THE INFLUENCE OF DISPOSITIONAL AND INDUCED IMPLICIT THEORIES OF PERSONALITY ON THE RELATIONSHIP BETWEEN SELF-REPORTED PROCRASTINATION AND PROCRASTINATION BEHAVIORS

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THE INFLUENCE OF DISPOSITIONAL AND INDUCED IMPLICIT THEORIES OF PERSONALITY ON THE RELATIONSHIP BETWEEN SELF-REPORTED PROCRASTINATION AND PROCRASTINATION BEHAVIORS

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ABSTRACT

Past research has established a model of implicitly held theories whereby people are considered to approach the world primarily through one of two views: the entity view, whereby attributes (such as intelligence, ability, morality or personality) are relatively fixed and stable, or the incremental view, in which these attributes are malleable and may be changed or developed. This model was applied in the current study to the area of self-reported personality. The current study measured chronically held implicit theories and also manipulated them based on research that has established that these theories may be considered to be a relatively enduring trait but also may be induced as a state. The ensuing state-trait interaction was explored in order to understand the influence of implicit theories on the relationship between self-reported personality and related outcomes. Specifically, the relationship of interest was between self-reported tendency to procrastinate and actual recorded procrastination behaviors aggregated over five test-taking occasions. Implicit theories were measured using four different ways and a self-persuasion paradigm was used to induce incremental and entity theories in separate groups. The study failed to find significant influences of implicit theories on the relationship between self-reported procrastination and actual procrastination. Reasons for the lack of effects detected are discussed and implications for the robustness of self-reported personality to influences from implicitly held theories about malleability are also discussed.
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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction: An “Implicit Theories” approach to understanding in psychology

Each of us literally chooses, by his way of attending to things, what sort of universe he shall appear to himself to inhabit (James, 1890, p.416).

The field of social cognitive psychology has been concerned with the study of cognitive processes underlying social behavior. An idea that has emerged in the last couple of decades in the field of social cognition has to do with the outcomes of people’s fundamental assumptions – “lay theories” or “implicit theories” – about the nature of the self and the social world. These implicit theories can alter the general cognitive structures and processes through which they perceive this world (e.g. Dweck & Leggett, 1988; Morris, Ames & Knowles, 2001). A primary focus of this research concerns the question of whether fundamental attributes such as intelligence or personality are considered to be relatively static or fixed, or instead, more dynamic qualities that can change or be cultivated (Dweck, 1999). The first assumption is called an ‘entity theory’ wherein human attributes are fixed entities not subject to personal development. The latter is termed an ‘incremental theory’ whereby individuals’ attributes can develop and change incrementally through effort. Several studies have established that these two implicit theories give rise to distinct, contrasting patterns of social perception and explanation based either on fixed traits as the main instrument for understanding behavior (the entity
model) or based on dynamic, psychological processes for understanding behavior (the incremental model) (for reviews, see Dweck, Hong, & Chiu, 1993; Plaks, Levy, Dweck, & Stroessner, 2004). The implicit personality theories model has, over the last twenty years, gained widespread acceptance and applicability, especially in the field of education and in areas such as goal setting, feedback seeking and achievement motivation.

Despite the wealth of evidence pointing to the different implications of having either an incremental or an entity theory, some researchers have pointed to the somewhat narrow focus of the Dweck et al. model (e.g. Peterson, 1995). As a result, some researchers (e.g. Church, Ortiz, Katigbak, Avdeyeva, Emerson, Vargas-Flores and Ibanez, 2003) have been investigating extensions of the model. One such extension involves the extent to which people’s implicit theories emphasize the ‘traitedness’ or ‘contextuality’ of behavior or attributes and not merely their overall malleability. This program of research arises from the observation that there are individual differences in the extent to which people use personality traits versus contextual factors as explanations in understanding persons and behavior. The traitedness-versus-contextuality implicit beliefs construct measured by the Personality Beliefs Inventory or the PBI (Church et al., 2003) is an interesting way to operationalize several of the implications and consequences outlined by research on entity and incremental theories (e.g. Dweck, 1999). The PBI addresses a wider spectrum compared to entity and incremental theory measures by measuring traitedness (versus contextuality), including longitudinal stability (versus instability) of traits; the cross-situational consistency (versus variability) of behavior; the ability to predict (versus not predict) individuals’ behavior from their traits; the ability to infer traits from few behavioral instances (versus the difficulty of doing so); and the
importance of traits in understanding people (versus the greater importance of contextual factors such as roles and relationships). As such, taken together, one may view two separate clusters of implicit systems that deal with malleability or change in personality and behavior: the broad, all-encompassing implicit theories of personality model which focuses on entity and incremental views and the narrower, more behavioral implicit beliefs model emphasizing implicit traitedness and contextuality beliefs.

Even though there seem to be different ways of conceptualizing the idea that one approaches the world through the lens of one’s implicit theories, most of the research in the area focuses on the distinction between an entity view and an incremental view. Specifically, research has established the ramifications of these implicit theories on two main areas: achievement and social judgment. The present study therefore sought to extend the findings of the model not merely to include ideas about traitedness-contextuality but more importantly, to the as yet unexamined realm of the self. Specifically, the issue of whether implicit theories influence self-reports of personality was examined. As will be described later, research has found that implicit theories can be measured as pre-existing dispositions but also be contextually influenced. However, few or no studies have tried to do both at least not with respect to self-reported personality. The current study investigated therefore, the influence of implicit theories as dispositional traits and also as induced states and additionally, the influence of an interaction between these traits and states on the relationship between self-reported personality and relevant criteria.

As Harackiewicz and Elliot (1995) point out, the parsimony as well as broad explanatory power of the implicit personality theory model are its great assets. Research
in this area over several years and diverse populations has established a few basic features of the model: (a) most people endorse either an entity or an incremental theory and each theory occurs with about equal frequency in the population; (b) people can hold different theories depending on the domain of the self, for instance, one could embrace an entity theory of physical ability but an incremental theory of personality; (c) no single theory is linked to people’s ability level, education or cognitive complexity; and (d) even though these theories can be held strongly and stably, they can also be experimentally induced (Molden & Dweck, 2006).

How malleable are these implicit theories about malleability?

The assumption behind labeling people ‘entity theorists’, ‘trait theorists’, ‘incremental theorists’ etc. based on the lay theories these people typically favor is that these ways of organizing one’s world and experience is something innate and constant about someone. That is, implicit theories are often measured as being an individual difference variable. However, several studies also note that the same person can vary in terms of the lay theories that are activated in different situations or in different domains, leading to predictable variation in that individual’s behavior (e.g. Molden & Dweck, 2006). These studies have either successfully measured situational determinants of implicit theories (such as cultural variations or instructions on a test) or have induced one or the other theory experimentally. Recent research by Poon and Koehler (2008) in fact, even questions the long-term stability of these theories in the absence of any attempts to manipulate or change them.
These seemingly contradictory observations leads one to wonder whether these implicit theories are pre-existing dispositions or trait-like conditions, or instead, situationally-induced state-like conditions. In reality, there is evidence for both sides and the resolution for this apparent discrepancy requires resorting to the notion of knowledge structures from the social-cognitive psychology literature. The idea of a knowledge structure activation framework is a familiar one in research on trait concepts, stereotypes, etc. wherein traits are seen as being represented in the brain, similar to other cognitive concepts, via neural networks of relationships which grants them meaning. In such a conceptualization, activating one node of such a network activates related nodes and deactivates others, rendering some knowledge structures more accessible than others (e.g. Poon & Koehler, 2006). Applying this idea to implicit theories, it appears that either entity or incremental theory is always more dominant and easily accessible, but if situational factors activate the opposite theory, then that theory gains accessibility; “…with direct intervention from the outside, the weaker theory can gain strength or accessibility and thus be more readily elicited in the future.” (Dweck, Chiu, & Hong, 1995b, p.324).

In reality, it is unlikely that pre-existing theories will be just simply substituted with new ones when ‘activated’. As research has shown, it is often difficult to induce a new implicit theory in an enduring manner even though it is possible (e.g. Tabernero & Wood, 1999). Also, the specific theory being induced may match or be incongruent with existing notions and this interplay will give rise to interesting consequences. The current study attempted, among other things, to separate out the main effects of pre-existing and induced implicit theories, from the interaction that results when these are both in play.
Results seemed to indicate that not only was it difficult to manipulate people’s implicit theories of personality, there seemed to be very little influence of these theories (whether pre-existing, manipulated or viewed as state-trait interactions) on the relationship between self-reported tendency to procrastinate and actual procrastination behaviors.

Implications of Implicit Theories of Personality

Past research found, perhaps surprisingly, that the effects of holding a certain theory are similar regardless of whether that theory was pre-existing or rendered more accessible by context, measured or manipulated. People’s implicit theories “cognitively orient individuals toward different ways of understanding their experiences and the ways in which these different interpretations of experience can guide different reactions.” (Dweck et al., 1995b). Implicit theories of intelligence, morality, and the person as a whole have been shown to have cognitive, affective and behavioral consequences in a variety of situations, notably in the fields of self-regulation (including achievement motivation), social perception and social judgment, and social development.

Specifically, entity beliefs are associated with helpless reactions to achievement setbacks, and incremental beliefs are associated with mastering behavior in the face of difficulty or failure (Dweck & Leggett, 1988; Henderson & Dweck, 1990). Even with self-regulatory behavior such as coping with dysphoria, overcoming negative stereotypes and managing personal conflict in intimate relationships, the common theme seems to be that for entity theorists, failure suggests a permanent lack of abilities/attributes and self-regulation consists of suppressing the importance of this failure. For incremental theorists on the other hand, failure might signal need for improvement through further attention
and effort, which then becomes the focus of their self-regulatory activities (Molden & Dweck, 2006). In the area of social judgment, entity theorists have been shown to draw stronger dispositional inferences and other evaluations (including stereotyping and blaming) which they use to explain others’ behavior despite limited or contradictory person information whereas incremental theorists draw fewer dispositional inferences and use temporal states or situational demands instead, to explain behavior (Chiu, Hong & Dweck, 1997; Erdley & Dweck, 1993; Levy & Dweck, 1998). Whether entity theorists would retain these tendencies to draw strong and consistent dispositional inferences in evaluating themselves was an empirical question the current study attempted to answer.

Thus it is clear that the lay theories approach has yielded important implications for areas of psychological research such as development, culture, socialization and personality, especially if viewed in the sense of providing organized systems of meaning for people to construct their experiences (Molden & Dweck, 2006).

Implicit Theories and Self-Reported Personality

Most of the research in the area of implicit theories of personality thus, seems to revolve around two outcomes: social judgment and achievement. There is little focus on how these implicit theories influence outcomes related to the self. As Kruglanski (1995) observed, the research program needs to move from a mere theory of trait clustering or perceiving other people to start investigating how these theories affect or aid people in their reactions and interpretations of events in their own life. Inasmuch as these theories are concerned with the very possibility of personal change, they are described as being ‘poignantly pertinent to the self’ (Kruglanski, 1995, p.301).
With all the accumulating proof of the impact of implicit personality theories in areas such as social judgment, it is but the next logical step to extend this research to the area of personality tests and self-presentation. Although preliminary evidence suggested no direct relationship between one’s self-reported standing on various personality or ability attributes and one’s implicit theories about personality or ability (e.g. Hong, Chiu, & Dweck, 1995; Spinath, Spinath, Riemann, & Angleitner, 2003), little or no research until now had examined the effect of these theories on the validity of such self-reports of personality.

Another gap that needed to be filled is whether the implicit theories that we hold about attributes *in general* are the same theories we hold about *our own attributes*. That is, do implicit personality theories apply to the self? If so, do they affect judgments about the self similarly to how they affect social judgment or do they differ in important, systematic and understandable ways?

The influence of implicit personality theories on self-related judgments might well differ from that on social judgments. An established finding in social psychology is that people often are guilty of making the “Fundamental Attribution Error” (Heider, 1958) – the tendency for people to over-emphasize dispositional, or personality-based, explanations for behaviors observed in others while under-emphasizing the role and power of situational influences on the same behavior. People’s default assumption is that what a person does is based more on what "kind" of person he or she is, rather than the social and environmental forces influencing their behavior. However, in reviewing the implicit personality theory model, one postulate is that these implicit theories influence both self- and social perception processes and the sequels that flow from these
perceptions in the same manner (Anderson, 1995; Dweck, Chiu & Hong, 1995a). At the same time, current measures that target theories about people in general, might turn out to be more distal in predicting self-relevant outcomes such as self-reported personality and behavior (e.g. Church et al., 2003). The present study therefore used a self-referent frame for measures used in order to facilitate conclusions made about implicit theories about personality as it relates to oneself.

If one were to generalize from findings in the field of social judgment, it is clear that entity theories produce a trait focus wherein assessing people’s stable personality traits is emphasized, whereas incremental theories produces a process focus wherein the primary aim is assessing people’s dynamic social situations and the ongoing, context-sensitive mental states they create (Levy, Plaks, & Dweck, 1999). This is congruent to the findings on implicit traitedness and implicit contextuality theories respectively (Church et al., 2003). Research has established that, in making judgments or seeking explanations about others’ behavior at least, entity theorists display what is called lay dispositionism (Ross & Nisbett, 1991), overemphasizing the role of traits and undermining contextual/environmental factors in interpreting and explaining others’ behavior (Chiu et al., 1997). Incremental theorists swing the opposite way and over-attribute behavior to a specific situation. Those individuals who believe in fixed dispositions (entity and trait theorists) in a domain tend to make more global, unconditional person judgments whereas incremental and contextual theorists’ dispositional inferences refer to more specific, context-dependent and time-dependent behavioral tendencies (Trope, 1986; Dweck et al. 1993).
Entity Theory//Trait Consistency (Dispositionism) versus Incremental Theory/Contextuality (Situationism): What leads to a better correspondence between self-reports and behavior?

For incremental theorists, understanding people involves understanding the contextual mediators of behaviors or outcomes and the conditions under which these mediators occur. Research on ‘frame of reference’ effects shows that even a simple verbal frame such as “at work” or “at school” changes how one responds to personality tests because it provides a context, thereby improving outcomes such as accuracy/validity (e.g. Hunthausen, Truxillo, Bauer, & Hammer, 2003). Given that incremental theorists are more susceptible to such context effects it follows that they should provide self-reports that correspond better with actual behavior in such contexts than would entity theorists.

Entity theorists in contrast, rely on consistent global or fixed attributions of traits. Also, entity theorists are more concerned with proving or demonstrating competence and shy away from looking bad...Inasmuch as it is socially undesirable to waver on one’s opinions (e.g. Allgeier, Byrne, Brooks, & Revnes, 1979), entity theorists are likely to self-report consistently regardless of context. Besides, past research has shown that for those who report high consistency in their behavior, their self-reports tend to correlate better with others’ reports and other outcomes compared to those who report low consistency in their own behavior (e.g. Bem & Allen, 1974). To the extent that these reports of behavioral consistency are derived from the same systems that influence one’s beliefs about the consistency of traits entity theorists might show the same advantage. If self-reporting consistently across situations is potentially likely to increase reliability and
predictability of a personality test, one cannot discount the possibility that entity theorists and trait theorists might yield self-reports that correspond better with actual behavior compared to incremental theorists.

