
Person Theories: Their Temporal Stability and Relation to Intertrait Inferences

Connie S. K. Poon

University of Hong Kong

Derek J. Koehler

University of Waterloo

This article tests whether individual differences in inferring one trait from another (intertrait inferences) can be linked to lay beliefs about the malleability of personality (person theories). It finds that holding the belief that personality is malleable (incremental theory) rather than fixed (entity theory) at the time of inferences is associated with less extreme inferences involving semantically related (but not unrelated) traits. Although person theories have been assumed to be stable over time, existing short-term test–retest coefficients do not capture their instability over a longer period. These results can illuminate interrater discrepancies in assessments of personality pathology and job performance, enrich understanding of such phenomena as stereotyping and impression formation, refine the interpretation of past research involving person theories, and inform research planning.

Keywords: *person theories; temporal stability; intertrait inferences; impression; personality*

Impressions of people are often conveyed in trait terms (e.g., John is a *reliable* person. Tom interacts with others in a *friendly* way). People may infer an individual's standing on a particular trait based on information about his or her standing on another trait (*intertrait inferences*). A manager who wants to hire a *conscientious* and *loyal* subordinate, for example, may infer whether a job candidate possesses these traits, based on a referee's report that the candidate is *hard-working* and *honest*. Besides personnel selection, intertrait inferences are relevant in other areas that hinge on evaluation of traits, such as performance appraisals (Krzystofiak, Cardy, & Newman, 1988) and assessments of personality disorders (Wiggins & Pincus, 1989).

Intertrait inferences may derive from laypeople's perceptions or beliefs about relations among traits, usually

referred to as *implicit personality theories* (Schneider, 1973). Perceived trait relations lie at the heart of many social phenomena. One's global impression of an individual's personality, for example, depends on how traits are organized within the individual (Asch, 1946). Also, stereotypes of social groups may be conceptualized as perceived associations among group memberships and traits (e.g., Asians are *obedient*, *quiet*, and *shy*; Crocker, 1981). Moreover, extreme evaluative judgments of people are engendered by the perception of highly correlated traits (Linville, 1982).

Researchers have identified some factors affecting perceived trait relations. For example, people often use semantic similarity among traits to estimate their empirical associations, such that semantically similar traits (e.g., *independent* and *assertive*) are expected to co-occur with one another (Shweder, 1982). Also, people perceive greater covariation among traits of unfamiliar outgroup members than among traits of familiar ingroup members (Linville, Fischer, & Yoon, 1996). Substantial individual differences in intertrait inferences were noted long ago (Schneider, 1973), but the determinants of these individual differences have not been identified.

Our main goal is to propose and test the idea that individual differences in intertrait inferences can be traced to lay beliefs about the malleability of personality. Beliefs about the malleability of personality are thought to play a key role in social judgments and reactions (Dweck, Chiu, & Hong, 1995a; Dweck, Hong, &

Authors' Note: Correspondence concerning this article should be addressed to Connie Poon, Department of Psychology, University of Hong Kong, Pokfulam Road, Hong Kong; e-mail: cskpoon@hkucc.hku.hk.

PSPB, Vol. 34 No. 7, July 2008 965-977

DOI: 10.1177/0146167208316690

© 2008 by the Society for Personality and Social Psychology, Inc.

Chiu, 1993). People who believe that personality is fixed (*entity theory*) are referred to as *entity theorists*; those who believe that personality is malleable (*incremental theory*) are referred to as *incremental theorists*. The terms *person theories* and *implicit person theories* are used interchangeably in the literature to refer to general beliefs about the malleability of personality. We refer to such beliefs as *person theories* to clearly distinguish them from *implicit personality theories* (IPT), which refer to beliefs about trait relations (Schneider, 1973).

Historically, research under the rubric of person theories (e.g., Chiu, Hong, & Dweck, 1997; Hong, Chiu, Dweck, & Sacks, 1997; Kammrath & Dweck, 2006) has proceeded independently from research on IPT (e.g., Schneider, 1973; Schneider & Blankmeyer, 1983). By examining the relation between person theories and intertrait inferences, this work may bridge these disparate areas of research.

How Are Person Theories Linked to Intertrait Inferences?

Our account of intertrait inferences draws on a model of intuitive predictions developed by Griffin and Tversky (1992). These researchers show that people first base their predictions (e.g., a student's graduate school performance) on the strength of impressions conveyed by the available evidence (e.g., warmth of a reference letter), such that their predictions are as extreme as the impressions on which they are based (cf. Kahneman & Tversky, 1973). The extremity of such predictions may then be attenuated (typically insufficiently) if the evidence is perceived to be unreliable (e.g., a highly optimistic prediction of a student's future performance based on a glowing letter will be attenuated if the letter writer's credibility is dubious). When estimating the empirical relation between two traits, we suggest, people first focus on their semantic similarity, which conveys an impression about the strength of their empirical association: Highly similar traits are initially perceived to be highly positively correlated, moderately similar traits to be moderately positively correlated, and semantically unrelated traits to be uncorrelated (e.g., Koehler, Brenner, Liberman, & Tversky, 1996).

The perceived reliability of both the *predictor trait* (trait on which inference is based) and the *predicted trait* (trait about which inference is to be made), we suggest, will determine how much people attenuate the initially assumed empirical relation between semantically similar traits. Our focus is not on whether people's adjustments are sufficient (or whether their inferences are accurate) but rather on the determinants of the magnitude of adjustment. For semantically similar traits, we suggest, the less reliable trait information is perceived to

be (as gauged, for instance, by person theories), the greater is the magnitude of adjustment (though possibly still insufficient) for unreliability and the less extreme is the resultant perceived relations or intertrait inferences.

The perceived reliability of trait information diminishes to the extent that behaviors relevant to a trait are assumed to be inconsistent across situations and time, as can be reflected in reduced confidence in various types of inferences within the boundary of a single trait (*within-trait inferences*). Past research has shown that relative to entity theorists, incremental theorists assume greater variability in trait-relevant behaviors across situations and greater temporal instability in trait characteristics (Chiu et al., 1997; Poon & Koehler, 2006). Compared to entity theorists, incremental theorists are less certain that (a) if Person A *behaved in a more friendly way* than Person B in a particular situation, Person A will also *behave in a more friendly way* than Person B in another situation; (b) if Person A *behaved in a more friendly way* than Person B in a particular situation, Person A is *more friendly* than Person B *on average*; (c) if Person A is *more friendly* than Person B *on average*, Person A will *behave in a more friendly way* than Person B in a particular situation; and (d) if Person A is now *more friendly* than Person B *on average*, Person A will also be *more friendly* than Person B *on average* 5 years from now. Together, relative to entity theorists, incremental theorists appear to perceive trait information as less reliable.

Although the role of person theories in within-trait inferences is well established, there have not been any investigations on their influence on intertrait inferences. The link between person theories and intertrait inferences is not readily apparent and should not simply be assumed. First, person theories and intertrait inferences bear on different aspects of personality: Person theories pertain to the malleability of personality, whereas intertrait inferences concern the cohesiveness of personality traits. Second, intertrait and within-trait inferences differ qualitatively. In going beyond the boundary of a single trait, intertrait inferences span a broader scope and likely entail more wide-ranging implications for social judgments and reactions.

