personality, Like Plaster, Is Pretty Stable Over Time." It described multiple research programs—case studies of famous individuals, longitudinal studies, and results of large scale interventions—that found, while people's behaviors may vary, their underlying personality does not change. The incremental article was entitled "Personality is Changeable and Can Be Developed". It described the same research programs, but the findings were altered to suggest that personality is always malleable across the life span. (The full text of the articles is available from the authors upon request). Although the articles quite thoroughly described entity or incremental views, they did not discuss in any way the issue of whether people's behaviors typically reflect their internal dispositions or situational forces and were not directly related to the inference task that participants completed later.

Immediately following the articles, participants responded to several short "reading comprehension" questions, which included (a) summarizing the main theme of the article, (b) describing which pieces of evidence they found most convincing, and (c) describing a personal experience consistent with the theme of the article. At the end of the study, to ensure the theory induction was successful, participants rated how difficult the article was to understand, how credible it was, and how persuasive it was on 1 (*not at all*) to 9 (*extremely*) scales. They also wrote any additional comments they had about the article and then completed the implicit theory questionnaire used in the two previous studies. Finally, everyone was probed for suspicion and fully debriefed (i.e., participants were shown both versions of the article and the actual continuing debate concerning the stability or malleability of personality was discussed).

Results

Four participants expressed suspicion about the legitimacy of the articles (2%). Another six participants (3%) saw

a connection between the articles and the social inference task (although no one correctly guessed the hypotheses). Finally, seven participants (4%) either failed to follow the cognitive load instructions, did not complete all materials, or failed the manipulation check for the social inference task. These participants, who were evenly distributed across the experimental conditions, were eliminated, leaving 157 individuals for analysis.

Implicit theory induction manipulation checks

Were the inductions of an entity or incremental theory effective? Participants' ratings of the articles revealed that both the entity and incremental versions were judged to be extremely easy to understand (M difficulties = 1.8 and 1.7, respectively), largely credible (M's = 5.5 and 5.7, respectively), and largely persuasive (M's = 5.6 and 6.2, respectively). The difference in persuasiveness between the two versions was near significant ($F(1, 149) = 3.6$, $p = .06$). Because this could reflect differences in the effectiveness of the two manipulations, persuasiveness ratings were included as a covariate in all primary analyses, and all means reported have been adjusted. Most importantly, however, analyses of participants' responses to the implicit theory questionnaire at the end of the experiment revealed a highly reliable main effect of the essay manipulation ($F(1, 149) = 53.5$, $p < .001$). Using the same scoring procedure described in Studies 1 and 2, on average, those who read the entity article agreed with the view that personality is fixed and stable, whereas, on average, those who read the incremental article agreed with the view that personality is dynamic and malleable. This confirms that the appropriate theories were successfully induced. There were no simple or higher-order effects of the inference task manipulations on any of these measures (F's < 2.1, p's > .15).

Categorization of the target's actions

Did participants in this study differ in their perceptions of the woman's actions as "anxious"? Participants' categorization of how anxiously the woman appeared to be acting revealed that, as in the other studies, people categorized her behaviors as moderately anxious ($M = 6.2$). Neither the implicit theory induction nor the social inference task manipulations had any simple or higher-order effects on these identifications, (all F's < 2.3, p's > .13), confirming that participants did not show encoding differences. Furthermore, including these categorizations as covariates in all of the analyses reported below did not alter the significance of any of the results. As intended, any variations in judgment can again be attributed to differences at later stages of inference.

Judgments of the target's dispositional anxiety and the anxiety provoked by the situation

Were the results of Studies 1 and 2 replicated using an implicit theory induction? To test this, analyses were first performed within the dispositional versus situational impression conditions separately. Recall that all partici-

pants in this study formed their inferences under cognitive load. Our predictions were therefore that, when forming dispositional impressions, the incremental theory induction should lead participants to consider situational influences but the entity theory induction should not (analogous to Study 1). As shown in Fig. 4A, an index formed from participants' trait ratings of the woman ($\alpha = .61$), supported these predictions. Incremental inductions led people to judge the woman as less dispositionally anxious when she was discussing something stressful vs. mundane ($F(1, 68) = 10.9$, $p < .01$), whereas entity inductions did not ($F(1, 68) = .11$, $p = .83$). A 2 (entity vs. incremental induction) × 2 (stressful vs. mundane interview topic) ANOVA confirmed this pattern of results and showed a main effect of the interview topic ($F(1, 68) = 5.2$, $p = .03$) that was qualified by the expected induction × topic interaction ($F(1, 68) = 3.78$, $p = .05$). This replicates Study 1.