In other words, persuasive arguments can be made for stronger relationships between self-reports and actual behavior on the part of both entity and incremental theorists. The current study sought to answer this question empirically.

The Current Study

Research on implicit theories about the malleability of human attributes has thus far focused on theories people hold about intelligence, personality or ability and the effects of these theories on achievement, social judgment, goal orientation and goal setting following feedback, causal attributions of (others’) behavior, performance appraisals, etc. The current study is an attempt at understanding the influence of implicitly held beliefs about the malleability of personality on responding to self-report personality tests. Two important modifications were made in the current attempt at bringing the model of implicit theories of personality into the realm of self-reported personality: one, as mentioned earlier, measures were modified to be more ‘self-referent’ in order to maintain the target of interest in the area of the self. and two, a domain-specific measure of implicit theories regarding one’s tendency to procrastinate was included. This was done in order to retain the idea of predictor-criterion match (Bartram, 2005) which is important in identifying relationships and also to study whether effects using the commonly used general measure would be the same as those using this more level-appropriate procrastination-specific measure.
Given that implicit theories are relatively exceptional compared to other social-cognitive constructs in that they are both a ‘state’ and a ‘trait’, that is, they can be manifested either as long-standing dispositions or be induced by situational factors, there is a unique opportunity to study this phenomenon using the classic person-situation interaction framework. Therefore, implicit theories were measured as a dispositional variable and also manipulated as a situational variable using a procedure based on self-persuasion principles. In order to separate the effects due to this interaction from the effects of dispositional implicit theories alone, a separate sample was used to study some research questions.

To answer the question of whether at all, pre-existing dispositional implicit theories influence of the relationship between self-reported personality and behavior, the first (control) sample was given measures of dispositional entity and incremental theories (general and procrastination-specific theories) as well as measures of implicit traitedness and contextuality beliefs. The relationship of these measures to the correspondence between self-reported procrastination on one hand, and actual procrastination behaviors on the other, was investigated. This sample served as the control condition in which the influence of pre-existing implicit personality theories and implicit traitedness-contextuality beliefs on the relationship of interest will be studied.

Then, using a second, main sample, the question of whether manipulating implicit entity and incremental theories has an effect on the same relationship was investigated. This second sample was also administered pre-measures of dispositional implicit theories and beliefs. The sample was divided (randomly) into two experimental conditions – an entity theory condition and an incremental theory condition. Thus, a between subjects
design using this sample will help answer questions about the main effects of
dispositional and induced implicit theories, as well as the more important question of the
interaction between these two. Manipulation checks were used to ensure that the
manipulation took the intended effect. The specific procedure, measures and the self-
persuasion exercise designed to induce the implicit theories are described later, in the
third chapter.

Summary

In the current study, the person-situation paradigm is explored using the construct
of incremental and entity theories of personality. This study is an attempt to contribute to
the field in several ways. One, this is an attempt to extend the application of the idea of
implicit personality theories to the domain of the self in order to understand the nature of
responding to personality measures. Second, it is a unique attempt at a more complete
conceptualization of the lay theories concept by examining its effect as a measured
individual difference or ‘trait’ as well as a manipulated ‘state’. Third, it is an attempt to
replicate the effects of previously used self-persuasion techniques designed to induce
implicit theories for a new purpose – exploring the possibility of such an intervention in
improving the validity of self-reports. Fourth, it is an attempt to expand the nomological
network of implicit theories of personality framework by using related measures such as
the PBI scales of contextuality and traitedness as well as the domain-specific measure of
procrastination-related implicit theories.

This chapter has summarized the literature on implicit theories of personality as is
relevant to the issue of representing oneself on self-reported personality measures, and
has proposed a person-situation paradigm to study the effects of these implicit theories on the relationship between such self-reports and behavior. The next chapter provides a more detailed review of relevant literature in addition to presenting the specific hypotheses of the study. The third chapter details the methodology used to test these hypotheses. Chapter IV will present the results of the study, and Chapter V will present the discussion of these results and implications of the study.
Implicit Theories or Lay Theories of Person Attributes

The idea that people structure their worlds using cognitive or affective systems of meaning has been around in psychology for a long time. Half a century ago, Kelly (1955) for instance, proposed in a theory of personal constructs that everyone possesses a unique set of conceptual representations they use to interpret their environment. Jones and Thibaut (1958) similarly, proposed that how someone is perceived “will tend to be imposed on the stimulus person by the perceiver; the missing link in the inference chain will be supplied by the perceiver’s own ‘theory’ of personality” (p.166). Social-cognitive psychology was the offspring of such ideas. Social-cognitive psychologists started focusing on the study of general cognitive structures and processes underlying social judgment and behavior, and more importantly, the meaning that arises from individual representations of social stimuli.

One specific area of interest in this field that has emerged in the last twenty-five years has to do with the outcomes of people’s fundamental assumptions – “lay theories” or “implicit theories”– about the nature of the self and the social world that modifies the general ‘lens’ and perceptual processes through which they interact with this world (e.g. Dweck & Leggett, 1988; Morris et al., 2001). By definition, the theories are termed
‘implicit’ because they are often unarticulated or not consciously recognized. Research shows that people often fall back on such “implicit”, “lay” or “naïve” theories of personality (Hong, Levy, & Chiu, 2001; Morris et al., 2001) in trying to make sense of their environment and experiences. In the area of implicit or lay theories, there is a specific program of research that has shown great promise in its interesting implications and applicability. This program of research is the one that studies whether fundamental person attributes such as intelligence or personality are considered to be static traits that are relatively fixed, or rather, dynamic qualities that can be developed (see Dweck, 1999). A distinction is made in this area of study, between an entity theory (the belief that human attributes are fixed and largely resistant to change) and an incremental theory (the belief that human attributes are malleable and cultivatable).

Much of the research in this area can be traced back to the work of Dweck and her colleagues in the area of achievement (e.g. Dweck & Elliott, 1983; Dweck & Leggett, 1988). The original Dweck and Leggett (1988) model is a motivational one which arose in educational settings, with goals as central constructs. During observations of children, these and other researchers found two main classes of responses in the face of challenging/difficult problems – one group of children responded in maladaptive, helpless and frustrated ways, while another showed a more constructive, adaptive response. After further investigations, it turned out that these children approached the situations with different goals – performing well to obtain favorable judgments of ability versus performing well to learn and develop ability. This led Dweck to propose the concept of goal orientation and identify two basic orientations: “learning goal orientation” (a preference to develop one’s competence by acquiring new skills and
mastering new situations) and “performance goal orientation” (a preference to
demonstrate and validate one’s competence by seeking favorable judgments and avoiding
negative judgments from others). Dweck’s motivational theory holds that goal
orientations are relatively stable dispositional traits associated with different cognitive
frameworks for interpreting situations or ‘implicit theories of ability’. In such theorizing,
the implicit theories that people hold about the controllability or malleability of personal
attributes such as intelligence, predispose them toward different goal orientations.
Specifically, a performance goal orientation is related to the previously described entity
theory whereby ability is fixed and uncontrollable. On the contrary, people with learning
goal orientations have an incremental theory of ability, viewing it as malleable through
effort and experience. Because they think ability can be changed, they are more
concerned with developing it rather than merely demonstrating it (as is typical in those
with a performance goal orientation). Recent advances have focused on defining the
dimensionality and manifestations of goal orientation effects, and have suggested that
goal orientation seems to be both a dispositional variable as well as one caused by
situation factors (e.g. Button, Mathieu, & Zajac, 1996).

Since the time of the original model, Dweck and her colleagues have extended it
to emphasize the manner in which different implicit theories may cognitively orient
people toward different ways of understanding their experience and thereby result in
different cognitive, affective and behavioral responses (Dweck, Chiu & Hong, 1995). It is
now clear that most people endorse either an entity theory or an incremental theory but
could hold different theories depending on the domain of the self (Dweck et al., 1993).
Even though much of the goal orientation research (with which interest in this field

originated) focuses on implicit theories of ability, it seems that we hold implicit theories about morality, intelligence, and personality in general, amongst other more specific domains.

Contrary to some descriptions of implicit theories in ‘cold’ terms such as assumptions or heuristics that aid in classification of the world we live in (e.g. Morris et al., 2001), there is evidence that core implicit theories are linked to ‘warm’, epistemic motivations that lend meaning to our world (e.g. Molden & Dweck, 2006) and play an important role in building and maintaining people’s sense of prediction and control competence (e.g. Plaks, Grant, & Dweck, 2005). Plaks et al. (2005) for instance, argue that such implicit theories are not just rules of thumb, but rather constructs that people are emotionally invested in. These are so basic that we are motivated to protect these implicit theories from disconfirmation and therefore adopt motivated processing mechanisms which may even result in distortions, such as selective attention and selective scrutiny of information.

Over several years, research has related implicit theories of one’s traits or abilities to a variety of outcomes such as the immediate self-regulatory responses to setbacks one makes including responding to failure, coping with dysphoria (depression/negative affect), overcoming negative stereotypes and managing conflict in personal relationships (Molden & Dweck, 2006). Not just immediate responses, but also prolonged self-regulation of achievement and self-esteem of individuals undergoing transitions such as moving from high-school to college, have been related to the implicit theories they hold (e.g. Robins & Pals, 2002). One’s implicit theory of others’ attributes also affects social behavior such as processing of social information and the use of stereotypes (Levy,
Stroessner, & Dweck, 1998). Because of the relatively simple but powerful nature of this model, it has found implications in several areas of psychological research spanning areas such as socialization, development, culture and personality.

The implicit personality theory model has been widely praised for being a simple yet powerful framework. According to Harackiewicz and Elliot (1995) the model possesses two attributes of a good theory: it is both parsimonious as well as broad in its explanatory power. Moreover it has found applicability in social, personality, clinical, developmental and educational psychology and is rife with probability that it will lead to subsequent theoretical and empirical developments such as attempts to link it to the field of industrial/organizational psychology.

What does it mean to have an “Entity Theory” or an “Incremental Theory”? People’s implicit theories structure the way they understand and react to human actions and outcomes. (Dweck et al., 1995a). The model of interest in the present discussion is the one that distinguishes between the belief that human attributes are fixed (entity theory) and the belief that they are malleable (incremental theory).

Anderson (1995) described the difference between entity theorists and incremental theorists in terms of their worldviews: entity theorists view the world in dispositional terms, believing that stable traits exist, that traits influence people’s behavior and that behavior in turn reveals the presence or absence of such traits. Incremental theorists on the other hand, have a more dynamic and fluid view of the world, believing less in fixed traits and more in the power of current psychological states such as needs, goals and intentions, in order to understand behavior.
An extensive array of empirical evidence demonstrates that an individual’s beliefs about the malleability of intelligence, personality and morality have a major impact on how impressions are formed, information is processed, goals are adapted, setbacks are handled and social reward and punishment is administered (Harackiewicz & Elliot, 1995).

While discussing the implicit theory model as proposed by Dweck and her colleagues it is as important to consider what these theories are not as it is to consider what they are. For one thing, there is no attempt to measure or even talk about the accuracy of these theories – that is, research has not been concerned with whether someone who endorses an entity viewpoint actually does show more longitudinal and cross-situational stability in his/her personality than someone who is an incremental theorist. Second, the model is strictly concerned with the possibility of change, not its probability. In other words, even though factors such as perceived competence (e.g. Dweck & Leggett, 1988), locus of control, perceived control or learned helplessness (Peterson, 1995) and others influence results, “control should not be dragged into measurement, because then interpretations and theorizing become clouded” (Peterson, 1995, p.308).

Early research on implicit theories focused almost exclusively on children’s achievement and goal-oriented behaviors in educational contexts or on their social judgments. A representative of many such studies is the research done by Erdley and Dweck (1993) in which children’s implicit theories of personality were assessed, and then a slide show was shown to them depicting a ‘new boy at school’ who engaged in transgressions such as stealing and cheating. Entity theorists not only made more
generalized and negative trait evaluations of this boy (e.g. “mean”, “nasty”) than incremental theorists but also predicted consistency of such behavior in the future whereas incremental theorists predicted him to be ‘somewhat different’. Moreover, entity theorists showed less adjustment of their trait judgments in the face of disconfirming information compared to incremental theorists.

Over several such studies, Dweck and her colleagues (e.g. Dweck et al., 1993) suggested that not only do implicit beliefs represent different theories about the nature of attributes but also different models about how personality works. That is, not only does one’s implicit theory impact how malleable he/she thinks attributes are, but it also impacts the attributions made about behavior and outcomes. Entity theorists for instance, may encode information with strong evaluative tags and may segregate positive and negative information in memory (whereas incremental theorists may store integrated information), processes which support the making of global dispositional inferences. Dweck et al (1993) propose that for entity theorists, dispositions may be the unit of analysis, a construct which they use to understand their world. By their reasoning, entity theorists use schema-driven information seeking, encoding, representation and retrieval. These processes are subject to both the ‘efficiency’ and the distortion of schema-driven cognitive processing (Sherman & Corty, 1984). Incremental theorists, in contrast, don’t see traits as causal explanations of behavior but rather, seek more proximal causes or mediators of behavior or outcomes. They may thus be susceptible to a greater variety of situational or personal factors in the strategy they adopt in a given instance.

In terms of making social judgments, therefore, entity theories are related to a *trait focus* wherein assessing people’s stable personality traits is emphasized. Holding
incremental theories produces a process focus wherein the primary aim is assessing people’s dynamic social situations and the ongoing, context-sensitive mental states they create (Levy et al, 1999). Implicit theories about the nature of personality traits appear to affect both the frequency and nature of dispositional inferences (Heyman, Dweck & Cain, 1992). The entity theorists’ trait focus is reminiscent of what Ross and Nisbett (1991) called lay dispositionism wherein people overemphasize the role of individuals’ personality traits and underemphasize the role of varying social environments in interpreting and explaining others’ actions. The trait-versus-process focus proposition finds support in cross-cultural research; those who display interdependence and sensitivity to social contexts such as East Asians have been shown to display less lay dispositionism than Western Europeans who are more concerned with independence and individual accomplishments. Taking the reasoning into the realm of implicit theories of personality, Chiu et al (1997) found that incremental theorists were substantially less likely to display lay dispositionism than entity theorists, going as far as to over-attribute behavior to a specific situation. Entity theorists however, tended to over-attribute behavior to a person’s traits. Individuals who believe in fixed dispositions (entity theorists) in a domain tend to make more global, unconditional person judgments whereas incremental theorists’ dispositional inferences refer to more specific, context-dependent and time-dependent behavioral tendencies (Trope, 1986; Dweck et al., 1993).

Consistent with such research, Plaks, Stroessner, Dweck, & Sherman (2001) found that in a study using stereotypes such as “Nazi skinhead” that entity theorists paid less attention to stereotype-inconsistent information than to stereotype-consistent information. They thus showed a congruency effect, because this helped them maintain
their implicit theory that people’s traits remain consistent over time. Incremental theorists, however, paid more attention to stereotype-inconsistent information than stereotype-consistent information, demonstrating an incongruence effect, because this in turn represents to incremental theorists, highly diagnostic information helpful for understanding the complete person (Skowronski, 2002). It appears therefore, that the two types of theorists differ in what type of information is considered more diagnostic or informative about personality. The theme seems to be that entity theorists rely on dispositions and traits to make inferences and predictions about others’ behavior whereas incremental theorists rely on situational, dynamic factors to explain and predict behavior.