The following hypotheses are derived from our account of intertrait inferences. We suggest that people tend to conclude that semantically unrelated traits are uncorrelated irrespective of how reliable they perceive trait information to be. Thus, we hypothesize that person theories do not influence inferences between semantically unrelated traits.

For semantically similar traits, people initially assume that their empirical relations closely correspond to their degree of semantic similarity, but they then attenuate such assumed relations to the extent that the reliability of trait information is deemed imperfect. Because the perceived reliability of traits depends on

person theories, we hypothesize that person theories will play a role in inferences between semantically similar traits: Incremental theorists, in perceiving that trait information is less reliable, will make less extreme inter-trait inferences than entity theorists, whether the trait information is presented in the form of simple trait characteristics or in the form of trait-relevant behaviors. These hypotheses are tested in this research.

How Stable Are Person Theories Over Time?

Our secondary goal is to assess the stability of person theories over time. Dweck et al. (1995a) suggest that person theories are “relatively stable but malleable” (p. 279). Malleability and stability are related but distinct concepts. Fixed attributes are by definition stable. Malleable attributes are not necessarily unstable: They will become unstable only if conditions for change occur, but they will remain stable over time if conditions necessary for change are not met (Ross, 1989).

Research has indeed shown that person theories are malleable: People’s theories can be manipulated by having them read a fabricated scientific article containing persuasive arguments and research evidence supporting either an entity or incremental theory (e.g., Chiu et al., 1997; Levy, Stroessner, & Dweck, 1998; Molden, Plaks, & Dweck, 2006; Plaks, Stroessner, Dweck, & Sherman, 2001). The provision of new and allegedly conclusive scientific knowledge supporting a designated person theory, while effective, is relatively unusual in daily life. The effectiveness of this manipulation, therefore, does not necessarily indicate that person theories show naturally occurring instability.

In fact, the implicit assumption in the literature on person theories seems to be that they are stable in the absence of experimental interventions. Indeed, the test–retest coefficient of the three-item Person Theory Measure, designed to assess general beliefs about the malleability of personality, is .82 over 2 weeks (Dweck et al., 1995a), and that of the eight-item Person Theory Measure is .82 over 1 week and .71 over 4 weeks (Levy et al., 1998). Longer-term assessments have not been conducted, however, leading some researchers to question the long-term stability of person theories (e.g., Schunk, 1995; Sorrentino, 1995). The relevant data are typically not available from studies that link person theories with other variables of interest because person theories tend to be measured on a one-shot basis, either concurrently with other variables in a single session or questionnaire package (e.g., Chiu et al., 1997; Gervey, Chiu, Hong, & Dweck, 1999; Levy et al., 1998; McConnell, 2001; Plaks et al., 2001; Ruvolo & Rotondo, 1998) or 1 or 2 weeks before the measurement of other variables (e.g., Hong et al., 1997; Tong &

Chiu, 2002). In short, the stability of person theories “tends to be assumed or implied rather than formally tested” (Levy, Chiu, & Hong, 2006, p. 9).

Given their presumed stability, person theories are often measured as an individual-differences variable on a one-shot basis; such measurements are interpreted as reflecting chronically accessible theories (e.g., Levy, Plaks, Hong, Chiu, & Dweck, 2001). At any time, however, the relative accessibility of entity and incremental person theories could be a combined outcome of (a) the chronic accessibility of these theories and (b) their temporary accessibility due to short-term influences from cues or experiences (cf. Higgins, 1996).

Some chronicity in the relative accessibility of an individual’s entity and incremental theories can reasonably be expected. An individual’s dominant theories about the social world may well be preserved and kept active through various cognitive mechanisms (e.g., biased attribution, recall, and assimilation), even in light of counterevidence (cf. Anderson & Lindsay, 1998). Indeed, Plaks, Grant, and Dweck (2005) found that individuals differentially process information violating (vs. supporting) their dominant person theories. Such differential processing is interpreted by these researchers as a means by which individuals protect their dominant theories, although its actual impact on theory stability remains to be empirically evaluated.

These cognitive mechanisms notwithstanding, the relative accessibility of entity and incremental theories of an individual at any point in time may also include a temporary component. In fact, some lay beliefs about the social world, such as stereotypes (Garcia-Marques, Santos, & Mackie, 2006) and relational schemas (Baldwin & Fehr, 1995), are found to possess considerable naturally occurring intraindividual instability through time. Their temporal instability is often thought to stem from idiosyncratic variations in knowledge accessibility triggered by everyday contextual cues or experiences (e.g., Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996). We suspect that the relative accessibility of entity and incremental theories will likewise be readily affected by relevant cues and experiences that naturally unfold in everyday life.

Recently, Poon and Koehler (2006) found that having participants explain why the personality of a person remained unchanged (or changed a lot) throughout his or her life was sufficient to shift their beliefs about the malleability of personality, as was having them illustrate the meaning of proverbs consistent with an entity (or incremental) theory through everyday examples. One can imagine real-life occurrences that mimic these tasks, such as making sense of changes (or lack thereof) in someone’s personality and interpreting statements about the malleability of personality in communicative

contexts. These occurrences may produce idiosyncratic changes in the relative accessibility of entity versus incremental theory, which manifest as temporal instability in person theories.

In this research, we assess the still unknown relatively long-term stability of person theories in the absence of any experimental manipulations designed to influence people's theories. This is a worthwhile goal for at least two reasons. First, our interpretation of past research that links person theories to a myriad of other variables (for a review, see Levy et al., 2006) can be refined by knowing the extent to which 1-point measurement of person theories indeed reflect stable individual differences. Second, a better specification of the temporal stability of person theories can inform research planning. Sometimes, a researcher may want to test whether person theories are related to a particular variable by measuring the two variables at different times. How far apart such measurements can be spaced depends partly on the temporal stability of person theories, which sets an upper limit on their long-term predictive validity. If the stability of person theories decreases over time, the chances of detecting a relation will diminish as the measurement interval lengthens; concurrent (or proximal) measurements will be needed to increase the chances of detecting a relation.

STUDY 1

In Study 1, we tested the hypothesized relations between person theories and intertrait inferences. Person theories were assessed using the three-item Person Theory Measure 2 to 10 weeks before participants made intertrait inferences (Time 1) and on the day they made inferences (Time 2). This measure has been widely used to assess general beliefs about the malleability of personality (e.g., Chiu et al., 1997; Hong et al., 1997; Poon & Koehler, 2006). Considering that the test-retest coefficient (.82) available for this measure was obtained using only a 2-week interval (Dweck et al., 1995a), the 2- to 10-week interval of this design allowed us to explore the relatively long-term stability of person theories and possible changes in the predictive relation between person theories and intertrait inferences over time.

Method

Time 1: Person Theories

At the beginning of an academic term, undergraduates completed the three-item Person Theory Measure embedded in a questionnaire booklet along with other unrelated measures (Time 1). Its items include (a) "The

kind of person someone is, is something very basic about them, and it can't be changed very much"; (b) "People can do things differently, but the important parts of who they are can't really be changed"; and (c) "Everyone is a certain kind of person, and there is not much that can be done to really change that" (Dweck et al., 1995a, p. 269). Respondents rated how much they agreed with each item on a 6-point scale (1 = *strongly agree*, 6 = *strongly disagree*). Ratings on these items were averaged to compute a *person theory score*, with a lower score indicating stronger general belief that personality is fixed. Based on cutoffs established by Dweck et al. (1995a), only respondents with a score of 3.0 or below (entity theorists) and those with a score of 4.0 or above (incremental theorists) were recruited for this study ($n = 204$).