In contrast, when forming situational impressions, our predictions were that the entity theory induction should lead participants to consider dispositional influences but the incremental theory induction should not (analogous to Study 2). As shown in Fig. 4B, participants' ratings of how anxiety-provoking the topic of interview was supported these predictions. Entity inductions led people to judge the interview topic as less anxiety-provoking when the woman was believed to be dispositionally anxious vs. calm ($F(1, 77) = 4.43$, $p < .05$), whereas incremental inductions did not ($F(1, 77) = .23$, $p = .63$). A 2 (entity vs. incremental
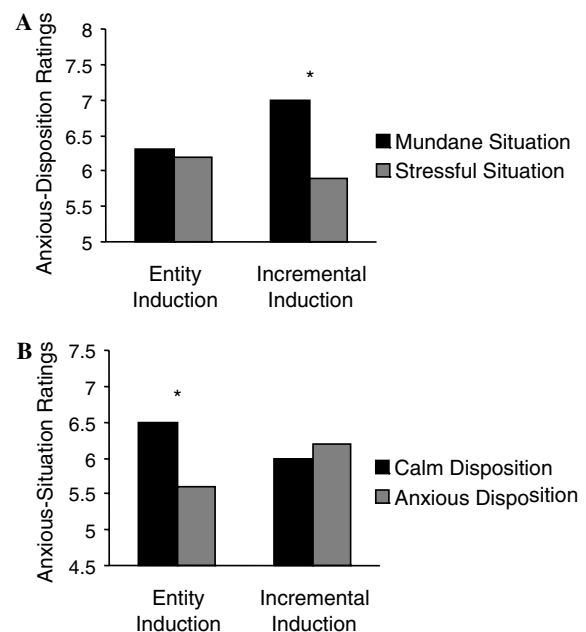

Fig. 4. (A) Mean ratings of a target's anxious disposition as a function of the target's situation and participants' induced implicit theories. Higher ratings indicate greater perceived anxiety. (B) Mean ratings of a target's anxiety-provoking situation as a function of the target's dispositions and participants' induced implicit theories. Higher ratings indicate perceptions of a more anxiety-provoking situation. All perceivers made their judgments while under cognitive load. Asterisks denote a significant ($p < .05$) planned comparison between ratings in the two conditions indicated.

induction) × 2 (anxious vs. calm disposition) ANOVA confirmed this pattern of results and showed only the expected induction × disposition interaction ($F(1, 77) = 3.5$, $p = .06$). This replicates Study 2.

Was the overall pattern of results different between the dispositional and situational inference goal conditions? To test this, participants' dispositional or situational impression ratings were transformed to z-scores and submitted to an omnibus 2 (inference goal: dispositional vs. situational) × 2 (induction: entity vs. incremental) × 2 (alternate interpretations: impression-discounting vs. impression-augmenting) ANOVA. In addition to a simple main effect of discounting versus augmenting interpretations ($F(1,147) = 5.84$, $p < .05$), the critical induction × goal × interpretation interaction emerged ($F(1, 147) = 6.33$, $p = .01$), indicating that the theory induction × interpretation interactions did indeed differ between the two inference goal conditions (compare Figs. 4A and B). This therefore provides direct evidence that perceivers' inference goals also played a significant role in the effects of their implicit theories on their corrections for alternate interpretations of behavior.