Drawing on these very ideas of lay dispositionism (e.g. Ross & Nisbett, 1991) and empirical findings in the area of entity and incremental theories (e.g. Chiu et al., 1997; Dweck, 1999), Church et al., (2003) developed a measure of implicit trait and contextual beliefs in the domain of personality. As opposed to the narrower and ‘more deterministic’ (e.g. Church, Katigbak, Ortiz, del Prado, Vargas-Flores, Ibanez-Reyes, Reyes, Pe-Pua, & Cabrera, 2005, p.492) entity-incremental theory construct, the implicit trait and contextual beliefs construct was developed to cover a broader spectrum of the very aspects that previous research had speculated as being implications of having an entity or incremental view. Specifically, Church et al. (2003) propose that implicit traitedness theories encompass beliefs in (a) the longitudinal stability of personality traits, (b) cross-situational consistency on trait-relevant behavior, (c) the ability to predict individuals’ behaviors from their traits, (d) the ready ability to infer traits from few behaviors, and (e) the accurate description and understanding of people based on traits. In contrast, implicit contextuality theories encompass beliefs in (a) the longitudinal or temporal instability of
traits, (b) cross-situational variability, (c) lack of predictive validity, (d) difficulty of trait inference, and (e) the perceived greater importance of contextual factors (such as roles/relationships) compared to traits in person description and understanding. This structure has been replicated across different individualistic and collectivistic cultures including the US, Philippines, Mexico and Australia (e.g. Church et al., 2005).

Church et al. (2003) distinguish their theorizing from that of Dweck et al., while acknowledging the overlap and common themes, in three main ways. One, the implicit traitedness-contextuality distinction should lead to a more comprehensive assessment of multiple aspects of lay theories than the implicit entity-incremental distinction which focuses solely on the longitudinal stability component. Second, they see the entity-incremental theory conception as being more deterministic; as Dweck (1999, p.88) stated, “Simply put, entity theorists don’t grant people the potential to grow”. In contrast, the traitedness-contextuality theory is more probabilistic. Third, in testing cross-cultural hypotheses about people’s implicit theories, the traitedness-contextuality model may yield more information (as was seen in future studies by Church, Katigbak, Prado, Valdez-Medina, Miramontes and Ortiz, 2006) than the entity-incremental model.

Even though Church et al. (2003) created their implicit beliefs measure to be more encompassing than the entity-incremental theory measures thus far since their theory is broader, there may be some natural correspondences between their traitedness belief and the entity theory of Dweck’s model, and between their contextuality construct and the incremental theory of Dweck’s model. Whether using general measures (e.g. Church et al., 2003) or domain-specific ones (e.g. Church et al., 2005), entity beliefs were positively related to implicit traitedness beliefs and negatively related to contextuality beliefs, albeit
to a moderate magnitude. Two subscales in particular, resonate well with the entity-incremental distinction as they have to do with malleability: temporal stability/instability and cross-situational consistency/inconsistency. These are the two dimensions that will be covered in the current study as well insofar as they are theoretically and practically the most closely aligned to the idea of self-referent incremental and entity theories. As such, I propose that including the traitedness-contextuality construct is a logical extension of understanding the entity-incremental theory implications for the question of interest in this study, viz. do people’s implicit beliefs influence their self-reports?

Thus people’s implicit theories seem to influence not just beliefs about the stability or malleability of people’s attributes, but also reliance on lay dispositionism, the kinds of attributions one makes about (others’) behaviors, social judgments such as stereotype formation and maintenance, and as will be described in following sections, very interesting motivational and behavioral outcomes.

Research on Measuring Pre-existing or Chronically Accessible (‘Dispositional’) Implicit Theories

In proposing this idea of implicit theories that guide our understanding and behavior, a fundamental question is whether these implicit theories are themselves malleable or fixed. In other words, is the implicit theory we hold a trait, a disposition or a chronic individual difference, or is it instead a situation-specific notion or transient state?

Harackiewicz and Elliot (1995) posed this very question and recognized that the data indicated that the entity-incremental dimension is domain specific but reliable over time within domains. That is, the theory one holds about a certain domain (e.g.
intelligence, personality, morality) tends to be stable and unchanging thus implying that it is a relatively enduring *trait* or *disposition*. Thus, it is suggested by some that given the domain-specific nature of implicit beliefs, individuals’ entity and incremental theories about different attributes may need to be assessed by separate implicit theory measures (e.g. Dweck, 1996). However, in studies of what seems to be the most commonly studied outcome in the area – judgments about others – it appears that it is general implicit beliefs about the malleability of personal attributes (e.g. ability and personality) that define the type of person that someone is and how he/she behaves, not domain-specific beliefs (Chiu et al., 1997). It makes sense that a general measure captures one’s general broad belief or world view and thus predicts broad judgments about others. This may change when one considers a specific narrow domain (see Hogan & Roberts, 1996 for a discussion of the narrow-versus-broad predictor/criterion i.e. the “bandwidth-fidelity” issue).

The accepted assumption in the literature seems to be that individuals tend to hold one of the two theories as a chronically accessible structure, almost as a dispositional individual difference variable. In the majority of investigations, implicit theories are measured as individual differences. That is, the assumption is that these theories occur in systematically different base-rates in the population and as such are measurable constructs. There are studies however that successfully manipulate or induce these theories with similar findings (described in a later section). In a study that directly measured both dispositional and situationally induced implicit theories (of ability), Tabernero and Wood (1999) found that the influence of pre-existing dispositional implicit theories persisted over a number of trials, and the influence of the
manipulated/induced implicit theories were marginal. Specifically, in a complex group-management task, those who had incremental beliefs developed stronger self-efficacy, maintained more positive affect and set themselves more challenging goals and thereby outperformed their entity theorist counterparts over multiple trials. While the situationally induced theory had some minor effect, it was only seen in that entity construals attenuated some of the motivational/affective benefits of a preexisting incremental belief. But the corresponding incremental construal didn’t remove or ameliorate the negative effects of a preexisting entity belief. Thus, despite their hypothesis that continual exposure to contextually induced implicit theories would lead to a replacement of (mismatched) preexisting beliefs, Tabernero and Wood found more evidence for the overwhelming effects of chronic pre-existing implicit beliefs.

One way of establishing the stability of such chronic beliefs is by assessing the consistency and temporal stability of such implicit theories directly. In a longitudinal study that followed students from high school to college, Robins and Pals (2002) not only found stark differences between those who held entity theories and those who held incremental theories, but also found that these were shown to be stable individual differences through the course of the study. Thus, it appears that implicit theories are more or less stable, even through arguably turbulent times such as transitions from high school to college. Evidence of such temporal stability is seen in the reported corrected correlation between undergraduates’ implicit person theories from one year to the next: .72, and the correlation of .64 over a 3-year period (Robins & Pals, 2002).
**Measuring implicit theories**

Because of the emphasis on treating implicit theories as dispositional variables, there are a couple of measures that researchers have come to rely on almost exclusively. A glimpse into the content and robustness of these measures provides us with a better idea of what really constitutes the idea of implicit theories. Most times, implicit theories are assessed by means of a three-item questionnaire, which can easily be adapted to different domains such as intelligence, morality or the ‘person as a whole’ (Dweck et al., 1995). These three items in the general version of the measure are: “The kind of person someone is, is something basic about them, and it can’t be changed very much”, “People can do things differently, but the important parts of who they are can’t really be changed” and “Everyone is a certain kind of person, and there is not much that they can do to really change that.” Typically, using this measure, about 40-45% fall in either category and 10-20% get eliminated.\(^1\)

Some (e.g. Schunk, 1995; Sorrentino, 1995) however have questioned the usefulness of this three-item measure since the items are all worded in entity theory terms and wondered if the assumption behind this choice – that being high (or low) on entity theory means that one is low (or high) on incremental – is valid. This precludes simultaneously holding both theories. Researchers who have used this measure defend the choice of the three-item entity-theory-framed questions because as Boyum (1988), Leggett (1985) and others have found, including incremental items led to participants

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\(^1\) This estimate of the distribution of the two theories in the population varies slightly by study. For instance, Tabernero and Wood (1999) report that 54%, 21% and 25% of their sample endorsed incremental, entity and mixed beliefs respectively. Dweck and Leggett (1988) reported 55%, 30% and 15% as the corresponding proportions in their study using children.
drifting toward the middle or preferring the more desirable incremental items. This of course, raises questions about the stability of the constructs as well as the validity of the measures. However, in many pilot studies, Dweck and her colleagues followed up participants’ choice of responses on the 3-item measure with asking for their reasons for their choice, and found that those who disagreed with the entity statements always gave clear incremental theory justifications for their responses. Levy and Dweck (1998) also found direct evidence using an eight-item measure that had four items measuring each theory, that those who disagreed with an entity theory on the three-item measure were the ones who agreed with the incremental theory items on the expanded measure. There was 88%-90% classification correspondence using both measures as well as relatively high correlations (.73 to .83). MacGyvers (1992) also found evidence to dispel the idea that agreement with the three entity items might represent an acquiescence set. Thus it seems that endorsing an entity theory is equivalent to disagreeing with an incremental theory.

Even though construct validity and reliability of a measure does not present direct evidence that the construct itself is a stable and valid one, it does lend credibility to the studies that use this measure to test assumptions about the construct. As such, the three-item Implicit Person Theory measure has been shown to have high internal consistency (alphas ranging from .73 to .96 in various studies), test-retest reliability of around .82 (which is direct evidence of the stability of these theories), and has been shown to be unrelated to or not confounded by constructs like academic attitude, socially desirable responding, optimism about human nature, self-esteem, authoritarianism, conservatism and liberalism (Dweck et al., 1995). The eight-item measure and a similar balanced six-
item measure (Dweck, 1999) has been shown to have similar strong psychometric properties that provide confidence in using these measures.

Thus, it seems clear that as measured and conceptualized by Dweck and her colleagues, implicit theories have been established as a relatively stable psychological construct that is largely unrelated to different attitudes, ability beliefs and self-presentational concerns and can be reliably measured (Spinath et al., 2003).

Implications of “Dispositional” or “Pre-existing” Implicit Theories for Personality, Motivation and Social Behavior

Research on implicit theories arose from studies measuring implicit theories and investigating their relationship to achievement and reactions to failure. Such research has found that entity theorists react to achievement setbacks with helpless reactions as compared to incremental theorists who persist with a mastery orientation in the face of difficulty or failure (Dweck & Leggett, 1988; Henderson & Dweck, 1990). Even for self-regulatory behaviors such as dealing with depression, overcoming negative stereotypes and managing personal conflict in intimate relationships, entity theorists see negative feedback as a permanent failure/lack of abilities. Their coping consists of suppressing the importance of this failure by demonstrating (rather than developing) competence, for instance. For incremental theorists on the other hand, failure might signal need for improvement through further attention and effort, which then becomes the focus of their self-regulatory activities (Molden & Dweck, 2006). Robins and Pals (2002), in a longitudinal study following students from high school into college, found that dispositional entity theorists tended to adopt performance goals and display a helpless
response pattern in response to challenge and declined in self-esteem during college. In contrast, chronically incremental theorists tended to adopt learning goals, display a mastery-oriented response pattern and increased self-esteem during college.

Apart from motivational goals and emotions, plenty of research especially in the last decade, has focused on the impact of chronically held implicit theories on how we perceive and interact with others. The most consistent and probably the most important finding from this area seems to be in the area of attributions or the role that entity and incremental theorists give to different factors for explaining others’ behavior. Specifically, as described earlier, entity theorists show a trait focus with respect to social judgment, drawing stronger dispositional inferences, which they use to explain others’ behavior despite limited or contradictory person information. Incremental theorists, on the other hand, display a process focus rather than a trait focus and draw fewer dispositional inferences. They use temporal states or situational demands instead, to explain behavior (Chiu et al., 1997; Dweck, 1991; Erdley & Dweck, 1993; Levy & Dweck, 1998). Research findings further describe what this means: Compared to incremental theorists, entity theorists also are more likely to use single behavioral indicators to make decisions about guilt or innocence (Gervey, Chiu, Hong & Dweck, 1999), blame or punish someone for undesirable behavior (Erdley & Dweck, 1993), believe in a duty-based (versus rights-based) morality (Chiu, Dweck, Tong, & Fu, 1997) and develop and maintain stronger stereotypes (Levy et al., 1998). Also, reflecting incremental theorists’ inclination to make attributions around modifiable determinants of performance/behavior compared to the entity theorists’ rigid, categorical judgments of others (e.g. Dweck, 1999), research has found that incrementalism was related to better
quality developmental advice provided by children (Heyman & Dweck, 1998) and undergraduates (Chiu et al., 1997). Plaks et al. (2001) showed in a series of experiments, that *a priori* assumptions about human traits and behaviors in the form of entity and incremental beliefs led to processing that affects stereotype maintenance. Those who held an entity belief displayed greater attention to and recognition of stereotype-consistent information and those who held an incremental belief attended to and recognized stereotype-inconsistent information more. They showed this effect in three experiments where implicit beliefs were measured as chronic structures as well as in one where they were experimentally manipulated. In these studies, however, the focus was always on social judgments and perceptions about others; it is plausible to connect these processes and results to the arena of self-perception, but it needs to be noted that this was not the focus of any of these studies. For the current study, pilot studies were undertaken in order to investigate whether indeed, self-referent (‘about me’) implicit theories are the same as or much different from generically framed (‘kind of person’) implicit theories. Based on these pilot investigations, the final measures used in the current study were all modified to be self-referent.

The implicit theories idea has found application in the field of industrial/organizational psychology primarily as an explanatory mechanism for the various findings related to goal orientation. As described earlier, there are two basic orientations: “learning goal orientation” (a preference to develop one’s competence by acquiring new skills and mastering new situations) and “performance goal orientation” (a preference to demonstrate and validate one’s competence by seeking favorable judgments and avoiding negative judgments from others) and these two main types have been traced
back to beliefs in incremental and entity theories respectively (Dweck & Leggett, 1988).
The fact that the two main goal orientations stem from different implicit beliefs also implies different outcomes. The adoption of learning goals stems from a belief that ability can be changed through effort and experience and is therefore associated with increased achievement via adaptive learning styles such as deeper processing of task-related information, self-regulation of performance and persistence (Day, Radosevich & Chasteen, 2003). Performance goal orientations, on the other hand, arise from a belief that ability is a fixed attribute and are consequently associated with maladaptive, helpless response patterns including task withdrawal in the face of failure or negative feedback and low achievement (Day et al, 2003).

Thus, a preponderance of evidence suggests that implicit theories are stable and consistent structures that are systematically and predictably related to outcomes as varied as responses to negative feedback and maintenance of social stereotypes. If viewed in the sense of providing organized systems of meaning which people use to construct their world of experiences, this approach has interesting implications for psychological research and practice (Molden & Dweck, 2006).