Time 2: Intertrait Inferences

Any time from 2 to 10 weeks after their person theories were measured, participants attended a session on social judgments in exchange for experimental credits (Time 2). They completed a questionnaire on intertrait inferences. Each item followed a format used in Kunda and Nisbett's (1986) research on covariation judgments: Participants were told that Person A is higher than Person B regarding their standing on a designated trait, and they were asked to predict how likely it is that the same relative standing holds for another trait. Participants were randomly assigned to the *similar trait condition*, where the inference items involved 20 pairs of semantically similar traits (e.g., *likable* and *warm*), or the *unrelated trait condition*, where the inference items involved 20 pairs of semantically unrelated traits (e.g., *secretive* and *sympathetic*).¹ As Table 1 illustrates, one member of each trait pair was randomly assigned as the predictor trait, and the other the predicted trait; each trait was specified as either a trait characteristic or a trait-relevant behavior. Each participant made four types of intertrait inferences for each of the 20 trait pairs in his or her condition: (a) predicting a trait-relevant behavior from a trait characteristic, (b) inferring a trait characteristic from a trait-relevant behavior, (c) predicting a trait-relevant behavior from a trait-relevant behavior, and (d) predicting a trait characteristic from a trait characteristic. The order in which these inference types appeared was counterbalanced between participants in a Latin square design; the trait pairs appeared in the same random order within each inference type.

For each item, participants were asked to indicate their estimates on a scale ranging from 0% to 100%. The scale's midpoint (50%) indicates a belief that the two persons' relative standing on the predicted trait cannot be predicted with any certainty using information

TABLE 1: An Example Item for Each Type of Intertrait Inference (Study 1)

<i>Inference Type</i>	<i>Example</i>
Predicting a trait-relevant behavior from a trait characteristic	Person A is more strongly characterized by the trait <i>likable</i> than Person B. What is the probability that you would find Person A to behave in a more <i>warm</i> way than Person B in a particular situation?
Inferring a trait characteristic from a trait-relevant behavior	Person A behaved in a more <i>likable</i> way than Person B in a particular situation. What is the probability that Person A is more strongly characterized by the trait <i>warm</i> than Person B?
Predicting a trait-relevant behavior from a trait-relevant behavior	Person A behaved in a more <i>likable</i> way than Person B in a particular situation. What is the probability that in a completely different situation, you would find Person A to behave in a more <i>warm</i> way than Person B?
Predicting a trait characteristic from a trait characteristic	Person A is more strongly characterized by the trait <i>likable</i> than Person B. What is the probability that Person A is more strongly characterized by the trait <i>warm</i> than Person B?

TABLE 2: Summary of Regression Analyses for Variables Predicting Intertrait Inferences at Time 2 (Study 1)

<i>Source</i>	df	F	
		<i>Time 2 Person Theory</i>	<i>Time 1 Person Theory</i>
Between subjects			
Theory	1	6.93**	0.94
Similarity	1	270.11***	252.62***
Theory × Similarity	1	7.24**	0.66
<i>S</i>	199	(211.58)	(225.61)
Within subjects			
Inference	3	13.43***	13.37***
Inference × Theory	3	1.77	1.26
Inference × Similarity	3	6.77***	6.40***
Inference × <i>S</i>	600	(22.35)	(22.45)

NOTE: Variables were cumulatively entered in the order listed. Similarity was treated as a categorical variable with two levels (similar and unrelated). Theory was treated as a continuous variable, indexed in turn by the Time 2 and Time 1 person theory scores. All subject-related variables were criterion-scaled variables serving as error terms. Values in parentheses represent mean square errors. *S* = subjects within groups.
p* < .01. *p* < .001.

about their relative standing on the predictor trait. Increasing values above the midpoint indicate increasing certainty that their relative standing on the predicted trait follows that on the predictor trait. Decreasing values below the midpoint indicate increasing certainty that their relative standing on the predicted trait *reverses* from that on the predictor trait. Participants were provided with detailed instructions on how to use the scale.

Time 2: Person Theories

Next, participants completed the three-item Person Theory Measure, the same measure they had completed 2 to 10 weeks earlier.

Results and Discussion

Between-Persons Variations in Person Theories and Intertrait Inferences (Same-Day Measurement)

Aggregated inferences across trait pairs. When measured on the same day, were person theories and inter-trait inferences related? We averaged each participant’s probability judgments over all 20 items within each of the four inference types in his or her similarity condition (similar or unrelated), thus yielding four aggregated judgments per participant. These judgments served as the dependent variable in a multiple regression, with person theories, similarity condition, and their interaction as between-participants predictors, and inference type, its interaction with person theories, and its interaction with similarity condition as within-participant predictors (see Table 2). In this analysis, person theories were indexed by person theory scores obtained at Time 2, the day participants made intertrait inferences.²

In the regression analysis, criterion scaling was used to identify and control for variance due to individual differences (as in mixed ANOVA). Briefly, a subject vector comprising the unstandardized predicted score or mean on the criterion (i.e., the dependent variable) for each subject was created in the computation process. Creation of this vector permits separation of variance due to individual differences from unexplained error

and hence produces more precise tests (see Pedhazur, 1982, chap. 14, for details of how to apply criterion scaling in regressions involving mixed designs).

As Table 2 shows, intertrait inferences were significantly influenced by semantic similarity between traits: Judgments involving the semantically similar traits ($M = 67.0\%$) fell clearly above those involving the semantically unrelated traits ($M = 50.5\%$), which neared the midpoint of the probability scale. Thus, although participants clearly inferred that people's standing on the predicted traits follows that on the semantically similar predictor traits, they did not make inferences about the semantically unrelated traits with any confidence.

This significant main effect of similarity was qualified by a significant Theory \times Similarity interaction (see Table 2). To elucidate this interaction, within each similarity condition, participants' judgments (collapsed across inference types) were regressed on their Time 2 person theory scores. Figure 1 (top panel) depicts the simple slopes. As predicted, whereas judgments regarding the semantically unrelated traits did not depend on Time 2 person theories ($b = -0.5$), $t(103) = -1.07$, ns , judgments regarding the semantically similar traits depended on Time 2 person theories ($b = -2.7$), $t(97) = -4.27$, $p < .001$. Specifically, participants holding an incremental theory at Time 2 (indicated by higher person theory scores) made less extreme inferences between semantically similar traits than did those holding an entity theory (indicated by lower person theory scores).³ The effect of person theories could be generalized across inference types (i.e., whether the traits are specified as trait characteristics or trait-relevant behaviors), as person theories did not significantly interact with inference type to influence intertrait inferences (see Table 2).⁴

Theory-related effects aside, we found a significant main effect of inference type, qualified by a significant Inference Type \times Similarity interaction (see Table 2): Inference type influenced judgments involving the semantically similar traits, $F(3, 294) = 17.70$, $MSE = 24.71$, $p < .001$, but not those involving the semantically unrelated traits, $F(3, 312) = 0.79$, $MSE = 20.08$, ns . Among the similar traits, inferences between trait-relevant behaviors were less extreme than inferences between trait characteristics ($M_s = 64.9\%$ vs. 68.3%), $t(98) = -4.22$, $p < .001$. As trait characterization of a person implies more than one instance of trait-relevant behavior, a trait-relevant behavior may be perceived to be less reliable information relative to a trait characteristic. Viewed in this light, this finding fits with the idea that perceived empirical relations among semantically similar traits tend to be attenuated by the perceived unreliability of trait information involved.⁵ Beyond this consideration, participants' tendency to see trait characteristics as causes and trait-relevant behaviors as consequences might have