Discussion

Overall, Study 3 provides particularly strong support for the effects of distinct implicit theories of social behavior on social inference and replicates the key findings of Studies 1 and 2. Even though their cognitive resources were depleted, those induced with an incremental theory considered situational influences when forming dispositional impressions, whereas those induced with an entity theory did not. Thus, as in Study 1, incremental theorists formed weaker dispositional judgments of behavior than entity theorists when situational influences were consistent with observed behavior, but significantly stronger dispositional judgments when situational influences conflicted with this behavior ($F(1, 68) = 3.9$, $p = .05$, see Fig. 4A). However, when forming situational impressions, those induced with an entity theory considered dispositional influences, even though their cognitive resources were once again depleted, whereas those induced with an incremental theory did not. Thus, as in Study 2, entity theorists formed weaker situational judgments of behavior than incremental theorists when dispositional influences were consistent with observed behavior, but marginally stronger situational judgments when dispositional influences conflicted with this behavior ($F(1, 77) = 2.19$, $p = .14$, see Fig 4B).

In addition, Study 3 extends the two previous studies in several ways. First, the replication of previous findings when people's entity or incremental theories were experimentally induced firmly establishes the causal role of these theories in such findings. Second, this replication also suggests that implicit theory effects on social inference do not necessarily depend on perceivers establishing a long history of practice at certain types of inferential correction (cf., Knowles et al., 2001). Although chronic entity and incremental theorists are likely to differ in their accumulated practice with integrating trait versus situational information, more immediate differences in the salience or accessibility of certain behavioral interpretations may play at least some role as well (see Trope & Gaunt, 2000).

General discussion

In this article, we have proposed that perceivers' implicit theories about the social world can have a profound influence upon the social inference process. In three studies, we measured or manipulated theories concerning the stability or malleability of personality and found that these theories enhanced the processing of certain types of information during impression formation. That is, when judging someone else' actions, an entity or incremental theory of personality each led to more efficient consideration of alternate characterizations of these actions, but only when the characterizations were especially meaningful in light of that particular theory. Study 1 demonstrated that incremental theorists more efficiently integrate situational influences of behavior into their dispositional impressions. This is consistent with their general focus on understanding the dynamic states and circumstances influencing people's psychological processes (Levy et al., 1999; Molden & Dweck, in press). Study 2 demonstrated that entity theorists show a similar efficiency in integrating dispositional influences on behavior into their situational impressions. This is consistent with their general focus on assessing people's unchanging psychological properties (Levy et al., 1999; Molden & Dweck, in press). Study 3 replicated the results of both these studies when individuals were temporarily induced to hold an entity or incremental theory and established the causal role of these theories in producing such inferential efficiency.

These studies are not the first to demonstrate that perceivers' implicit theories can create processing differences during social inference (e.g., Knowles et al., 2001). However, they extend previous work in several important ways. First, whereas past work has exclusively focused on implicit theory differences in people's consideration of situational influences while forming dispositional impressions (see Choi et al., 1999), here we have also generalized implicit theory effects to people's considerations of dispositional influences while forming situational impressions (Krull & Erickson, 1995b; Lee & Hallahan, 2001; Quattrone, 1982). Second, whereas previous studies have mostly concentrated on differences between the implicit theories of people from different cultural backgrounds (e.g., Choi et al., 1999; Knowles et al., 2001), here we demonstrate the importance of examining such theories within the *same* culture as well (e.g., Chiu et al., 1997; see Molden & Dweck, in press). Finally, whereas these other cultural investigations have largely inferred implicit theory differences from broad cultural systems of thought, here we have measured and manipulated such theories directly, allowing us to establish the causal link between perceivers' beliefs and their inference processes.

Possible mechanisms for implicit theory effects on social inference

Given this causal link between perceivers' implicit theories and their processing of social information, the next question that inevitably arises is how does this occur? One possible mechanism that we described earlier was Knowles et al.'s (2001) proposal that perceivers become extremely well-practiced, and thus highly efficient, at considering theory-relevant interpretations of behavior (see also Smith & Lerner, 1986; Wegener & Petty, 1998). Although this is entirely consistent with Studies 1 and 2, where perceivers' chronic theories were measured, the results of Study 3, where perceivers' implicit theories were temporarily induced, suggests that extensive practice is not necessary for facilitated processing and that other mechanisms must be involved as well.

What might these other mechanisms be? As noted earlier, another possibility is Trope and Gaunt's (2000) proposal that implicit theories can increase the momentary salience and accessibility of information perceived to be especially meaningful. This, in turn, would allow such information to be more easily integrated into one's inferences even when cognitive resources are depleted. Given that temporarily inducing a particular implicit theory could be expected to alter the salience and accessibility of theory-relevant information, this mechanism is consistent with the results of all three studies and could indeed play a role in the effects described here.