Research on Induced and Manipulated (‘Situational’) Implicit Theories

In most studies, the assumption is that people are either entity theorists or incremental theorists by nature, especially within domains. However, a non-trivial percentage of studies have also experimented with the idea of either inducing an implicit theory or manipulating one’s existing implicit theory and have succeeded in producing effects similar to those obtained by measuring chronically held implicit theories (e.g.
Bergen, 1991). In fact, Dweck herself (e.g. Dweck et al., 1995) proposed that it may be best to view implicit theories as “relatively stable but malleable personal qualities, rather than as fixed dispositions” (p. 279).

The situational or social construal of such beliefs may be communicated to individuals either directly, through comments of others, task instructions or appraisals, or indirectly, for instance through rewards and promotions (Tabernero & Wood, 1999), and affect motivation and performance just as dispositional construals of these beliefs do. Moreover, results are ambivalent when it comes to the stability of implicit theories. For instance, Robins and Pals (2002) demonstrated relative stability over the college years in a group of students, in terms of normative and relative differences. However, Bempechat, London, and Dweck (1991) and Pomerantz and Ruble (1997) for instance, showed low levels of stability in terms of normative (mean-level) change and the stability of individual differences (Pomerantz & Saxon, 2001) in children. Recent evidence also has questioned this belief in the long-term stability of implicit theories which has always been “assumed or implied rather than formally tested” (Levy, Chiu, & Hong, 2006, p.9) until now. Poon & Koehler (2008) recently showed that the short-term 1-4 week test-retest coefficients reported in past literature (e.g. Levy et al., 1998) overestimate the long-term stability of these theories. In the Poon and Koehler study, there was a 40% chance that people classified according to their implicit theories would be classified into the other group even merely two months after the initial classification. This occurred in the absence of any experimental interventions intended to produce theory change. These results remind researchers to be cautious in the generalizations made on so-called stable or chronic implicit theories, which may ultimately only reflect one’s views at or near the
time of measurement. Thus, unless special attempts are made to tease out ‘trait’, chronic or dispositional implicit theories from ‘state’ or situationally created ones within the context of any single study, it is difficult to make confident conclusions regarding implicit theories of personality.

Empirical results have shown that people can hold both theories about the possibility of change in general. They can even be persuaded to switch the general theory they chronically hold, based on experimental manipulations. For instance, implicit theories have been experimentally induced through achievement attributions (Dweck & Leggett, 1988), task framing (Wood & Bandura, 1989), “scientific testimonials” (Bergen, 1991; Chiu et al., 1997; Levy et al., 1998) and by providing process-oriented feedback (e.g. “You must have worked hard”) rather than trait-oriented feedback (e.g. “You must be smart”; Mueller & Dweck, 1998).

In the same way that scientific theories may change when faced with new evidence, their naïve or implicit counterparts may change under appropriate conditions or faced with new information. These changes could take place over months or years, via systematic exposure to conditions supporting the opposite theory, or they could be seen in minutes, following an experimental manipulation in the laboratory. In partial support of the former scenario, Kamins and Dweck (1999) who were exploring the developmental antecedents of implicit theories, showed that feedback focused on the child could result in entity orientation and feedback focused on the process could lead to incremental orientation. At the other extreme, as several studies (e.g. Bergen, 1991) have shown, even a brief “scientific article” presented to participants during an experiment suffices to affect their beliefs on those topics or implicit theories. It must be noted that the latter,
specifically, are manipulations designed to induce theories about people in general and not about the self. To the best of the author’s knowledge, there has been no precedent to studying the implicit theory model as it relates to the possibility of change in oneself versus general beliefs about change in people.

Bempechat et al (1991) manipulated implicit theories to investigate their effects on goal orientation and found that children in the incremental condition were more likely to choose learning goals than performance goals after having experienced failure compared to children in the entity condition. Also, Hong, Chiu, Dweck, Lin, and Wan (1999) found that individuals who were primed towards an incremental orientation displayed mastery-oriented responses by making attributions of effort for failure and taking remedial action after setbacks in contrast to those primed with an entity orientation who displayed more helpless responses. Using a different approach to induce different implicit theories, Thompson and Musket (2005) were able to improve the performance of students who initially held an entity theory of ability, by priming them for mastery goals relative to social comparison goals (which have been related to incremental and entity theories respectively in past research), irrespective of whether they were first exposed to success or failure experiences. Thus, the fact that whether mastery-oriented responses followed incremental theory manipulations as in the Hong et al. (1999) study, or whether they induced incremental thinking and outcomes as in the Thompson and Musket (2005) study, the close linkages between implicit theories, goals and outcomes regardless of chronological sequence points to the possibility proposed by some researchers, that these notions are all inter-related via means of knowledge structure activation. That is, implicit theories gain or lose accessibility depending on whether specific knowledge structures
are ‘activated’ or not – so even a dormant theory may come to awareness or be manifest in effects. This idea of knowledge structure accessibility is explored in a later section.

One way to see that the working of implicit theories is dependent on activating or gaining access to knowledge structures that may have been dormant so far is to investigate the possibility directly. In such an attempt to induce an implicit theory in participants different from the one chronically held, Taberno and Wood (1999) gave entity theorists task instructions in which incremental cues were embedded (e.g. “skills…are developed through practice”; p.114) and gave incremental theorists instructions in which entity cues were embedded (e.g. “decision-making reflects the basic cognitive capabilities that people possess”; p.114). They found that while incremental theorists adopted entity beliefs to a certain extent, entity theorists did not adopt incremental beliefs.

Other studies have found, however, that incremental theory can be induced and in fact, can have a more than transient influence. In probably the first (or at least one of the earliest) demonstration of induced incremental beliefs that showed sustainability over time, Aronson, Fried and Good (2002) used an intervention aimed at addressing the phenomenon of stereotype threat, whereby minority members typically under-perform in situations where a stereotype of low ability is evoked (see Steele & Aronson, 1995). Aronson et al (2002) used the realization that stereotype threat manipulations elicit from targets many of the same responses that entity theorists display in contrast to incremental theorists such as choosing easier, success-assuring tasks/goals when their ability is subject to scrutiny, experiencing greater performance pressure or anxiety in these situations and tending to devalue domains in which they have performed badly. Thus they
suspected that negative ability stereotypes might be partly powerful in undermining intellectual performance and motivation precisely because they imply an inalterable and thereby self-threatening deficiency – a fixed amount (indeed, a fixed lack) of intelligence. Their study thus used an intervention, which combined various approaches targeted at influencing implicit beliefs. Specifically, African American and White undergraduate students were shown a film showing how challenges, effort and learning make people smarter. This incremental message was then reinforced by making participants write letters to struggling grade-school children about how intelligence expands with work and then making them rework these letters into recorded speeches to be used with at-risk children. Results showed that six weeks after the intervention, African American entity theorist participants who had accentuated stereotype threats (but not so much the White participants) exhibited a significant increase in incrementalism compared to the control group. They altered their reaction to the stereotype threat by showing a greater valuing of and engagement in academic work, and higher GPAs than those in control groups. As Heslin, Latham and Vandewalle (2005) suspect, however, unsystematic variation could have been introduced in this study by means of the way the criterion was assessed, specifically, by having an African American research assistant read a 2-item IPT measure over the phone to the experimental group. This lack of control makes the results less generalizable.

In another compelling and more controlled intervention, Heslin et al (2005) showed not only that implicit person theory affects managers’ acknowledgment of change in employees’ behavior, but also that an incremental theory induced using a self-presentation training was maintained over (at least) a six-week period and led to greater
acknowledgment of improvements in employee performance than was exhibited by entity theorists in a placebo group. Heslin, Vandewalle and Latham (2006) later traced similar effects of such a manipulation on managers’ coaching behaviors as well.

The efficacy of this manipulation lies in its thoroughness and the fact that it was based on lessons learned from the literature on persuasion and attitude change. Five self-persuasion principles were used in a 90-minute workshop: (a) receiving scientific testimony about the malleability of personality using a written article as well as a videotape, (b) generating counter-attitudinal arguments or ideas, (c) answering three questions designed to induce self-reflection, (d) mentoring a supposedly struggling protégé using counter-attitudinal advocacy and (e) reflecting on beliefs they have held that are inconsistent with ones they have just advocated (induced cognitive dissonance).

Thus, while the method of inducing or manipulating implicit theories have spanned a wide variety of techniques, right from instructions, to half-day workshops targeting a specific self-persuasion technique to induce an implicit theory, all the research studies described here point to the conclusion that it is possible to situationally elicit or induce implicit theories.

Implications of “Situational” or “Induced” Implicit Theories for Personality, Motivation and Social Behavior

It appears as though many of the implications of situationally induced implicit theories are the same as or similar to the implications of chronically held implicit theories. Research has established that both entity and incremental theories can be both measured as chronic structures as well as situationally activated (even using mere
persuasively written materials), with essentially identical effects (e.g. Chiu et al. 1997, Experiment 5; McConnell, 2001, Experiment 2; Plaks et al., 2001, Experiment 3).

Some of the outcomes that are attributed to implicit theories (whether measured or manipulated) include selectively considering only theory-relevant interpretations of others’ actions (e.g. Molden, Plaks, & Dweck, 2006) and processing trait-versus-process information in a more or less evaluative manner (e.g. Hong et al, 1997). As part of a series of experiments, Levy et al (1998) found that manipulating implicit theories affected the level of stereotyping that people resorted to, suggesting a causal role of implicit theories in forming and maintaining stereotypes. In these studies, Levy et al (1998) found that entity theorists made more stereotypical judgments of ethnic and occupational groups, formed more extreme trait judgments of new groups, and attributed stereotyped traits to inborn group qualities versus environmental factors, as compared to incremental theorists.

Having found effects of manipulating implicit theories to be similar to those of chronic ones, however, the boundary condition seems to be that situational influences (such as a manipulation of implicit theories using instructions) are likely to be effective inasmuch as they are salient, accessible and specific (Trope & Gaunt, 2000). Though chronically or dispositionally entity or incremental theorists may differ in their accumulated practice with integrating trait versus situational information, immediate differences in the salience or accessibility of certain behavioral interpretations may play at least some role. Thus, temporarily inducing a particular implicit theory could be expected to alter the salience and accessibility of theory-relevant information (Molden et al., 2006) such as that provided in instructions on a personality test or contextual cues.
such as that represented by rewards or punishments, and even explicit transmission of information designed to endorse one or the other implicit theory. There is support for the idea that accessibility can be altered by affecting allied knowledge structures that are linked to or consistent with it (Poon & Koehler, 2006). There is also indirect evidence of the existence of these allied structures – some studies (e.g. Blackwell, Trzesniewski & Dweck, 2005; Robins & Pals, 2002) have established that people’s entity and incremental theories influenced performance and self-esteem primarily through a system of goals, beliefs and strategies that arose from these basic theories. More direct evidence comes from Thompson and Musket (2005) who found in their study that manipulating the goals that have been related in past research to implicit theories was successful in manipulating the corresponding implicit theories.

As Dweck (1999) pointed out, “Some of these changes in ‘mindset’ may last as long as you are in the situation that is delivering the message, but long-term changes may also be induced by a compelling or continuing message” (p.133). Heslin et al. (2005) set out to induce this very kind of compelling or continuing message. They worked on the limitations of previous studies such as Aronson et al. (2002) and Tabernero and Wood (1999) by adding a cognitive dissonance component to Aronson et al.’s self-persuasion techniques, and realizing that replacing entity beliefs with incremental ones is not very easy and requires “more than an exhortation” (Tabernero & Wood, 1999, p. 124). Heslin et al. (2005) wanted to see if it was possible to influence managers’ acknowledgment of change in employee behavior so as to impact their performance appraisals. In their first two studies, they found that the extent to which managers endorsed an incremental theory was positively related to their recognition of both good and bad performance relative to
initial observations of employee behavior. Realizing that an entity theory makes for a belief in consistency and stability of behavior, Heslin et al. (2005) set about trying to induce incremental thinking in entity theorist managers in order to bring about a change in the way they recognized changes in employee behavior. Using the elaborate self-persuasion techniques described earlier, they were able to bring about a change – entity theorists in the experimental condition adopted a significantly more incremental implicit theory, which was maintained over a 6-week period, and most importantly, led to greater acknowledgment of an improvement in employee performance than was shown by entity theorists in the control group.

In a more recent demonstration, Heslin et al. (2006) extended these findings to the realm of managerial coaching as well. Specifically, they showed that the same self-persuasion intervention used in their previous study about performance appraisals was shown to increase entity theorist managers’ willingness to coach poor performing employees, as well as the quantity and quality of their performance improvement suggestions. These studies together demonstrate not only the benefits of managers subscribing to an incremental theory (either preexisting or induced), but also the efficacy of the self-persuasion intervention in influencing managers to adopt a long-lasting belief in incrementalism.

So there seems to be evidence that it is possible to induce changes in implicit theories, which last from as little as the duration of the experiment to as long as six weeks after the manipulation has taken place. Proof of lasting influences of the context or situation to change implicit theories might need to be sought from longitudinal studies that span several years, few or none of which seem to have been published this far.
However, a different method of gaining this proof might be to look at natural experiments whereby there are naturally occurring contextual differences, which can then be used to explain any observed differences in implicit theories that result. An example of such a natural experiment is studying cross-cultural differences in implicit theories. For instance, studies have repeatedly shown that those from Western European cultural backgrounds analyze social interactions using assumptions that markedly differ from those with East Asian cultural backgrounds. The former find greater meaning in the stable personality traits of people they are interacting with whereas the Easterners find greater meaning in the dynamic social situation where the interaction occurs (Choi, Nisbett, & Norenzayan, 1999). More interestingly, such variations in the implicit theories of social behavior of people from different cultures produce dramatic differences in how they process and interpret social information.

Other than credible information such as that provided in the real world by cultural influences, travel, new experiences, developmental experiences and situations, motivational conditions are likely to significantly impact one’s adherence to a given implicit theory (Kruglanski, 1995). A changed implicit theory once changed, however, does not imply that it has been extinguished from the repertoire of available cognitive notions. In fact, discussing ‘personality regressions’, Kruglanski (1995) proposed that one may revive an older implicit theory which had been foregone, failing to recall the compelling evidence against it under certain motivational or cognitive load conditions. This proposal was granted credibility in a series of experiments by Molden et al (2006). As such, implicit personality theories may share several cognitive process commonalities with cognitive content categories like stereotypes, attitudes and attributions.
It appears therefore, that regardless of whether via a short experimental manipulation, elaborate training/development workshop or culturally embedded contextual cues, implicit theories can be induced and manipulated by external factors. Moreover, it seems likely that such induction might be possible because implicit theories are similar in process mechanisms to other cognitive notions such as attitudes and attributions and as such, are possible to be activated by the right cues.