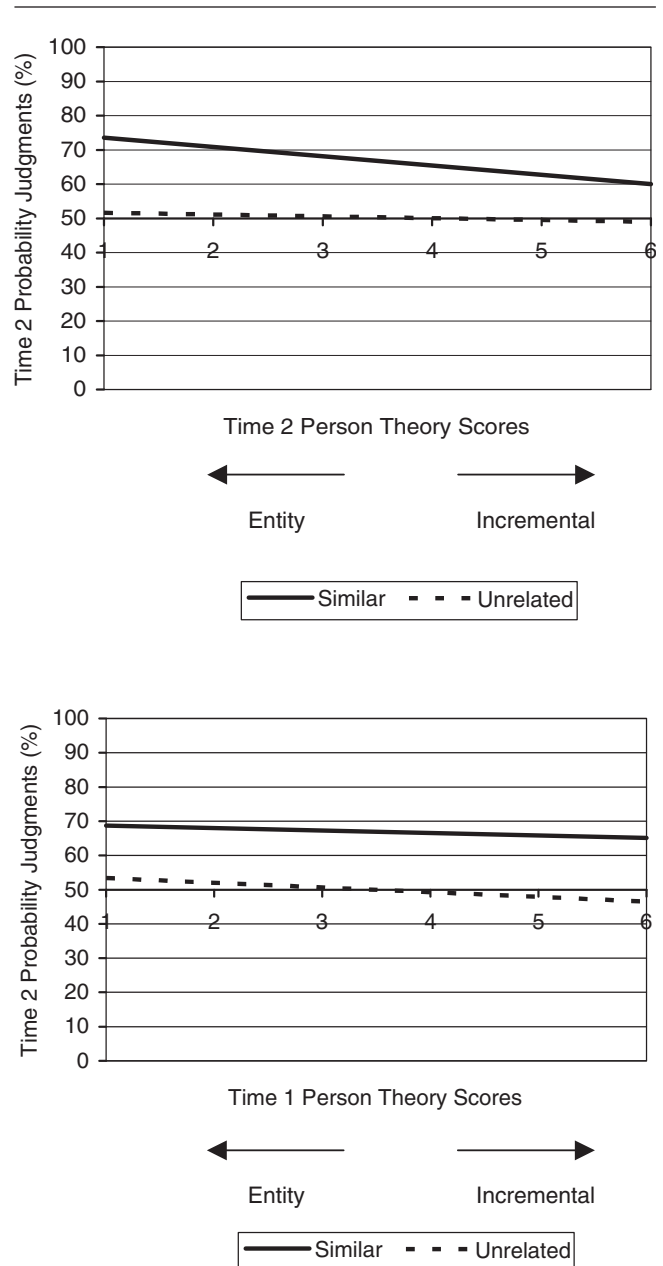


Figure 1 Probability judgments at Time 2 as a function of semantic similarity between traits and person theory scores (Study 1).

affected their inferences between a trait characteristic and a trait-relevant behavior. Inferences from perceived causes to consequences are often made with greater certainty than inferences in the reverse direction (Tversky & Kahneman, 1982). As would be expected by this account, inferences from a trait characteristic to a trait-relevant behavior were more extreme than inferences in the reverse direction ($M_s = 69.2\%$ vs. 65.4%), $t(98) = 5.82$, $p < .001$.

TABLE 3: Correlations and Regression Slopes Between Probability Judgments for Each Similar Trait Pair and Person Theory Scores (Study 1)

Trait Pairs (Predictor + Predicted)	Person Theory Scores			
	Time 2		Time 1	
	r	b	r	b
Likable + Warm	-.24*	-2.2*	-.13	-1.1
Competitive + Ambitious	-.29**	-2.9**	-.12	-1.1
Punctual + Organized	-.28**	-2.6**	-.14	-1.2
Conscientious + Organized	-.29**	-2.7**	-.23*	-2.0*
Tidy + Conscientious	-.30**	-2.7**	-.14	-1.2
Warm + Polite	-.23*	-2.1*	.01	0.1
Affectionate + Sensitive	-.25**	-2.5**	.08	0.7
Reliable + Punctual	-.39***	-4.1***	-.06	-0.6
Sensitive + Warm	-.32***	-3.1***	.02	0.2
Assertive + Independent	-.31**	-3.2**	-.06	-0.5
Tidy + Organized	-.24*	-2.6*	-.04	-0.4
Unconventional + Unpredictable	-.21*	-2.5*	-.27**	-3.0**
Sympathetic + Affectionate	-.15	-1.5	-.02	-0.2
Likable + Affectionate	-.24*	-2.4*	-.04	-0.4
Sensitive + Sympathetic	-.22*	-2.1*	-.12	-1.1
Active + Competitive	-.23*	-2.5*	-.06	-0.6
Active + Athletic	-.21*	-2.8*	.00	0.0
Loyal + Reliable	-.32***	-3.4***	.07	0.7
Warm + Affectionate	-.26**	-2.2**	-.05	-0.4
Optimistic + Idealistic	-.31**	-4.0**	-.17 [†]	-2.1 [†]
Mean	-.26	-2.7	-.07	-0.72

NOTE: Correlation coefficients (*r*) were between probability judgments (averaged over inference types) and person theory scores. Unstandardized regression coefficients (*b*) depict change in judged probability per unit change along the Person Theory Measure. Negative (downward) slopes indicate that higher person theory scores, indicative of an incremental theory, were associated with lower judged probability that people’s standing on the predicted trait follows that on the predictor trait.
[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Pair-by-pair analysis for similar traits. To examine whether the relation between Time 2 person theories and similar-trait inferences observed at the aggregate level also held at the level of individual trait pairs, for each similar trait pair we computed (a) the correlation coefficient between participants’ probability judgments involving that pair (averaged over inference types) and their Time 2 person theory scores and (b) the unstandardized regression coefficient depicting the change in judged probability per unit change in Time 2 person theory scores. Consistent with our account, for most similar pairs, holding an incremental theory at Time 2 (indicated by higher person theory scores) was associated with lower judged probability that people’s relative standing on the predicted trait follows that on the predictor trait (see Table 3).

In sum, the foregoing results support our hypotheses that people perceive semantically unrelated traits as uncorrelated irrespective of their person theories and that how strongly they perceive semantically similar traits as positively correlated depends on their person theories *at the time of judgment*. Holding an incremental (entity) theory is associated with less (more) extreme inferences between semantically similar traits.^{6,7}

Temporal (In)Stability of Person Theories

The test–retest coefficient of the three-item Person Theory Measure, as indexed by the correlation between Time 1 and Time 2 person theory scores (Cronbach’s α s = .94 and .91, respectively) was .46 over the 2- to 10-week interval. To explore how the stability of person theories might change during this interval, we divided our participants into two groups (*n* = 102 per group) based on when they completed the Time 2 measures.⁸ The test–retest coefficient was significantly higher for those who completed the Time 2 measure nearer to Time 1 than for those who completed the Time 2 measure further away from Time 1 (*r*s = .55 and .28, respectively, *z* = 2.33, *p* < .05). Viewed together with the 2-week test–retest coefficient of the three-item Person Theory Measure (.82, as reported by Dweck et al., 1995a), our findings suggest that person theories exhibit increasing instability over time.