Additional mechanisms for these effects, however, are also suggested by the larger literature on automatic processing during social inference. Hassin, Bargh, and Uleman (2002) presented several studies indicating that perceivers can make causal inferences about others' behaviors spontaneously, without instruction, and even without awareness. Moreover, Chartrand and Bargh (1996) have demonstrated that general goals to form impressions of others can also be activated outside of consciousness. Finally, Brandstätter, Lengfelder, and Gollwitzer (2001) have shown that prior intentions to implement specific actions in specific situations can allow those actions to be performed efficiently and without the need for cognitive resources. If activating a chronic or temporary implicit theory of social behavior (a) leads perceivers to make particular, theory-relevant, spontaneous causal inferences, (b) unconsciously primes theory-relevant impression formation goals, or (c) creates an intention to implement a theory-driven search for particular interpretations when viewing others' actions, this too could explain the present effortless integration effects.

For example, even when given a situational inference goal, entity theorists could have been making spontaneous trait inferences based on the woman's dispositions (see Todorov & Uleman, 2002), unconsciously formed a simultaneous dispositional inference goal, or developed a specific intention to assess dispositional alternatives. In any case this would have facilitated their ability to integrate trait information into their final situational impressions despite limited cognitive resources. Analogous situational inferences, goals, and intentions could also explain how incremental theorists integrate situational information into their final dispositional impressions, again, despite limited cognitive resources.

Future research should thus more closely examine the possible role of each of these mechanisms (i.e., practice-based efficiency, enhanced salience, or the activation of spontaneous goals, inferences, and implementation intentions) in implicit theory effects on social inference. However, regardless of whatever mechanisms are functioning it is important to note that the theory-based patterns of processing demonstrated here further extend conventional models of social inference (Gilbert et al., 1988; Krull, 1993; Krull & Erickson, 1995a; Trope & Alfieri, 1997) and add to the growing consensus that perceivers show substantial flexibility in their social information processing (see Chun et al., 2003; Knowles et al., 2001; Trope & Gaunt, 2000; Wegener & Petty, 1998).

Implicit theories and dispositionism versus situationism in social inference

What consequences did the efficient integrations shown by entity and incremental theorists have for their social inferences? Unlike previous studies where the trait focus shown by entity theorists has uniformly led to stronger dispositional impressions and the process focus shown by incremental theorists has uniformly led to stronger situational impressions (see Levy et al., 1999; Molden & Dweck, in press), our findings indicate that, at times, entity theorists may also form stronger situational impressions and incremental theorists may also form stronger dispositional impressions. Although these latter effects were not always particularly strong in each individual study, a meta-analysis combining the results across all three studies (see Rosenthal, 1991) reveals that they are reliable overall (Studies 2 and 3, combined $Z = 2.03$, $p < .05$ for the effect of entity theorists forming stronger situational impressions under cognitive load; Studies 1 and 3, combined $Z = 2.92$, $p < .01$ for the effect of incremental theorists forming stronger dispositional impressions under cognitive load).

Do these findings conflict with past work? Although it may appear this way at first, the current results are entirely consistent with the larger implications of focusing on traits versus psychological processes. As Kelley (1973) noted long ago, greater sensitivity to situational influences on behavior should only weaken dispositional impressions when the available situational information *discounts* alternate trait interpretations (e.g., when someone's anxiety-provoking situation could have produced their anxious behavior just as well as their anxious dispositions). However, when situational information *augments* alternate trait interpretations (i.e., when someone's rather mundane situation could not have produced their anxious behavior and actually must have been overcome by their anxious dispositions), then greater sensitivity to this information should strengthen

dispositional impressions. Similar logic suggests that greater sensitivity to trait influences on behavior should only weaken situational impressions when trait information discounts alternate situational interpretations, and should strengthen these impressions when it augments alternate situational interpretations. This is the exact pattern of results that was found here and highlights the importance of carefully considering the larger inferential implications of trait or situational information when predicting the consequences of entity vs. incremental theories of personality on social judgment.