Implicit Personality Theory – “State” or “Trait”? Reconciling Evidence for both Dispositional and Situational Implicit Theories

An observation which follows from the literature reviewed so far is remarkable, at the same time heartening; that studies measuring and manipulating implicit theories find that the implications and outcomes parallel each other. But at the same time, there seems to be some fundamental questioning of whether then, implicit theories are dispositional traits or transient situational states in view of the evidence for both. Harackiewicz and Elliot (1995, p.298) pointed out that, “the use of global and stable terms like world view and immutable suggest that within domains, ‘once an entity theorist, always an entity theorist’” However, these authors also question this by citing examples of studies where entity and incremental theories can be experimentally manipulated. A growing body of research evidence shows that entity and incremental beliefs can have either dispositional or situational origins (Dweck, 1996).

At first, the mixed findings regarding the stability of implicit theories over time as well as the successful manipulation of implicit theories in experiments might seem to refute the very idea of holding chronic implicit theories. Harackiewicz and Elliot (1995)
feel that it seems hard to reconcile these two positions especially if we are to believe that someone who views the world through, say, entity glasses, can be easily persuaded to adopt an incremental theory as a function of a brief experimental manipulation. Logic seems to dictate that entity and incremental theories must be mutually exclusive – after all, the belief that one’s ability, personality or morality can change is the direct opposite of the belief that these attributes are fixed.

One way of reconciling these findings is by considering implicit theories as knowledge structures (e.g. Dweck et al., 1995). Anderson (1995) proposes that investigating how current implicit theories fit with knowledge structure approaches would be useful, especially to understand how implicit theories can be ‘induced’ when they are almost by definition, dispositional. He describes knowledge structures as packets of related information that people “know” about the world around them. Knowledge structures could range from simple schema about objects such as knowledge about a ‘chair’ to complex social, religious or philosophical theories about our place in the universe. These knowledge structures guide and sometimes distort judgmental processes, be it perceptual (what you see) to inferential (what attributions you make about what you see).

In applying such a notion to the area of implicit theories, incremental and entity theories are seen as cognitive knowledge structures which are both available to people, but the degree of each of their accessibility differs (Anderson, 1995). That is, one theory is always more dominant, with stronger links to allied structures (such as goal orientations or attributions) but the other may still be available and accessed under certain circumstances as seen in successful manipulations of people’s implicit theories (Dweck et
al, 1995; Anderson, 1995; Harackiewicz & Elliot, 1995). By this token, a certain theory is chronically accessible for individuals and typically determines their judgments and reactions. However, in situations that make a different world view salient (such as questionnaires that ask about the opposite belief or studies that manipulate theories), individuals can access these other theories. Viewing implicit theories as knowledge structures helps us understand how one can hold both beliefs simultaneously as well as how these theories can be both fairly stable as well as relatively malleable. “…with direct intervention from the outside, the weaker theory can gain strength or accessibility and thus be more readily elicited in the future.” (Dweck et al, 1995, p.324).

Entity and incremental theories may be similar to other constructs which have been investigated using a knowledge-activation approach such as trait concepts (e.g. Higgins, Rholes, & Jones, 1977), stereotypes (e.g. Sinclair & Kunda, 2000) and cultural theories (e.g. Hong, Morris, Chiu, & Benet-Martinez, 2000). For instance, Kunda, Sinclair and Griffin (1997) used a ‘parallel constraint satisfaction’ model which is an idea similar to the one being proposed here, to explain their finding that sometimes the same rating represents different behaviors to different people. This model maintains that traits, like other cognitive concepts, gain their meaning through neural networks of association people store in their brain. That is, when one node is activated, it simultaneously differentially activates and inhibits certain related nodes such that certain patterns of activation are easier, rendering some judgments more accessible than others. This finding suggests the possibility that both incremental and entity theories are available to most people, but individual differences exist in the chronic accessibility of each (Levy, Plaks, Chiu, Hong, & Dweck, 2001). As Dweck et al (1995) described, people probably hold
both kinds of beliefs to some extent and contextual features affect the salience of one or another belief.

In applying such ideas from the social-cognitive literature, it seems that (a) existing knowledge structures need to be activated or brought to mind, and (b) activation then spreads within the entity or incremental cluster to influence judgments. The accessibility of knowledge or the ease of retrieval of such knowledge contributes to its activation (Poon & Koehler, 2006). This accessibility in turn, may be affected by goals, prior activation and interconnectedness with other existing knowledge (see Higgins, 1996). At a given time, thus, the relative accessibility of entity versus incremental knowledge is a combined result of (1) its chronic accessibility (which in turn results from differential exposure to situations which engender relatively more frequent application of entity or incremental knowledge over a prolonged period, such as stable differences in family environments or culture or success/failure experiences) and (2) temporary accessibility due to relatively transient situational influences. Thus, one’s current endorsement of an implicit theory may serve as a general index of the relative accessibility of one’s entity versus incremental knowledge at the time of measurement (Poon & Koehler, 2006).

The implicit theory model could be considered an attributional approach to information processing, as Sorrentino (1995) suggested. By this token, individuals differ in how we attribute causes to various aspects of the self or others (e.g. the trait versus process focused attributions of entity and incremental theorists respectively) and then process information based on these attributions. As such, manipulations emphasizing the fixed versus malleable nature of personality might have varying degrees of appeal to the
two groups. The process by which manipulations that emphasize different implicit theories might be expected to affect how one responds to personality tests could be as follows: Activating a chronic or situational implicit theory of personality could lead one to (a) make particular, theory-relevant, spontaneous causal inferences about one’s personality, (b) unconsciously prime theory-relevant impression management goals regarding presenting one’s personality, or (c) create an intention to implement a theory-driven search for particular interpretations of one’s own personality (see Molden et al., 2006).

Anderson (1995) encourages study in an area that is especially relevant to the current endeavor – he suggested designing studies to see if entity and incremental theorists display distortions in judgment about or recall of information that is ambiguously related to trait judgments. One such investigation may be around the question of whether entity and incremental theories cause one to selectively attend to, judge or recall trait judgments in a manner that is consistent with one’s theory. Some possible answers to this are explored in the next section where I examine the interplay between chronic and induced implicit theories.

The Interplay between Dispositional and Situational Implicit Theories

If one views implicit theories as cognitive notions, research in social cognition informs us that such available cognitive notions impact behavior only if activated or rendered accessible (Higgins, 1996). In an increasingly popular theory called “Cognitive Affective Personality Systems”, Mischel and Shoda (1995) interpreted personality in terms of situational activation of available cognitive configurations. In applying this idea
to the present question, an incremental or entity theorist may behave like one only in situations where those theories are activated but not otherwise. Also, entity theorists may be able to behave like incremental theorists (and vice-versa) if those relevant notions or knowledge structures are rendered especially accessible and are sufficient to override the default chronic theory's knowledge structures. On the other hand this discrepancy may not be accommodated easily.

An obvious question to arise therefore, is what happens if a situationally induced theory opposes a chronically accessible theory. For instance, if an entity theorist is posed with evidence of malleability of attributes or ability, does he/she discount this evidence, ignore it, or change his/her theory? Similarly, if an incremental theorist is told of instances where there is no change despite great efforts to change or improve behavior or ability, how would this information affect him/her? Responses to implicit belief manipulations may depend on participants’ preexisting implicit beliefs. Tabernero and Wood (1999) proposed that when a person’s preexisting implicit beliefs are matched with induced (social) construals of these beliefs, the predisposition to adopt a particular response for a task will be strengthened. They also suggested (but didn’t find support for this) that when there is a mismatch, individual response patterns will initially be determined by their dispositional implicit theories, but with continued exposure to the manipulation, their personal beliefs will evolve towards the new position. Added to the discrepancies between hypotheses and actual findings in such studies is the fact that when studies randomly assign participants to entity and incremental manipulation conditions and then report mean group differences it is unclear whether the instructions or manipulations turned entity theorists into incremental theorists (or vice versa) or only
made the incremental theorists even more incremental and entity theorists more entity-oriented (Heslin et al., 2005). However, in studies where the aim is not to induce a specific theory and thus override an existing one, but to actually understand the interaction between existing and induced theories, a between-subjects design is justified.

Plaks et al (2005, p.246) contend that violation of implicit theories could be “an epistemically disorienting experience” because these theories cut to the very heart of what is meant by prediction and control and lend structure to a highly unpredictable world. Entity theorists tend to understand people in terms of underlying traits, implying an expectation of consistency of these traits over time whereas incremental theorists have a dynamic understanding of people, relying on mediating situational and psychological factors as explanations for behavior (Chiu et al., 1997). Some evidence suggests that entity and incremental theorists consequently react in predictable ways to information that goes against the grain of their implicit beliefs.

Research suggests that when interpreting (others’) actions, perceivers’ existing implicit theories selectively facilitate interpretations that are especially theory-relevant (Molden et al., 2005). That is, information or manipulations that are consistent with existing implicit theories are allowed more access than those that are inconsistent. Across a series of studies, Molden et al (2005) found that under cognitive load, entity theorists continued to incorporate information about stable dispositions (but not about dynamic social situations) in making social inferences, while incremental theorists continued to incorporate information about dynamic social situations (but not about stable traits).

This might be because for individuals who find particular ways of characterizing behavior especially meaningful may become so used to or well-practiced at incorporating
these into their inferences (Knowles, Morris, Chiu, & Hong, 2001) that they could become very efficient at relevant inferential corrections and even make them in the absence of cognitive resources (see Bargh, 1997). This was supported in a finding that Chinese perceivers, culturally attuned to taking into account the effects of situational pressures on behavior, did indeed automatically correct their initial trait characterizations for situational influences even under cognitive load (Knowles et al., 2001). Generalizing such findings to the realm of implicit theories, Molden et al. (2005) found that incremental theorists who are naturally well practiced at considering the influence of situational pressures on behavior during social inference effortlessly showed correction of initial trait characterizations. Conversely, entity theorists, who find the influence of personality traits persuasive and meaningful, showed effortless correction of initial situational characterizations. This study showed that when forming dispositional impressions, incremental theorists considered situational interpretations even under cognitive load while entity theorists did so only when they possessed full cognitive resources. When forming impressions about the situation surrounding someone’s actions, entity theorists considered dispositional interpretations even under cognitive load but incremental theorists did so only when possessed of full cognitive resources. Thus, it seems that incremental theorists naturally revert to being susceptible to the use of situational influences to explain behavior or make social judgments and entity theorists naturally revert to being susceptible to the use of personality traits to do so.

Thus people’s preferences for consistent or inconsistent information depend largely to their a priori implicit theories of personality. It is important to note, however, that these findings come from some studies (e.g., Plaks et al., 2001) that manipulated
consistency or inconsistency of specific stereotypes such as that of a neo-Nazi skinhead, but not consistency or inconsistency of implicit theories. In a more recent study though, Plaks et al. (2005) violated people’s implicit theories as well as stereotypes and found evidence of motivated, selective processing regardless of the stereotype relevance or irrelevance. Plaks et al. (2005) presented entity and incremental theorists with information that either supported or violated their implicit theories. They found that theory violation was met with greater anxiety and effort to reestablish one’s sense of prediction and control mastery. Specifically, for entity theorists under high cognitive load, counter stereotypic information that also violated their implicit personality theory triggered more defensive processing (measured using response latency and affective responses) than merely counter stereotypic information. For incremental theorists under high cognitive load, stereotypic behavior that implied an inability to change led to more defensive processing than behavior that was merely stereotypic. That is, people seemed motivated to protect and defend their chronic implicit theory when it was threatened or violated. These studies seem to show that people are reluctant to abandon their active implicit theory, even resorting to biased or distorted processing when this theory is violated.

However, as described earlier, several experiments have shown that both the entity and the incremental theories can be situationally primed regardless of participants’ chronic theory. Methods to do so have ranged from using mock scientific articles that describe evidence of the fixed or changeable nature of human attributes (e.g. Chiu et al., 1997, Experiment 5; Plaks et al., 2001, Experiment 3), to priming different goals to induce different theories (e.g. Thompson & Musket, 2005), to conducting 90-minute workshops
to induce incremental theories using various persuasion techniques (e.g. Heslin et al., 2005). Such experiments which successfully manage to induce different implicit theories seem to present a contradiction to Plaks et al.’s (2005) findings that people resist changing their chronic implicit theory. However, the reconciliation lies in the distinction Plaks et al (2005) themselves make between theory violation and theory replacement. In the Plaks et al (2005) experiments with theory violation, no suitable replacement theory was offered which would help participants reconcile the violating information they were receiving. In the other (theory-priming) studies, however, a coherent, often ‘scientifically-validated’ theory was described to participants which allowed them to therefore access the available but not chronically accessible theory.

Such a conclusion is feasible especially given the discussion around activating relevant knowledge structure. If a certain notion is merely challenged or ‘deactivated’, with no replacement notion gaining accessibility in its place, there is bound to be strong resistance on the part of the person whose implicit theory was challenged or violated with nothing to take its place and thereby restore meaning to their experience.

These generalizations across all entity and all incremental theorists don’t tackle the question of whether it is easier to influence a change in implicit theories for some more than others. Harackiewicz and Elliot (1995) maintain that it may actually be easier to alter the world view of an entity theorist compared to one of an incremental theorist. This is an assumption that would fit in with some evidence that everyone seems to adhere to an incremental world view, and a subset (about 40%) additionally endorse an entity theory (Boyum, 1988; Leggett, 1985). This is also an adaptive mechanism in that if this is true, entity theorists may switch to an incremental theory for situations when negative
feedback is likely and thus protecting themselves from the debilitating consequences of negative feedback. Dweck et al (1995) however presents a counter-argument – they argued that entity theorists may disproportionately focus on their failures over their success: “Even a single failure, despite many prior successes, may be enough to govern their self-judgments” (p.275). Thus, entity theorists may react cognitively, affectively and behaviorally, to success as well as failure in a way that their helpless pattern persists. Therefore, whether and to what extent entity and incremental theorists can change their theories if explicitly manipulated, and what effect this has seems to be an as yet untested empirical question.

At this point though, there is reason to believe that both entity and incremental theories are available to most of us, and if our chronically accessible theory is violated, we react defensively unless the alternative theory is primed or made accessible to us. Other things being equal however, we are more easily drawn to ‘accept’ situational priming or induction of theories that match our pre-existing notions about the malleability of personality and behavior than those that go against our chronic implicit theories.

**Extending Findings from Implicit Theory Research to Other Fields of Study**

The preceding discussion shows that ideas from social-cognitive literature on knowledge structure activation have helped reconcile some seeming discrepancies in the implicit theories literature. Similarly, adopting well-developed concepts and methods from other sub-disciplines of psychology will result in advances in industrial-organizational psychology (Latham & Heslin, 2003). The time seems ripe to apply learnings from the study of implicit theories of personality to the world that industrial-
organizational psychologists deal with. The majority of implicit theory research has been by educational and social psychologists on children and students, and has focused especially in the early years on the motivational implications of holding a chronic entity or incremental implicit theory (e.g. Dweck & Leggett, 1988; Kamins & Dweck, 1999).