As noted, we recruited only respondents with Time 1 person theory scores of 3.0 or below (Time 1 entity theorists) and those with scores of 4.0 or above (Time 1 incremental theorists) for this study. This selection criterion typically excludes about 15% of the respondents scoring around the middle of the scale (Dweck et al.,

1995a). As only a relatively small minority of the initial respondents were excluded, the participants we recruited did not represent particularly extreme-scoring groups who had much room to regress to the mean. Hence, it seems unlikely that our selection criteria would substantially affect (a) the test–retest coefficient of the Person Theory Measure as reported previously or (b) the relation between Time 1 person theory scores and intertrait inferences to be reported in the next subsection.

Between-Persons Variations in Person Theories and Intertrait Inferences (2- to 10-Week Measurement Interval)

Aggregated inferences across trait pairs. Could Time 1 person theories, given such temporal (in)stability, predict intertrait inferences at Time 2? Participants' probability judgments were aggregated and subject to a multiple regression as described in the subsection Between-Persons Variations in Person Theories and Intertrait Inferences (Same-Day Measurement), except that person theories were indexed by person theory scores obtained at Time 1 instead of Time 2. As Table 2 shows, the main effect of theory and the Theory \times Similarity interaction, both significant when Time 2 person theory scores were used, became nonsignificant when Time 1 person theory scores were used. Apparently, the predictive relation between person theories and intertrait inferences weakened when they were measured 2 to 10 weeks apart, relative to when they were measured on the same day.

Figure 1 (bottom panel) shows the regression slope of a regression of participants' probability judgments (collapsed across all traits and inference types) on their Time 1 person theory scores within the similar and unrelated trait conditions. Probability judgments regarding the similar traits could no longer be reliably predicted from Time 1 person theory scores ($b = -0.7$), $t(97) = -1.12$, *ns*, even though they could be predicted from Time 2 person theory scores, as reported earlier.

Pair-by-pair analysis for similar traits. To examine the relation between Time 1 person theories and inferences at the level of individual trait pairs, for each similar trait pair we computed (a) the correlation coefficient between participants' probability judgments involving that pair (averaged over inference types) and their Time 1 person theory scores and (b) the unstandardized regression coefficient depicting the change in judged probability per unit change in Time 1 person theory scores. As Table 3 shows, for most pairs, probability judgments at Time 2 were not significantly related to Time 1 person theories even though they were significantly negatively related to Time 2 person theories.

Taken together, Time 1 person theory scores did not predict Time 2 intertrait inferences as well as Time 2 person theory scores did. Temporal instability in person theories during the intervening 2 to 10 weeks might have attenuated the relation between Time 1 person theories and intertrait inferences.

STUDY 2

Study 1 did not provide as precise a measure of the stability of person theories over time as might be desirable. Theory measurements were separated any time between 2 and 10 weeks. Also, only respondents with initial person theory scores of 3.0 or below and those with scores of 4.0 or above were recruited. To provide a more precise measure of the temporal stability of person theories, in Study 2, the measurement interval was consistently set at 8 weeks, and respondents with initial person theory scores ranging between 3.0 and 4.0 were not excluded. Furthermore, in Study 2, we evaluated the test–retest coefficient of the eight-item Person Theory Measure (to be described), an expanded version of the three-item measure used in Study 1. We investigated whether the test–retest coefficient of the eight-item version improves over that of the three-item version. With more items, the eight-item version may possess higher internal consistency, possibly affording a higher test–retest reliability coefficient.

Method

Procedure

At the beginning of an academic term (Time 1), 269 undergraduates completed a questionnaire booklet in which the eight-item Person Theory Measure was embedded among other unrelated measures. About 8 weeks later (Time 2), they were distributed a second questionnaire booklet in which the eight-item Person Theory Measure was embedded among other unrelated measures. Students received experimental credits for completing these booklets.

Person Theory Measure

Recall that the three-item Person Theory Measure contains only items expressing an entity theory. Respondents rate how much they agree with these items on a 6-point scale (1 = *strongly agree*, 6 = *strongly disagree*); disagreement is assumed to reflect stronger belief in an incremental theory. The eight-item measure (Levy et al., 1998, p. 1431) includes all items constituting the three-item measure, an additional item expressing an entity

theory, and four items expressing an incremental theory (e.g., “Everyone, no matter who they are, can significantly change their deepest attributes”); respondents rate how much they agree with each item on a 6-point scale (1 = *strongly agree*, 6 = *strongly disagree*). An eight-item person theory score is computed by averaging responses to the entire scale (reverse-scoring responses to the incremental items). A lower person theory score reflects stronger belief in an entity theory.

According to Levy et al. (1998), correlations between responses to the three-item measure and responses to the four incremental items of the eight-item measure fell between $-.69$ and $-.86$ in their validation studies; hence, they suggest that disagreement with the entity items represents agreement with the incremental items. Also, scores on the three- and eight-item versions correlated highly (between $.83$ and $.92$) in their validation studies, leading these researchers to conclude that both versions measure the same construct.

As the three-item version is a proper subset of the eight-item version, we can estimate the test–retest coefficients of both versions in this study, assuming that the context established by the added items does not systematically influence responses to the original three items.

Results and Discussion

Both versions of the Person Theory Measure showed high internal consistency reliability (Cronbach’s α s = $.91$ at Time 1 and $.93$ at Time 2 for the eight-item version; α s = $.86$ at Time 1 and $.88$ at Time 2 for the three-item version). Although the 8-week test–retest coefficient of the eight-item measure slightly improved over that of the three-item measure (r s = $.57$ and $.43$ for the eight-item measure and three-item subset, respectively), it was modest. These test–retest coefficients were lower than those over shorter intervals ($.82$ over 2 weeks for the three-item measure, Dweck et al., 1995a; $.82$ over 1 week and $.71$ over 4 weeks for the eight-item measure, Levy et al., 1998), suggesting that person theories exhibit increased instability over time.⁹

Table 4 shows how much participants’ classifications as entity or incremental theorists changed over 8 weeks. Using cutoffs established by Dweck et al. (1995a), for both the eight-item measure and its three-item subset, participants with a theory score of 3.0 or below were classified as entity theorists, whereas those with a score of 4.0 or above were classified as incremental theorists. Regardless of whether the entire eight-item measure or just the three-item subset was used as a basis of classification, roughly 60% of the participants classified as either entity or incremental theorists at Time 1 received

TABLE 4: Percentage of Entity, Unclassified, and Incremental Theorists (as Classified at Time 1) Subsequently Classified in Each Category at Time 2, Using Either the Full 8-Item Person Theory Measure or the 3-Item Subset (Study 2)

Time 1	Time 2		
	Entity	Unclassified	Incremental
Entity			
8-item	58.5 (62)	31.1 (33)	10.4 (11)
3-item	63.2 (91)	14.6 (21)	22.2 (32)
Unclassified			
8-item	27.8 (25)	38.9 (35)	33.3 (30)
3-item	41.7 (20)	22.9 (11)	35.4 (17)
Incremental			
8-item	13.7 (10)	24.7 (18)	61.6 (45)
3-item	27.3 (21)	18.2 (14)	54.5 (42)

NOTE: Values in parentheses represent frequency counts. Following Dweck, Chiu, and Hong (1995a), for both the eight-item theory measure and its three-item subset, participants with a theory score of 3.0 or below were classified as entity theorists and those with a theory score of 4.0 or above as incremental theorists.

the same classification at Time 2, and the remaining 40% received a different classification.