Another finding that may initially appear inconsistent with past research is that entity and incremental theorists did not differ in their judgments when possessed of their full cognitive resources. How is this to be reconciled with earlier findings? In previous work, participants have always simply been given the general goal of "forming an impression" of a person or group. Moreover, only limited behavioral information has been provided and the possibility of separate trait versus situational interpretations has never been explicitly mentioned (see e.g., Chiu et al., 1997; Plaks et al., 2001). Under these conditions, entity and incremental theorists may then have spontaneously chosen to pursue trait versus situational interpretations of the targets' behaviors, respectively. Since there were no obvious alternatives available, they presumably had no reason to look beyond their preferred interpretations and formed divergent impressions.

In the present studies, however, participants were given the specific goal of either forming a dispositional or situational impression. Our findings suggest that this led both entity and incremental theorists to form initial interpretations in line with these inference goals. Furthermore, in all cases compelling alternatives existed to any initial interpretations (even if these alternatives did not have any *special* meaning). Therefore, when perceivers had their full cognitive resources, and presumably did not need to rely as much on their implicit theories to guide their judgments (Chiu et al., 2000; Morris et al., 2001), it is not surprising that everyone integrated these alternatives into their final impressions. However, when perceivers' cognitive resources were depleted, and they presumably relied more on their implicit theories, this integration only occurred when the alternatives were meaningful in terms of those theories.

Cultural versus individual meaning systems

In this article, we have extended previous work examining how culture-based implicit theories affect social inference processes (Choi et al., 1999) and investigated how theory differences between individuals within the same culture can have similar effects. But how are implicit theories at cultural versus individual levels related? The effects on social inference of the trait focus shown by entity theorists appear to mirror the typical behavior of Western perceivers as a whole, whereas the effects of the process focus shown by incremental theorists appear to mirror the typical

behavior of Eastern perceivers as a whole (see Knowles et al., 2001). Furthermore, recent work has demonstrated that, on average, Korean perceivers hold stronger beliefs about the malleability of personality and American perceivers hold stronger beliefs about the stability of personality (Norenzayan, Choi, & Nisbett, 2003).

However, as the present findings clearly demonstrate, it would be a mistake to assume that most Americans think and act like entity theorists. In all of our American samples, not only did participants holding entity and incremental theories appear in virtually identical proportions, but the incremental theorists within these samples also displayed distinctly "Eastern" inference processes. Similarly, evidence exists suggesting that it would also be a mistake to assume that most East-Asians think and act like incremental theorists. Chiu et al. (1997, Study 4) found that many Chinese participants in their sample endorsed an entity theory and that this theory influenced perceivers' judgments of behavior in the same way as within American culture.

Thus, it appears that, although they have similar effects on the inference process, entity or incremental theories of personality and generally shared Western or Eastern cultural theories of social behavior may be largely distinct. For example, beyond beliefs about the stability or malleability of personality, Chiu et al. (2000; Morris et al. 2001) have suggested that Westerners have stronger beliefs in the notion of individual agency whereas Easterners have stronger beliefs in the notion of group agency. Moreover, Eastern and Western perceivers may have different culturally-shared notions of what aspects of the social environment (i.e., individuals, social groups, societal institutions, society as a whole, etc.) are fixed and what aspects are malleable. Thus, future research should examine more closely the intersection of individual and cultural implicit theories. It could also be fruitful to examine the extent to which perceivers sometimes move between using implicit theories that originate at individual versus cultural levels of identification, as well as the factors that determine when these different types of theories are activated (cf. Hong, Morris, Chiu, & Benet-Martinez, 2000).

Concluding remarks

In this article, we have emulated many prominent social psychologists that preceded us (e.g. Heider, 1958; Kelley, 1973) and examined how the meaning perceivers create from their implicit theories about the social environment guides their social inferences. What we have added to these previous perspectives is a consideration of how (a) in addition to sharing certain universal theories of the social world, people may also fundamentally differ in their theories, and (b) the distinct meaning that these different theories give to social behavior have important effects on information processing during social inference. We therefore see the challenge of future research as elaborating further upon perceivers' basic sources of social meaning and specifying the impact of this meaning on the inference process.

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