There is some uncertainty about whether implicit theory research generalizes to behavioral judgments made by adults in a work context (e.g. Kanfer, 1990; Vandewalle, 1997). Kanfer (1990) for instance concluded that adult conceptions of abilities are more complex and differentiated than those of children. Consistent with this conclusion, Vandewalle (1997) found much weaker relationships between adults’ implicit theories of intelligence and work-domain outcomes such as learning goal orientation \((r = .14)\) and feedback seeking \((r = .06)\) than has been found in studies with children and students (e.g. Dweck & Leggett, 1988; Robins & Pals, 2002). Applying the idea of implicit theories to industrial-organizational psychology is important because the ideas entrenched in both are similar – goals, achievement, abilities, self-efficacy, motivation and improvement. As Wood and Bandura (1989) stated, “The conception of ability with which people approach complex activities is likely to have a significant impact on the self-regulatory influences that govern ongoing motivation and personal accomplishments in complex decision-making environments.” (p.407). In the organizational context, studies have examined how implicit theories about ability influence self-regulatory aspects such as the goals people set (e.g. Wood & Bandura, 1989), self-efficacy levels (e.g. Martocchio, 1994) and resilience of self-efficacy following setbacks (e.g. Wood & Bandura, 1989), complex decision-making (e.g. Tabernero & Wood, 1999), revision of managers’ judgments of employees (Heslin et al., 2005), and of course, the vast body of goal orientation literature
that uses implicit theories as an explanatory mechanism in understanding the effects of goal orientation.

With the exception of a few studies, participants in most implicit theory studies have been children or undergraduates who were asked to perform tasks unrelated to their role as students, and much of this research has been conducted by educational and social psychologists and focuses on judgments of other people (Heslin et al., 2005). The domain of interest in the current study, self-reported personality seeks to rectify this.

The Need for Exploring the Role of Implicit Theories in Understanding Responses to Self-Report Personality Tests

A great deal of social science research in general relies on self-reports where people are asked to honestly and accurately express their thoughts, beliefs, attitudes, values, internal states, goals, fears or aspects of personality (Rasinski, Visser, Zagatsky, & Rickett., 2005). Industrial-organizational psychologists especially rely to a great extent on self-reported personality whether in research or in practice. Be it the ubiquitous pre-employment selection batteries which include personality assessments, vocational guidance tools or organizational surveys on job satisfaction, the common means to the various ends seems to be the use of self-reported personality or perceptions. There are vast numbers of studies focused on the influence of these self reports on outcomes such as faking on employee selection tests, turnover, performance appraisal results, etc. but there is less focus on the processes influencing the self-reports themselves. It is recognized by social cognitive psychologists that the introspective process involved with
filling out a self-report inventory is often fraught with bias and error (Ross & Nisbett, 1991).

Amongst practitioners, arguably the most pervasive concern about using self-report personality measures in a selection context is that applicants may strategically distort or ‘fake’ their responses to improve their chances of being selected and thus gravely reduce the usefulness of personality scores (e.g. Christiansen, Burns, & Montgomery, 2005; Ones & Viswesvaran, 1998). Investigating responding to personality test items is an important area where implicit theory research can find applicability because there is evidence that one’s responses to personality test items are not exact representations of his/her standing on that latent trait but are influenced by a variety of external and internal states. These include motivation to distort their responses (e.g. Alliger, Lilienfeld, & Mitchell, 1995), warnings (e.g. Dwight & Donovan, 1993) and frame-of-reference effects (e.g. Hunthausen et al., 2003). One such factor, which could be explored as both an internal and an external state, is the implicit theory individuals hold about the malleability of personality and behavior. In fact, some recent research showed that even implicitly primed goals (to be honest) using an ostensible vocabulary test influenced the accuracy of self-reports about excessive alcohol consumption (Rasinski et al., 2005). Inasmuch as there is a body of evidence showing that measured as well as manipulated implicit theories demonstrate interesting outcomes on social judgment and perception, such research findings could be leveraged in trying to understand their influence on self judgment and perception.

A particular area this research needs to investigate is whether there are differences in the validity of personality tests as a function of the person’s implicit theory (both
measured and manipulated). The first thing to establish is whether there are direct links between implicit person theories and various personality traits themselves, before diving into the question of whether or not these theories influence one’s self-report of such personality traits. In terms of direct relationships, lay theories have been demonstrated to be more or less unrelated to certain constructs such as cognitive ability as represented by SAT-scores, confidence in intellectual ability (Hong et al., 1995), different aspects of the ability self-concept (Spinath & Stiensmeier-Pelster, 2001), political affiliation, attitudes such as authoritarianism or conservatism and religious beliefs (Dweck et al, 1995). More interestingly, implicit theories about the malleability of intelligence and personality were shown to be largely unrelated to actual personality and intelligence (Spinath et al., 2003). In the only direct examination of the relationship between implicit personality theories and response distortion, implicit theories measures were shown to be uncorrelated with self-presentation strategies and concerns such as self-monitoring and social desirability, and factor analyses yielded different factors for different domains of the self thus ruling out a general response set which may have indicated faking (Dweck et al, 1995). However, the use of social desirability scales as a proxy for faking has been widely criticized (e.g. Christiansen, Goffin, Johnston, & Rothstein, 1994; Ellingson, Sackett, & Hough, 1999) and in view of the fact that not much research on implicit personality theories focus directly on the question of test validity or self-report accuracy, further investigation is warranted.

The current study attempts to understand the notion of validity under different conditions of implicit theories. Findings in the area of implicit theory and social judgment provide us with clues on how implicit theories might influence judgments about the self.
For instance, if entity theorists are more inclined towards dispositionism than incremental theorists and rely on trait labels more than situational dynamics to explain and understand behavior (e.g. Dweck et al., 1993), it may well be that they must use these processes when attributing and describing their own behavior and personality as well. Kruglanski (1995) made an important observation regarding the research on implicit theories – according to him, this research program is no longer a mere theory of trait clustering or a lay-theoretic base of perceiving other people. Entity and incremental theories, because they are concerned with the very possibility of personal change, are described as being ‘poignantly pertinent to the self’ (Kruglanski, 1995, p.301). These theories aid people in interpreting significant events in their own lives and influence their affective, cognitive and behavioral reactions to several personal and interpersonal situations. In fact, if adherence to a certain implicit theory is a relatively stable feature, it may even be possible to view personality itself as being largely composed of a set of naïve personality theories to which the individual may subscribe!

Using the Person-Situation Paradigm to Explore the Influence of Implicit Theories on Responding to Personality Tests

Having established the need to understand whether, and how, implicit theories influence self-reported personality, the focus becomes one of identifying the appropriate framework with which to study this question. As Hogan (1991) stated, from an individual’s perspective, personality is his/her perceptions of himself or herself across a wide variety of situations. This is the assumption behind the use of global measures of...
personality as well – that one can measure personality in a manner that is expected to generalize across time and situations.

When global personality items are used, some applicants may respond with how they are across situations while others may respond specifically about how they are at home, at work or elsewhere (Holtz, Ployhart, & Dominguez, 2005). Mischel and Shoda (1995) in their view of personality, the cognitive affective personality system (CAPS), suggest that individuals react to situational cues, which influence cognitive processing dynamics, which in turn elicit different reactions or manifestations of one’s personality depending on the situation. Thus it follows that by varying situational cues, one can influence how one’s personality is manifested, for instance on self-report personality measures. There are intimate relationships between various constructs that have traditionally not been defined within the confines of personality theory – the cognitive-emotional mediating processes of what we would call personality include interpretations of the situation, affective responses, expectancies and beliefs about the self and possible outcomes, scripts and plans for behavior as well as values and task-specific goals (Mischel & Shoda, 1998).

Mendoza-Denton, Ayduk, Mischel, Shoda and Testa (2001) point out that the influence of Mischel and Shoda’s (1995) conceptualization of personality structure and coherence in terms of Person X Situation (P X S) interactions is evident in current social-cognitive conceptions of personality organization. However, its implications for the encoding of the self remain largely unexplored. To correct this, they examined the causal role of PXS interactionism on self-encoding and found that such interactionist self-encoding led to less affective extremity compared to unconditional self-encoding (i.e.
encoding that does not take the situation into account). They also found that interactionist self-encoding attenuated the tendency to endorse global stereotypes. Both these results suggest that encoding in terms of PXS interactions may prevent people from generalizing specific experiences to the self as a whole and also enhance fine-grained social perception. That is, if personality is organized as a series of if-then patterns of situation behavior (i.e. if Situation X, person does A, if Situation Y, person does B), then the resulting interactionist self-encoding binds the experience to the context rather than generalizing the experience to the self as a whole (Mendoza-Denton et al., 2001).

The CAPS theory may be seen as merely a relatively sophisticated formulation of an idea that has been accepted in psychology for a long time, namely, the idea that behavior is a result of an interaction between the person and the situation they are in. This person-situation paradigm is a powerful explanation of virtually any phenomenon although the exact relationship between the two variables, the amount of variance attributed to either side and the definition of what constitutes ‘person’ and what ‘situation’ varies. Using this general framework to study the behavior of interest here (responding on personality tests) is a logical step given that (1) the person-situation framework has shown to have widespread explanatory power, (2) responding to self-reported personality tests is a behavior that has shown to be affected by both innate, personality variables as well as contextual, situation-specific effects, (3) there are obvious differences between incremental theorists and entity theorists in their tendency to resort to situational versus stable/personal factors respectively, in constructing their world and (4) more specific to the present undertaking, the implicit person theory model has been shown to have both a ‘person’ component as well as a ‘situation’ component in that
implicit theories can be both measured as well as manipulated (e.g. Harckiewicz & Elliot, 1995).

**Trait (Dispositionism) versus Process (Situationism)**

There is evidence that people tend to make dispositional judgments about themselves based on information they perceive as highly diagnostic (Ross, 1977). Given that the act of responding to self-report measures of personality is one such judgment, the question is, do incremental and entity theorists differ in what they consider diagnostic? Research seems to suggest that the answer is ‘yes’. As Dweck et al. (1995) suggested, the unit of analysis for the two belief systems differs. Entity theorists have been shown to attribute causality to global, consistent, stable traits (‘trait focus’) whereas incremental theorists rely on situation-specific, dynamic states to explain behavior (‘process focus’). According to Werth and Forster (2002), entity theorists, who believe in people’s consistency over time and situation use top down processing and therefore rely on metacognitive knowledge (such as how they are in general, across situations). Incremental theorists on the other hand, neglect even information that refers to themselves (especially metacognitive knowledge) in drawing inferences, favoring dynamic situation-specific details and relying on bottom-up processing instead. Butler (2000) found that the effects of temporal (over time) and normative (across people) feedback/comparisons on people’s self-appraisal are moderated by the implicit theories they hold, regardless of whether chronic or induced. Specifically, temporal feedback affects incremental theorists and normative feedback affects entity theorists more. She presents implications such as the ‘anchoring’ effect of initial impressions for entity
theorists and the same kind of ‘anchoring’ effect of changes for incremental theorists. That is, entity theorists are more likely to form strong expectations based on initial outcomes and maintain these expectations even in the face of disconfirming evidence indicating subsequent improvement or deterioration. But incremental theorists will be more likely to revise their expectancies in the light of additional information.

Research suggests that entity theorists are more likely to attribute behavior to dispositional causes and incremental theorists are more likely to attribute behavior to situational causes (e.g. Dweck et al., 1995, Levy et al., 1999). These results are consistent with the entity theorists’ general focus on assessing people’s unchanging psychological properties and the incremental theorists’ general focus on understanding the dynamic states and circumstances influencing people’s psychological processes (Levy et al., 1999; Molden & Dweck, 2006). This difference in world views, if manifested in the way people respond to personality tests, will result in entity theorists displaying consistency in responses regardless of context and in incremental theorists displaying contextual responding and modifying their responses if called for, when placed in a certain (e.g. work-related or school-related) context.

This trait versus process focus observed in entity and incremental theorists has a very direct parallel in research on cultural differences. In more than one study, the similarity between incremental theorists and people from collectivist/East Asian cultures and that between entity theorists and people from individualistic/Western cultures has been drawn (Church et al., 2003, Molden & Dweck, 2006; Choi et al., 1999). Individualistic cultures tend to foster construals of people as independent agents (Markus & Kitayama, 1991). People from such cultures are predicted to have stronger implicit
beliefs regarding the ‘tratedness’ of behavior (Church et al., 2003) leading to stronger emphases on (a) trait attributes as an aspect of self-concept, (b) inferring traits in observations of others, and (c) self-enhancement in the evaluation of one’s own traits (e.g. Heine, Lehman, Markus, & Kitayama, 1999). People in collectivistic cultures on the other hand, who construe persons as interdependent, are thought to have weaker beliefs regarding the traitedness of behavior and stronger beliefs regarding the role of contextual factors, which leads to corresponding emphases on (a) roles and relationships as aspects of self-concept, (b) greater attention to situational information in making causal inferences about behavior, and (c) weaker tendencies to self-enhance and perhaps even tendencies to self-criticize in self-descriptions.

Such findings might lead to an answer to some critiques of the entity-incremental theory model. Peterson (1995) for instance, wonders whether Dweck et al. have exhausted the range of implicit theories citing examples such as Pepper’s (1942) philosophies such as mechanistic (explanations in terms of causes-and-effects), formist (explanation in terms of categories) and contextualist (explanation in terms of entity-context interdependence). While the entity-incremental distinction may be similar to the formist-mechanistic one, there are obviously other ways to approach the question of changeability of attributes and one’s implicit theories around those.

Wright and Mischel (1987) used the term ‘conditional dispositions’ to describe the variability of personality – stable patterns of behavior are contingent on situational conditions (a Person X Situation interaction). In tying the research in the implicit theories area to such ideas, the key is in understanding that people differ in the kind of self-encoding that they use as a norm. The self can be encoded by focusing attention on the
interactions with the conditions or situations in which events unfold – “interactionist self-encoding”. Alternatively, individuals can disregard the interaction and instead encode the self in terms of unconditional, de-contextualized, self-referent attributes or traits (Mueller & Dweck, 1998) – “unconditional self-encoding”. From evidence gathered in implicit theories studies, it seems likely that as a rule incremental theorists favor interactionist self-encoding whereas entity theorists rely on unconditional self-encoding. The specific nature of the self-relevant thoughts that become activated depends mainly on how the self is encoded with respect to the experience (Mendoza-Denton et al, 2001). Thus, the way one self-reports on a personality test within a certain context could be related intimately with whether an interactionist self-encoding (incremental theorists) is activated or unconditional self-encoding (entity theorists). In the present study, I am interested therefore, in the difference between such contextual or interactionist responding (what I am calling ‘situationism’) and consistent or unconditional responding (what I am calling ‘dispositionism’).