These findings permit us to evaluate Dweck et al.’s (1995a) assumption that person theories are “relatively stable” (p. 279). These researchers did not specify any references for comparison. As person theories are thought to “involve stable individual differences” (Levy et al., 2001, p. 157), we will make references to some widely studied individual-differences variables, including personality traits, though it should be acknowledged that person theories are “not intended to be a description of personality types” (Levy et al., 2001, p. 157).

The 8-week test–retest coefficient of Full Scale IQ scores on the Wechsler Adult Intelligence Scale (Wechsler, 1997), a measure of general intellectual ability, exceeds $.90$. An analysis of the temporal stability of eight frequently used self-report personality inventories, including the Myers–Briggs Type Indicator, the California Psychological Inventory, the Minnesota Multiphasic Personality Inventory, and the Sixteen Personality Factor Questionnaire, shows that the 8-week test–retest coefficients for all of the scales tapping personality traits average about $.73$ ($.80$ and $.70$, respectively, for extraversion and anxiety alone; Schuerger, Zarrella, & Hotz, 1989). Together, person theories show more temporal instability than these individual-differences variables.

GENERAL DISCUSSION

Individual differences in intertrait inferences have not been explained in the literature. To fill this gap, we examine the relation of naturally occurring interindividual variations in person theories to intertrait inferences. We hypothesized that although people perceive semantically unrelated traits as uncorrelated irrespective of their person theories, incremental theorists make less extreme trait inferences than entity theorists involving semantically related traits. In Study 1, these hypotheses were supported when person theories and intertrait inferences were measured on the same day.

Recall that these hypotheses were derived from a theoretical account according to which people first anchor their estimates of the empirical relation between two traits based on their semantic similarity and then attenuate the extremity of their estimates based on the perceived unreliability of trait information (cf. Griffin & Tversky, 1992; Koehler et al., 1996), which could be influenced by person theories. As incremental theorists regard trait information as less reliable than do entity theorists (cf. Chiu et al., 1997), incremental theorists are expected to attenuate their initial estimates regarding similar traits to a greater extent (and hence produce less extreme estimates) than entity theorists. Our findings regarding the relation between person theories and intertrait inferences at Time 2 are clearly consistent with this account, even though the anchoring-and-adjustment process is but one possible process that could lead to the observed relation.

Furthermore, we found that person theories show increased instability over time (Studies 1 and 2). In Study 1, instability in person theories over 2 to 10 weeks apparently weakened the relation between person theories measured at Time 1 and intertrait inferences at Time 2.

Implications of the Link Between Person Theories and Intertrait Inferences

Relevance in Applied Contexts

The relation between person theories and intertrait inferences has applied relevance. Personality disorders (e.g., obsessive-compulsive personality) can be viewed as prototypes unifying semantically related traits (e.g., *conscientious, controlling, orderly, rigid*; cf. Cantor & Mischel, 1977). Often, trait information available for diagnosis is incomplete; clinicians must make inferential leaps from one trait to another. One might expect that relative to clinicians holding an incremental theory, those holding an entity theory are more likely to diagnose personality disorders, as they more readily infer that similar traits co-occur. Such individual differences may partially

explain low interrater agreement in personality assessment (Mellsop, Varghese, Joshua, & Hicks, 1982).

In performance appraisals, a halo effect occurs when an appraiser rates an appraisee on several attributes (e.g., *creativity, accuracy, timeliness of work*) based on how well the appraisee performs on one attribute (e.g., *motivation*) without due regard to the appraisee's actual performance on all attributes being evaluated (cf. Cooper, 1981). A stronger halo effect might be expected among appraisers holding an entity theory, as they make stronger inferences from one attribute to another, relative to those holding an incremental theory.

Lay Knowledge Networks: Their Contents and Explanatory Potential

Building on the growing recognition that the diverse beliefs that laypeople hold about the world form associative networks that affect social judgments and behavior (e.g., Dweck, Chiu, & Hong, 1995b; Hong, Morris, Chiu, & Benet-Martinez, 2000; Levy et al., 2006), this research suggests a novel association: Although beliefs about the malleability of personality (person theories) can be conceptually distinguished from beliefs about trait relations (IPT), they are related in laypeople's minds. Specifically, the belief that personality is malleable is associated with the belief that similar traits are relatively loosely related in the social world; the belief that personality is fixed is associated with the belief that similar traits are relatively tightly related. Considering person theories and IPT collectively may advance our understanding of social phenomena, as illustrated next.

Stereotyping. Relative to incremental theorists, entity theorists more strongly endorse stereotype-relevant traits for racial groups (Levy et al., 1998) and allocate more attention to incoming stereotype-consistent information (Plaks et al., 2001). Researchers have attributed entity theorists' stereotyping tendency to their use of traits, the basic components of stereotypes, as opposed to psychological states (e.g., goals, emotions), to understand the social world (Levy et al., 1998; Plaks et al., 2001). The link between person theories and IPT, as implied by our research, may complement this account: As stereotyping often involves perception of highly correlated traits of social groups (e.g., Asians are *obedient, quiet, and shy*), entity theorists' stereotyping tendency may derive from the strong intertrait relations they perceive among similar traits, beyond their focus on individual traits per se. Future research may examine whether belief in strong co-occurrence among similar traits and an entity theory are mutually sustaining and collectively reinforce stereotyping.

On-line versus memory-based impression. On-line judgments occur when perceivers form an impression of a social target as soon as they process the target's behaviors; such judgments are associated with better recall of early behavioral information (Srull & Wyer, 1989). Memory-based judgments are based on memory search at the time of judgment; such judgments are associated with better recall of recent information (Hastie & Park, 1986). McConnell (2001) finds that entity theorists tend to form on-line judgments of social targets, whereas incremental theorists form memory-based judgments. He suggests that entity theorists' assumption that behaviors reflect underlying attributes leads them to engage in on-line judgments.

The link between person theories and IPT, as implied by our research, may enhance McConnell's (2001) account. Past work indicates that the perceived unity of a *target* promotes on-line, as opposed to memory-based, judgments (Hamilton & Sherman, 1996). Belief in tight empirical associations among similar traits, we suspect, may contribute to perceived unity of a target. Entity theorists' propensity for on-line judgments may be reinforced by strong perceived intertrait relations that augment the perceived unity of a social target. This possibility remains to be tested.

Implications of the (In)Stability of Person Theories

Our findings cast some doubt on the long-held assumption that person theories are "relatively stable" over time (Dweck et al., 1995a, p. 279). Clearly, the relatively high 1- to 4-week test-retest coefficients for person theories reported in the literature (Dweck et al., 1995a; Levy et al., 1998) fail to capture the instability that naturally unfolds over a longer period.

Our results can refine the interpretation of research that establishes the relation of person theories to other variables of interest through an individual-differences approach. In this often-used approach, participants' person theories as measured on a one-shot basis are interpreted as reflecting their chronically accessible theories (Levy et al., 2001). Our results, however, reveal that somebody classified as an entity (incremental) theorist today has about a 40% chance of receiving an inconsistent theorist classification 2 months from today, even in the absence of experimental interventions intended to produce theory change. Thus, person theories as measured at one point in time should be more cautiously interpreted as reflecting one's theorist status at or near the time of measurement. Such a one-point measure embodies not only (a) one's chronic theory accessibility, as researchers have long assumed, but also (b) one's temporary theory accessibility triggered by naturally unfolding, idiosyncratic cues or experiences in everyday life.

This work can inform research planning. Person theories possess a level of temporal instability that intertrait inferences and person theories measured only several weeks apart were apparently unrelated (Study 1). Had we not also measured participants' person theories on the same day they made intertrait inferences, we would have failed to uncover the relation between person theories and intertrait inferences. Thus, a lesson to take home is that temporal instability of person theories can considerably weaken the observed relation between person theories and another variable of interest as the measurement interval lengthens. Researchers can increase the chances of detecting a relation by measuring them in close temporal proximity, as in many published studies (cited in the introduction). Researchers must then be aware of the interpretative issue discussed previously.

This research does not directly evaluate the stability of lay beliefs associated with person theories (e.g., people's beliefs about trait relations) over time, which remains an intriguing question for future research. Also, future research may clarify the relation between person theories and intertrait inferences through experimental techniques. If person theories exert a causal effect on inferences regarding similar traits, one would expect that manipulating people's person theories will affect the extremity of their inferences among similar traits.

NOTES

1. These trait pairs were drawn from a list of all possible pairs (i.e., 435 pairs) among the 30 traits used by Poon and Koehler (2006). Mean semantic similarity ratings for each possible pair were obtained from a separate group of participants using a scale ranging from -3 (*opposite meaning*) through 0 (*unrelated meaning*) to 3 (*similar meaning*). In selecting the similar and unrelated sets of trait pairs for this study, we identified a combination of trait pairs that maintained a fairly large similarity difference between sets while preventing redundancy (i.e., the tendency for some traits to show up in many more pairs than others) from becoming too extreme. For the set of trait pairs selected, the mean similarity ratings for the similar and unrelated sets were 2.03 and 0, respectively.

2. Similar results were obtained when we treated person theories as a dichotomous variable (based on cutoffs established by Dweck, Chiu, & Hong, 1995a) and analyzed the data using a mixed ANOVA.

3. In a separate group of participants ($N = 102$), we found that judgments of the semantic similarity of the trait pairs used in the inference task did not vary as a function of person theories held at the time of such inferences. Thus, it is unlikely that Time 2 incremental theorists made less extreme intertrait inferences about the similar traits than did Time 2 entity theorists simply because the former group perceived these traits as less similar.

4. All behaviors in the inference task were clearly trait relevant, as they were categorized in trait terms (see Table 1). However, if the behaviors are not clearly trait relevant, a significant Theory \times Inference Type interaction might emerge: Person theories might have a more pronounced effect on inferences involving trait characteristics than on inferences involving concrete behaviors that are not clearly trait relevant. This possibility remains to be tested.

5. In our view, person theories and the nature of trait information have an additive effect on the perceived reliability of trait information: Incremental theorists perceive both kinds of trait information (trait

characteristic and trait-relevant behavior) to be less reliable than do entity theorists; incremental and entity theorists alike perceive trait-relevant behavior as less reliable trait information than a trait characteristic. In this article, we are mainly interested in individual differences in person theories.

6. Apart from person theories (i.e., general beliefs about the malleability of personality), we also measured participants' beliefs about the malleability of specific traits (individual trait malleability scores) at Time 2. For each similar trait pair, we computed a trait-pair malleability score for each participant by averaging his or her individual trait malleability score for each member of the pair. Each participant tended to perceive some differences in the malleability among trait pairs used in the inference task, as evidenced by within-person variations in the trait-pair malleability scores. We analyzed the relation of within-person variations in malleability beliefs across similar trait pairs to intertrait inferences. We found that an individual would make less extreme inferences regarding traits perceived by him or her to be relatively malleable than inferences regarding traits perceived to be more fixed. This finding provides further support for our account of intertrait inferences. Details of this analysis are available on request from the authors.

7. In Study 1, the relation between Time 2 person theories scores and intertrait inferences was observed when the intertrait inference task was administered before the three-item Person Theory Measure. To examine whether the same relation holds when the order of the two measures was reversed, we conducted an additional study ($n = 176$) in which the three-item Person Theory Measure was administered before the intertrait inference task in a single experimental session. Results similar to Study 1 emerged. Of importance, although participants' judgments (collapsed across inference types) regarding the semantically unrelated traits were not contingent on person theories ($b = 0.03$), $t(86) = 0.07$, *ns*, their judgments regarding the semantically similar traits were contingent on their person theories ($b = -2.66$), $t(86) = -3.83$, $p < .001$. Specifically, participants holding an incremental theory (as reflected by higher person theory scores) made less extreme inferences between semantically similar traits relative to those holding an entity theory (as reflected by lower person theory scores). Hence, findings from this extra study rule out the possibility that the relation between Time 2 person theories and intertrait inferences observed in Study 1 was simply a measurement-order artifact.

8. One might examine the test-retest reliability of the measure on a week-by-week basis within the 2- to 10-week interval. Two concerns preclude us from using this approach. First, as participants were given a window of a few days to complete the Time 1 Person Theory Measure, precisely when they completed the measure cannot be determined. Second, participation in the Time 2 portion of this study was not evenly distributed across the 2- to 10-week interval. The sample sizes for some weeks would be too small to yield reliable estimates of temporal stability. Roughly, the dividing line between the two groups occurred near the middle of the 2- to 10-week interval.

9. In Study 2, the intertrait inference task was not administered before the Time 2 Person Theory Measure. Given that the test-retest coefficients of the Person Theory Measure in Studies 1 and 2 are consistently lower than those over shorter intervals as reported in the literature, it is unlikely that the intertrait inference task per se (administered before the Time 2 Person Theory Measure) produced the temporal instability in participants' person theories in Study 1.