Church et al. (2003), as stated earlier, therefore developed, tested and used a measure of implicit beliefs about the traitedness or contextuality of behavior, called the “Personality Beliefs Inventory”. Even though they developed it with the intention of using it to study cross-cultural differences/similarities in endorsement of “implicit trait theories”, as they called it, their ideas could be used in any context where one is interested in whether people belief in traitedness or contextuality of behavior. This measure gets at the very notions of dispositionism versus situationism by directly measuring whether someone believes in the consistency and importance of traits or the influence of the context or situational dynamics in influencing behavior.
The assumptions (made based on all the research summarized so far) therefore are as follows: (a) that those endorsing entity theories in general will also endorse entity theories when it comes to a specific domain such as procrastination as well as implicit traitedness beliefs (cross-situational consistency and temporal stability), (b) that those endorsing incremental theories in general will also endorse incremental theories when it comes to a specific domain such as procrastination as well as implicit contextuality beliefs (cross-situational inconsistency and temporal instability); (c) entity theorists and those endorsing implicit traitedness beliefs seem to form and maintain initial perceptions and therefore, must present a more consistent self-report regardless of context; and finally (d) incremental theorists as well as those endorsing implicit contextuality beliefs are sensitive to changes over time and across situations and therefore, must present a less consistent but more context-relevant self-report in different contexts. The first two assumptions are easily tested by examining the relationship between the variables in question after data is available. The more interesting question lies in the third and fourth assumptions. Specifically, which group is likely to provide self-reports that are more valid (strongly related to actual behavior)? Does presenting oneself as having a global, consistent standing on a trait make for more valid self-presentation or does presenting one’s standing on the trait as relevant to the context? That is, does dispositionism in self-reporting lead to better validity of the self-report or does situationism?

The case for Situationism: Incremental Theory and Contextuality

By definition, incremental theorists are more open to the idea of a changing personality, especially under certain situations. Depending on the context or purpose of
the self-report, people may be motivated to enhance the impression they make. Another way of viewing such findings is under the umbrella of ‘contextual responding’. As the CAPS theory proponents might view it, under such a context, applicants are merely presenting their view of themselves as “If I am at work, then I am organized (or creative or extraverted)”.

There are some interesting differences in the direction and nature of these changed responses. Traditionally, researchers and practitioners alike have denounced such changes as ‘faking’, which leads to undesirable outcomes such as reduced validity and selecting the ‘wrong’ candidates for the job (e.g. Douglas, McDaniel, & Snell, 1996, Mueller-Hanson, Heggestad, & Thornton, 2003). Attempts to reduce such faking include the administration of warnings and instructions designed carefully to evoke more honest and accurate responding. The efficacy of such warnings when applicable, demonstrates that it is possible to improve accuracy of responses using simple instructional frames such as those used in warnings. However, warnings and instructions do not seem to be universally efficacious in improving the accuracy of responding, thus questioning the assumption that every change in responding given an incentive or work context is faking. There is some evidence that providing a context actually improves accuracy and therefore, changes in responses due to instructions like this cannot be called faking.

Recent research investigating the inclusion of a simple ‘at work’ frame to personality tests, for instance, finds that these changes in responses yield better outcomes than context-free personality tests (e.g. Hunthausen et al., 2003). According to researchers in this area of frame-of-reference (FOR) effects, the very global/generalized nature of many personality tests leads to ambiguity in how applicants may respond while
applying to a job and thus lead to lower criterion-related validity (e.g. Hunthausen et al., 2003; Schmit, Ryan, Stierwalt, & Powell, 1995). For instance, in a selection test, if asked about one’s methodical and organizational nature, it may or may not be immediately clear to an applicant how to respond if he/she is different in different situations – her kitchen may be organized to a greater level of detail than her filing cabinet, or his office desk may be more organized than his bookshelf. As a result, the ensuing pattern of responses to all questions pertaining to their methodical nature or organization may be an unclear mix of self-reported tendencies, which is less likely to predict organization on the job.

Though there are arguments for why providing a frame of reference should reduce validity – such as providing a powerful situation which overrides personality influences (e.g. Beaty, Cleveland & Murphy, 2001) or making it easy to fake the test by increasing transparency and systematic error and thereby reducing validity, Schmit et al. (1995) showed that providing college students with an ‘at school’ frame of reference increased the predictive validity of a conscientiousness measure on GPA. Similarly, Hunthausen et al (2003) found that providing an ‘at work’ frame for respondents improved predictive validity of the Extraversion and Openness to Experience (and to a lesser extent, Conscientiousness) scales of the NEO-FFI amongst airline customer service employees and also showed overall incremental validity of personality over cognitive ability. Holtz et al. (2005) found that altering respondents’ frame of reference by adding “at-work” tags to the NEO-Five Factor Inventory produced consistent effects on personality test responses but not on test perceptions (contrary to recent claims). Specifically, such contextualized tests yielded lower error variances, smaller latent variances and higher means than generic versions. This suggests that providing an at-work frame could reduce
error in prediction and improve criterion-related validity as other research (e.g. Bing, Whanger, Davison, & VanHook, 2004; Hunthausen et al, 2003) has established. These frames might lead individuals to present the relevant ‘conditional disposition’ for the context in question. However, more research is needed to identify the boundary conditions of such findings. Holtz et al (2005) for instance, mention that individuals seem to judge their standing on some personality dimensions differently than others when an at-work frame is applied almost as if the context matters for some personality dimensions but not for others.

Hunthausen et al (2003) called for an investigation of other individual differences such as self-monitoring, on the effect of frame-of-reference effects on the validity of personality tests. They paint one possible scenario – perhaps in a hiring situation, high self-monitors, who rely on the immediate situation to guide their behaviors may be more likely to use an at-work frame-of-reference when responding to personality items and by the same token, providing low self-monitors with an at-work frame-of-reference may provide them with a context that allows them to indicate more accurately where they stand on the personality measure. Drawing such a parallel to implicit theories is not difficult. Incremental theorists who are more influenced by situations may be more likely to provide accurate responses, especially given an ‘at-work’ frame. Entity theorists may be helped by the ‘at-work’ frame in contextualizing their responses, or they may view this as just another situation where their global, generalizable traits will be manifested in much the same way as they would be at school or at home. In fact, Bergen (1991) suggested that entity theory’s belief in unchangeable attributes limits adaptation to environmental demands. Thus incremental theorists, and implicit contextual theorists (to
the extent that they are similar) might provide self-reports that are more related to actual behavior when provided this context than would entity theorists.

Another reason to expect higher validity in the incremental condition is the fact that entity theorists are almost by definition, more concerned about presenting a positive image which may or may not be accurate. In contrast, incremental theorists’ primary concern is development or the adoption of learning goals. They choose tasks that embody learning goals in that they provide an opportunity to increase ability even at the risk of exposing ignorance and drawing negative judgments of their competence, whereas entity theorists avoid this opportunity, picking performance goals instead that ensure competence at the cost of a meaningful learning opportunity (Sorrentino, 1995). In a somewhat indirect manner there is some evidence that incremental theorists’ conceptions of themselves are more accurate than are entity theorists for such reasons. Leonardelli, Hermann, Lynch, & Arkin (2003) found using a unique kind of self-report where participants report on the level as well as distribution (range) of their intellectual ability, that incremental theorists reported more negatively skewed distributions of their ability over time than entity theorists. That is, they were more likely to see that their intellectual ability has changed and improved compared to how it used to be (and in follow-up investigations, they attributed this growth to their effort). They are willing to admit to low ability whereas entity theorists showed a more normal distribution with very little change in their own perceived ability.

In relating these ideas to the area of implicit theories, it may be that for incremental theorists who view personality as malleable and context-dependent, providing students with a ‘school’ context or applicants with a ‘work’ context might
produce more accurate (context-relevant) self-reports of personality. For incremental and contextual theorists in particular, such a frame might provide the anchor for their responses. Perhaps this increases the salience of their own selves at work/school, and because they are more amenable to the idea of changing personalities, they grasp this new anchor and use it to respond to the personality test. (Of course, inducing an incremental theory might have the undesired effect of increasing actual faking by activating the idea that personality is indeed so malleable and dependent on context, that it gives people the license to ‘put their best foot forward’ regardless of the accuracy of their self-presentation. This is an empirical question.)

For entity and traitedness theorists however, this context should make little or no difference given their tendency to revert to dispositional judgments regardless of situational influences. Moreover, similar to entity theorists who have a trait-focus, cross-cultural studies propose that people from individualistic cultures who also have a trait-focus show enhanced evaluations of their own traits (e.g. Heine et al., 1999). With their concern for demonstrating competence, this finding will probably generalize to entity theorists as well more than incremental theorists who (like individuals from collectivistic cultures) will likely show less self-enhancement. In fact, Heine (2003) and Church (2000) proposed that people who believe that traits are malleable and less predictive of behavior such as Dweck’s incremental theorists and Church’s implicit contextual theorists will be less motivated to self-enhance. On the other hand, self-enhancement should be greater among people who believe that traits are stable and predictive of behavior such as Dweck’s entity theorists and Church’s implicit trait theorists. However, in a cross-cultural study testing this hypothesis, Church et al. (2006) found no relationship between
self-enhancement and implicit beliefs about the traitedness of behavior. One of the explanations they put forth to explain this lack of a relationship is that these implicit beliefs are too distal and concern one’s beliefs about people in general and not so much how one views oneself. However, given Kruglanski’s (1995) portrayal as implicit theories being ‘poignantly pertinent to the self’, and the fact that the Church et al. (2006) study had a different focus than understanding self-report accuracy, I propose that the time is ripe for such an investigation.

The case for Dispositionism: Entity Theory and Traitedness

The previous section established a few theoretical grounds on which to expect incremental theorists to provide self-reports that predict behavior better than entity theorists, especially when provided a specific context or frame. However, given the paucity or absence of research investigating which, if any, implicit theory actually makes for better self-presentation, it is important to consider the other side of the argument – that entity theorists’ self-representations might show greater correspondence with their actual behavior than incremental theorists’.

Paralleling findings in the field of intrinsic motivation where they have found positive consequences of performance goal adoption in some contexts and for some individuals (e.g. Elliot, 1994), Harackiewicz and Elliot (1995) draw our attention to the possibility that in some instances and/or for some individuals, entity theorizing may be the preferred alternative. For instance, success feedback may in fact have more positive consequences for entity theorists compared to incremental theorists; if they view ability as fixed and then perform well, they should infer that they possess the ability in question.
and thus enjoy the affective and motivational benefits that follow. Thus, inasmuch as someone is ‘high’ on a certain attribute, there are advantages to holding onto an entity belief. Bergen (1991) in fact, as an ancillary finding in his study about the generality of implicit theories, found that students with entity theories outperformed incremental theorists in their ACT scores. He posed two possible explanations: either they were more motivated to perform well on the ACT and demonstrate competency in keeping with the performance goals they tend to adopt (e.g. Dweck & Leggett, 1988) or they actually do have greater ability than incremental theorists. If the latter is true, then maybe the development of incremental theories is a way to preserve one’s sense of self-esteem and to compensate for true lack of ability by believing that this could change.

Also, if entity theorists actually believe that performance outcomes indicate stable dispositions then the initial judgments they make about their abilities or attributes should be highly resistant to change and may in fact serve as self-fulfilling prophecies perpetuating themselves due to perceptual and cognitive biases (Higgins, Roney, Crowe, & Hymes, 1994). Chiu et al (1997) found that in both the ability and social domains, entity theorists predicted that a person would act consistently across situations more than did incremental theorists. They also estimated that the probability of a personality trait (e.g. conscientiousness or shyness) being exhibited in a given situation was higher than did incremental theorists. Moreover, the firmness of entity theorists and their reluctance to revise their initial judgments applies in cases where the judgment is positive as well as negative and whether impressions were formed directly or indirectly (e.g. Heslin et al., 2005). Butler (2000) stated that it seems likely that entity theorists will also expect greater consistency over time than incremental theorists, and will tend to form and
maintain inferences based on initial evidence. If the tendency to expect such trait consistency extends to perceiving it in themselves, it should be evident in their self-reported personality whether given a specific context or not. Their self-presentation in a particular context should not differ much from their self-presentation in any other context, given that for them, the (stable) trait is the unit of analysis and not so much the dynamic situational factors that influence incremental theorists.

Implicit traitedness beliefs, while less deterministic and more probabilistic than implicit entity theories, also lead one to believe in the longitudinal and cross-situational consistency of traits, in the ability to predict individual’s behavior from their traits, that traits can be readily inferred from relatively few behavioral instances and the belief that people can be accurately described/understood in terms of their traits (Church et al., 2003). As such, like entity theories, such implicit traitedness beliefs may be expected to yield unwavering self-reports regardless of context.

Moreover, research suggests that it may be socially undesirable to seem variable in one’s opinions (Allgeier et al., 1979; Cialdini, Braver, & Lewis, 1974). In fact, it may even be somewhat comforting to believe that a self-attribute is fixed or constant (see Rholes, Ruble, & Newman, 1990). Thus, entity theorists, with their concern about demonstrating competence, might resort to their global, static view of traits to respond to personality tests, resulting in a consistency across situations. However, the uncertainty comes in when we realize that entity theorists, though they believe attributes are fixed, need to constantly look to the outcomes they are experiencing to know at what level they are fixed – as Dweck & Legget (1988) caution us, self-judgments of seemingly fixed traits can be highly unstable.
It therefore seems that entity theorists, with their view of personality as unchanging and consistent, might present themselves in a reliable manner over time and across situations, regardless of context. Research as far back as three decades ago established that for those who perceived less variability in their own behavior, self-reported personality traits such as conscientiousness and friendliness were more related to others’ ratings of them on these dimensions as well as other outcomes, compared to those who reported more variability in their behavior (Bem & Allen, 1974). To the extent that such self-perceptions of behavioral variability are related to self-perceived possibility of variability in personality (i.e. implicit theories of personality), these findings might be replicated in the current examination. If indeed, past behavior is the best predictor of future behavior, and entity theorists are sufficiently self-aware to report accurately on their consistent patterns of personality and behavior, it might be that this consistency leads to a stronger relationship of the self-report to actual future behavior than for incrementalists.

Current study

The current study is an attempt at understanding the influence of implicitly held beliefs about the malleability and traitedness/contextuality of personality on the behavior of responding to personality tests. The primary question under investigation in this study is what is the best formula to obtain a strong correspondence between self-reported personality and behavior? Do chronically held implicit beliefs about the malleability of personality (general or procrastination-specific entity and incremental theories, as well as implicit traitedness or contextual beliefs) influence the validity of self-reports? Would an
induced entity theory or an induced incremental theory have the desired effect? Or would the solution lie in an interaction between chronic and induced implicit theories on the behavior of self-presentation? If the answer does lie in this third possibility that implies a person-situation interaction, then what exact configuration is likely to yield the strongest relationship – congruence between chronic and induced theories or a mismatch/incongruence?

Specifically, I seek to understand whether dispositional entity and incremental theorists modify their self-report of personality under conditions where situational entity or incremental theories are made more salient by means of a set of experimental manipulations. More pointedly, do responses given under these different conditions result in different relationships with criterion behavior than under conditions where chronic or dispositional entity and incremental theories are merely measured and not induced? To do this, the influence of dispositional (existing) as well as contextually induced implicit theories on self-reports of personality is examined.

Operationalizing the primary outcome of interest, the relationship between self-reported personality and behavior, involves examining the relationship between a self predictor and an outcome/criterion it is logically tied to. The importance of a predictor-criterion match in terms of construct and breadth of coverage has been established (see Bartram, 2005, Hogan, 2005). Therefore, in the current study, the predictor and criterion used to study accuracy will both target the same construct, namely, procrastination. Procrastination has been defined as the tendency to delay initiation or completion of important tasks to the point of discomfort (Solomon & Rothblum, 1984). In a more recent meta-analytic review of procrastination studies, Steel (2007) combined various
conceptualizations of procrastination to yield the following description: “…to procrastinate is to voluntarily delay an intended course of action despite expecting to be worse off for the delay” (p.66). In this study, a self-reported measure of the tendency to procrastinate will be obtained from student participants, and its relationship to actual procrastination on test-taking behavior (a particularly relevant criterion for the present sample) will be measured. As will be made clear in Chapter III, the current operationalization is consistent with Steel’s definition in that the situation allows for students to realize that there are real advantages to not procrastinate and yet, delays in test-taking behavior are observed in the sample showing that these delays are voluntary and occur despite expecting to be worse off for the delay.