REFERENCES

- Anderson, C. A., & Lindsay, J. J. (1998). The development, perseverance, and change of naive theories. *Social Cognition*, 16, 8-30.
- Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology*, 41, 258-290.
- Baldwin, M. W., & Fehr, B. (1995). On the instability of attachment ratings. *Personal Relationships*, 2, 247-261.
- Baldwin, M. W., Keelan, J. P. R., Fehr, B., Enns, V., & Koh-Rangarajoo, E. (1996). Social-cognitive conceptualization of attachment working models: Availability and accessibility effects. *Journal of Personality and Social Psychology*, 71, 94-109.
- Cantor, N., & Mischel, W. (1977). Traits as prototypes: Effects on recognition memory. *Journal of Personality and Social Psychology*, 35, 38-48.
- Chiu, C., Hong, Y., & Dweck, C. S. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology*, 73, 19-31.
- Cooper, W. H. (1981). Ubiquitous halo. *Psychological Bulletin*, 90, 218-244.
- Crocker, J. (1981). Judgment of covariation by social perceivers. *Psychological Bulletin*, 90, 272-292.
- Dweck, C. S., Chiu, C., & Hong, Y. (1995a). Implicit theories and their role in judgment and reactions: A world from two perspectives. *Psychological Inquiry*, 6, 267-285.
- Dweck, C. S., Chiu, C., & Hong, Y. (1995b). Implicit theories: Elaboration and extension of the model. *Psychological Inquiry*, 6, 322-333.
- Dweck, C. S., Hong, Y., & Chiu, C. (1993). Implicit theories: Individual differences in the likelihood and meaning of dispositional inference. *Personality and Social Psychology Bulletin*, 19, 644-656.
- Garcia-Marques, L., Santos, A. S. C., & Mackie, D. M. (2006). Stereotypes: Static abstractions or dynamic knowledge structures? *Journal of Personality and Social Psychology*, 91, 814-831.
- Gervey, B. M., Chiu, C., Hong, Y., & Dweck, C. S. (1999). Differential use of person information in decisions about guilt versus innocence: The role of implicit theories. *Personality and Social Psychology Bulletin*, 25, 17-27.
- Griffin, D., & Tversky, A. (1992). The weighing of evidence and the determinants of confidence. *Cognitive Psychology*, 24, 411-435.
- Hamilton, D. L., & Sherman, S. J. (1996). Perceiving persons and groups. *Psychological Review*, 103, 336-355.
- Hastie, R., & Park, B. (1986). The relationship between memory and judgment depends on whether the judgment task is memory-based or on-line. *Psychological Review*, 93, 258-268.
- Higgins, E. T. (1996). Knowledge activation: accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133-168). New York: Guilford.
- Hong, Y., Chiu, C., Dweck, C. S., & Sacks, R. (1997). Implicit theories and evaluative process in person cognition. *Journal of Experimental Social Psychology*, 33, 296-323.
- Hong, Y., Morris, M. W., Chiu, C., & Benet-Martinez, V. (2000). Multicultural minds: A dynamic constructivist approach to culture and cognition. *American Psychologist*, 22, 709-720.
- Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review*, 80, 237-251.
- Kammrath, L. K., & Dweck, C. (2006). Voicing conflict: Preferred conflict strategies among incremental and entity theorists. *Personality and Social Psychology Bulletin*, 32, 1497-1508.
- Koehler, D. J., Brenner, L. A., Liberman, V., & Tversky, A. (1996). Confidence and accuracy in trait inference: Judgment by similarity. *Acta Psychologica*, 92, 33-57.
- Krzystofiak, F., Cardy, R., & Newman, J. (1988). Implicit personality and performance appraisal: The influence of trait inference on evaluations of behavior. *Journal of Applied Psychology*, 73, 515-521.
- Kunda, Z., & Nisbett, R. E. (1986). The psychometrics of everyday life. *Cognitive Psychology*, 18, 195-224.
- Levy, S., Chiu, C., & Hong, Y. (2006). Lay theories and intergroup relations. *Group Processes and Intergroup Relations*, 9, 5-24.
- Levy, S. R., Plaks, J. E., Hong, Y., Chiu, C., & Dweck, C. S. (2001). Static versus dynamic theories and the perception of groups: Different routes to different destinations. *Personality and Social Psychology Review*, 5, 156-168.
- Levy, S. R., Stroessner, S. J., & Dweck, C. S. (1998). Stereotype formation and endorsement: The role of implicit theories. *Journal of Personality and Social Psychology*, 74, 1421-1436.
- Linville, P. W. (1982). The complexity-extremity effect and age-based stereotyping. *Journal of Personality and Social Psychology*, 42, 193-211.
- Linville, P. W., Fischer, G. W., & Yoon, C. (1996). Perceived covariation among features of ingroup and outgroup members: The outgroup covariation effect. *Journal of Personality and Social Psychology*, 70, 421-436.

- McConnell, A. R. (2001). Implicit theories: Consequences for social judgments of individuals. *Journal of Experimental Social Psychology, 37*, 215-227.
- Mellsop, G., Varghese, F., Joshua, S., & Hicks, A. (1982). The reliability of Axis II of DSM-III. *American Journal of Psychiatry, 139*, 1360-1361.
- Molden, D., Plaks, J. E., & Dweck, C. S. (2006). "Meaningful" social inferences: Effects of implicit theories on inferential processes. *Journal of Experimental Social Psychology, 42*, 738-752.
- Pedhazur, E. J. (1982). *Multiple regression in behavioral research: Explanation and prediction* (2nd ed.). New York: Holt, Rinehart & Winston.
- Plaks, J. E., Grant, H., & Dweck, C. S. (2005). Violations of implicit theories and the sense of prediction and control: Implications for motivated person perception. *Journal of Personality and Social Psychology, 88*, 245-262.
- Plaks, J. E., Stroessner, S. J., Dweck, C. S., & Sherman, J. W. (2001). Person theories and attention allocation: Preferences for stereotypic versus counterstereotypic information. *Journal of Personality and Social Psychology, 80*, 876-893.
- Poon, C. S. K., & Koehler, D. J. (2006). Lay personality knowledge and dispositionist thinking: A knowledge-activation framework. *Journal of Experimental Social Psychology, 42*, 177-191.
- Ross, M. (1989). The relation of implicit theories to the construction of personal histories. *Psychological Review, 96*, 341-357.
- Ruvolo, A. P., & Rotondo, J. L. (1998). Diamonds in the rough: Implicit personality theories and views of partner and self. *Personality and Social Psychology Bulletin, 24*, 750-758.
- Schneider, D. J. (1973). Implicit personality theory: A review. *Psychological Bulletin, 79*, 294-309.
- Schneider, D. J., & Blankmeyer, B. L. (1983). Prototype salience and implicit personality theories. *Journal of Personality and Social Psychology, 44*, 712-722.
- Schuerger, J. M., Zarrella, K. L., & Hotz, A. S. (1989). Factors that influence the temporal stability of personality by questionnaire. *Journal of Personality and Social Psychology, 56*, 777-783.
- Schunk, D. H. (1995). Implicit theories and achievement behavior. *Psychological Inquiry, 6*, 311-314.
- Shweder, R. A. (1982). Fact and artifact in trait perception: The systematic distortion hypothesis. In B. A. Maher & W. B. Maher (Eds.), *Progress in experimental personality research* (Vol. 11, pp. 65-100). New York: Academic Press.
- Sorrentino, R. M. (1995). A world from two perspectives: E pluribus duo? *Psychological Inquiry, 6*, 314-318.
- Srull, T. K., & Wyer, R. S. (1989). Person memory and judgment. *Psychological Review, 96*, 58-83.
- Tong, Y., & Chiu, C. (2002). Lay theories and evaluation-based organization of impressions: An application of the memory search paradigm. *Personality and Social Psychology Bulletin, 28*, 1518-1527.
- Tversky, A., & Kahneman, D. (1982). Causal schemas in judgments under uncertainty. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 117-128). New York: Cambridge University Press.
- Wechsler, D. (1997). *WAIS-III/WMS-III technical manual*. San Antonio, TX: Psychological Corporation.
- Wiggins, J. S., & Pincus, A. L. (1989). Conceptions of personality disorders and dimensions of personality. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1*, 305-316.

Received June 12, 2007

Revision accepted December 19, 2007