With this relationship thus operationally defined, it is important to similarly operationalize the main variable of influence on this correspondence, implicit personality theories and beliefs. The study seeks to both measure as well as induce these theories. In reviewing the literature on implicit personality theories, it is clear that there are a few different ways to conceptualize implicit beliefs about the malleability of personality.

In the present study, to measure dispositional implicit beliefs, four different operationalizations will be used. One is a general measure of implicit personality theories which provides an index of one’s entity versus incremental theory in general (Levy & Dweck, 1998). This measure is domain-general or domain-agnostic in that it asks about people’s views on the possibility of personality change phrased in very general terms. Second, since authors (e.g. Dweck, 1999) have pointed out that one’s implicit theories may differ based on domain, a domain-specific measure will be used, which provides information on how malleable or fixed one believes their tendency to procrastinate is.
The remaining conceptualizations of implicit theories both arise from a single instrument measuring the two respective constructs: belief in the traitedness and belief in the contextuality of personality (Church et al., 2003). These measures are written using a self-referent frame, based on concerns that one’s implicit personality theories about people in general may be distal and inappropriate in the current context, compared to one’s implicit personality theories about themselves.

To induce situational implicit beliefs in the malleability or fixedness of personality, a self-persuasion paradigm that was used in past research (e.g. Heslin et al., 2005) will be modified for the present purposes. In such an exercise, participants are not only told that a certain belief is true, but are also made to engage in activities such as reflection and cognitive dissonance, designed to make them believe in it by persuading themselves that it is true. Such an elaborate induction is necessary because others (e.g. Tabernero & Wood, 1999) have found it difficult to induce certain theories with mere instructions or a brief vignette. In order to engage participants in the study, and ensure complete ‘buy-in’, a reasonable and relevant cover story will be provided to them and they will be debriefed about it at the end of the study. This cover story involves informing participants that the study will be used to make decisions for an online networking website that will match mentors to students. (See the measures section for the exact verbiage that will be used to communicate this cover story).

Thus, the influence of dispositional implicit personality theories and beliefs (measured four ways) and situationally induced implicit personality theories on the relationship between self-reported procrastination and actual recorded procrastination will be studied.
Hypotheses

This study is designed to be an exploration of processes and effects rather than a confirmation of predicted relationships. As such, the following hypotheses are best seen as general research questions than specific directional hypotheses of relationships between known variables.

*Hypothesis 1: Chronically held (dispositional) general implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors.*

![Diagram](image)

*Figure 2.1: The hypothesized moderating influence of General Dispositional Implicit Theories

*Hypothesis 2: Chronically held (dispositional) procrastination-specific implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors.*
Figure 2.2: The hypothesized moderating influence of Procrastination-Specific Dispositional Implicit Theories

Hypothesis 3: Chronically held (dispositional) implicit personality beliefs about the traitedness of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors.

Figure 2.3: The hypothesized moderating influence of Traitedness Beliefs

Hypothesis 4: Chronically held (dispositional) implicit personality beliefs about the contextuality of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors.
**Hypothesis 5:** Induced (situational) implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors.

**Hypothesis 6:** There will be an interaction between dispositional and situational implicit theories of personality such that differences in the relationship between self-reported procrastination and actual procrastination behavior will be observed based on whether there is a match or a mismatch between the two implicit theories. Specifically, when there is a match between dispositional and situational implicit theory, effects will be stronger than when there is a mismatch. The particular theory (entity or incremental) that will show stronger relationships is not predicted.
A couple of possibilities are illustrated next. Considering the relationship between self-reported procrastination and procrastination on test behavior, it may be that incremental theorists who are placed in the incremental condition show a stronger relationship than do incremental theorists placed in the entity condition.
Even with a match, we might observe differences based on the exact theory in question. For instance, with a match between dispositional implicit theory and induction, entity theorists might show stronger relationship between self-reported personality and observed behavior than would incremental theorists (or the other way around).

Figure 2.8: Possible interaction of Matched Entity versus Incremental Dispositional and Situational Implicit Theories
CHAPTER III
METHODOLOGY

In this chapter, the methodology that was used to test the hypotheses put forth in Chapter II is described. This includes an overview of the participants who were recruited, the research design used in exploring the hypotheses, and a description of all the measures and the manipulation used.

Participants

Individuals enrolled in undergraduate Introduction to Psychology courses at the University of Akron participated in the study. Of these participants, some were in the control sample and some were in the experimental sample, which consisted of randomly assigned participants in the entity and incremental theory manipulations. Of the 340 participants, 70.4% were females and the average age of the participants was 18.99 (s=2.2). Most (88.1%) were White, 6.2% were African American, 2.4 were Asian, 1.5% were two or more races, .3% were Hispanic or Latino and 1.2% described themselves as ‘other’. Participants’ work status and experience with personality tests were recorded. About 65.9% were currently employed. Several (37.6%) reported having never taken a personality test before but a number of participants reported having experience with
personality tests. This experience included taking personality tests online ‘for fun’ (41.5%), taking them while applying for jobs (14.5%) or for career guidance (17.4%) and a combination of these and other reasons. Participant demographics broken down by condition are reported in table 3.1 below.

Table 3.1. Participant Demographics

<table>
<thead>
<tr>
<th></th>
<th>CONTROL (n=51)</th>
<th>ENTITY (n=150)</th>
<th>INCREMENTAL (n=139)</th>
<th>OVERALL (n=340)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>38%</td>
<td>27.5%</td>
<td>28.8%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Female</td>
<td>62%</td>
<td>72.5%</td>
<td>71.2%</td>
<td>70.4%</td>
</tr>
<tr>
<td>White</td>
<td>88.2%</td>
<td>87.1%</td>
<td>89.1%</td>
<td>88.1%</td>
</tr>
<tr>
<td>African American</td>
<td>7.8%</td>
<td>7.5%</td>
<td>4.3%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Asian</td>
<td>2%</td>
<td>2%</td>
<td>2.9%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>2%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>-</td>
<td>-</td>
<td>.7%</td>
<td>.3%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>2%</td>
<td>.7%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Currently employed</td>
<td>58.8%</td>
<td>70.7%</td>
<td>63.3%</td>
<td>65.9%</td>
</tr>
<tr>
<td>Average Age</td>
<td>19</td>
<td>18.94</td>
<td>19.04</td>
<td>18.99</td>
</tr>
</tbody>
</table>

Design

This study uses two separate samples. The first sample served as the control group with which a correlational study was conducted using three primary variables: self-reported procrastination, procrastination on test behavior and dispositional implicit beliefs about personality. The second (main) sample is the experimental group which used a two-group experimental design with pre-measures of implicit beliefs. The control group was primarily used to test the hypothesis that even without explicitly manipulating anything, pre-existing or dispositional implicit beliefs about personality influence the relationship between self-reported tendency towards procrastination and actual procrastination behaviors. The experimental group was used to test the hypothesis that manipulated implicit theories of personality influence the relationship between self-
reported tendency towards procrastination and actual procrastination behaviors. Moreover, the person-situation interaction that was proposed in Chapter II was tested using the experimental group where it was possible to study how inducing a specific implicit theory interacts with one’s existing/dispositional implicit theory in influencing self-reported personality. In order to study this interaction between dispositional and induced implicit theories, therefore, an experimental design was used in which participants’ dispositional implicit theories were first measured and then they were randomly assigned into one of two experimental conditions in which either an entity or an incremental theory were induced. As seen in Table 3.2, this design allows a test of the following combinations of induced-dispositional implicit theories in addition to testing the main effects of dispositional theories and induced theories on the accuracy of self-reports.

Table 3.2. Experimental design for Sample II.

<table>
<thead>
<tr>
<th>Induced Entity Theory</th>
<th>Dispositional Entity Theory</th>
<th>Dispositional Incremental Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruence/Match</td>
<td>Incongruence/Mismatch</td>
<td></td>
</tr>
<tr>
<td>Incongruence/Mismatch</td>
<td>Congruence/Match</td>
<td></td>
</tr>
</tbody>
</table>

The specific procedure used in each sample will be described following a description of the measures used across both samples. The manipulation and any unique measures used in one but not both samples will be described under the procedure for that sample.
Measures

The following paragraphs use the term ‘predictor’ and ‘criterion’ to refer to self-reported tendency to procrastinate and actual procrastination behavior respectively. The implicit theories and beliefs measures, which are then described, function as ‘moderators’ in the analyses to follow. All the measures used in the current study were written using an ‘at school’ frame of reference, based on research (e.g. Schmit et al., 1995; Hunthausen et al., 2003) that demonstrated improved validity and utility in using a relevant frame. Given the sample (i.e. college students), the variables of interest (i.e. procrastinating on taking tests) and the setting, the ‘at school’ frame was deemed appropriate for this study.

Predictor

The self-reported personality variable in the current study is referred to as ‘predictor’ inasmuch as it serves as the predictor or independent variable in the regression analyses, even though it is not the main theoretical predictor of interest.

Self-Reported Procrastination Measure

The self-report procrastination measure used is a composite of two existing measures: The Conscientiousness Biographical Data Questionnaire (CBDQ) (Gee & Snell, 1998) and the Aitken Procrastination Inventory (API). A 13-item sub-scale of the original 64-item CBDQ which targets procrastination was created using item analysis procedures by Illingworth (2004) and has been shown to be internally consistent (α = .80). A sample item is “How likely are you to write down appointments or events on a calendar?” The API (Aitken, 1982) was similarly trimmed from 19 to 10 items by Moon and Illingworth (2005) using item analysis and this version of this scale was used in this
study \((\alpha = .87)\). A sample API item is “It often takes me a long time to get started on something.” These 23 items were further item analyzed to reduce them down to a 19-item scale with all ten API items retained and nine CBDQ items retained. When combined, these scales achieved acceptable reliability \((\alpha = .88)\) in the larger dataset and also in the separate samples – the control condition \(\alpha\) was .85, the entity condition \(\alpha\) was .88 and the incremental condition \(\alpha\) was .89 for this measure.

Criterion

As with the ‘predictor’, the term ‘criterion’ is used in the current study to denote the dependent variable or criterion used in the regression analyses. The main theoretical criterion of interest however is the relationship between the self-reported personality ‘predictor’ and the behavioral ‘criterion’.

Test Taking Behavior

Students taking Introduction to Psychology at the University of Akron are tested using five exams over the course of a semester, taken in an on-campus computer-based-testing lab. Each exam is administered over a five-day window during which students can take the exam any time. They are also allowed to take each exam twice with the higher score counting towards their final grade. Instructors strongly encourage students to take the exams early during each testing window so as to give them more time to study for the second attempt and also to avoid being denied access towards the end of the test week due to overcrowding in the lab. These features of the current set-up make it possible to consider any delays in taking these tests within the provided test windows to be procrastination. By providing students with five days to take the test and strongly
encouraging them to take the first attempt early in order to be able to retest and do better on the second attempt, any delays are then likely to be for the most part, both voluntary as well as undertaken with the full knowledge of the consequences of delay. These are the two key features of the Steel (2007) definition of procrastination – voluntary delay despite the expectation of being worse off.

The date of the first test attempt for each of the five exams served as a behavioral criterion of procrastination in this study. Scores can range from 1 (exam taken on first day of window) to 5 (exam taken on last day of window), resulting in five total scores (one score per exam) for each participant. Higher scores therefore indicate more procrastination. As in the research that has previously used this criterion (e.g. Fluckinger, Snell, & Nordlund, 2007) where it had adequate reliability ($\alpha = .82$), it showed high reliability in the present study too ($\alpha = .83$).

Since the construct of procrastination is a hard one to observe or measure tangibly, steps were taken to clean up the measurement of this criterion as far as possible in order to make results meaningful. There were two main areas to focus on with respect to this. One, even though past research (e.g. Fluckinger et al., 2007) has used an overall score to indicate procrastination on test behavior, as described in the previous paragraph, there is some question as to whether this is appropriate. To the extent that there is intra-individual variability in test behavior from one exam to another, modeling procrastination behavior as a global/overall score is not appropriate. Variance in test behavior within individuals was examined to determine if there is sufficient consistency to characterize procrastination as an overall tendency.
The second area to focus on, in ensuring that the procrastination criterion is usable, is attending to confounds. There are two main possible confounds of importance. The first is the possible noise from participants’ performance in the previous test which might be ‘noise’ in what seems to be procrastination. It is conceivable, for instance, that bad performance motivates one to study harder next time and thus postpone taking the test until he/she is fully prepared. To understand if past test performance is indeed a contributing factor to when one takes the following test, students’ grades were collected with their permission, in order to be used as covariates if appropriate. Another possible confound is students’ schedule flexibility which might also influence when they take their tests in addition to their tendency to procrastinate in general. To control for possible scheduling conflicts, students were asked directly for reasons why they could not take the exam earlier (Appendix D). Possible reasons they could choose may include “I had scheduling conflicts with work”, “I had social or personal commitments” etc. These analyses of possible confounding influences on the criterion of procrastination as described in the next chapter provided confidence in the use of the criterion as being a justifiable measure of procrastination.

*Implicit Theories and Beliefs Measures*

The four indices of implicit theories and beliefs used in this current study will be described next. See Appendix A for the items used in these measures and Table 3.3 for a quick overview of these measures.
<table>
<thead>
<tr>
<th>Table 3.3. Implicit Theories and Beliefs Measures Used in Current Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Sample</td>
</tr>
<tr>
<td><strong>Pre-manipulation</strong></td>
</tr>
<tr>
<td><strong>General IPT</strong></td>
</tr>
<tr>
<td>Self-referent version of 8-item measure by Levy &amp; Dweck (1998) of general IPTs (‘‘I am a certain kind of person and there is not much I can really change about that’’)</td>
</tr>
<tr>
<td><strong>Specific IPT</strong></td>
</tr>
<tr>
<td>Self-referent 4-item measure of procrastination-related IPTs (‘‘My tendency to procrastinate is something very basic about me and it can’t be changed very much’’)</td>
</tr>
<tr>
<td><strong>Treatedness</strong></td>
</tr>
<tr>
<td>Self-referent version of 12-item measure of cross-situational consistency and longitudinal stability by Church et al. (2003) (‘‘I am as rebellious at school as I am at home’’; ‘‘My personality characteristics will stay much the same over time’’)</td>
</tr>
<tr>
<td><strong>Contextuality</strong></td>
</tr>
<tr>
<td>Self-referent version of 14-item measure of cross-situational inconsistency and longitudinal instability by Church et al. (2003) (‘‘How stubborn I am depends on the situation’’; ‘‘My personality characteristics will change quite a bit over time’’)</td>
</tr>
</tbody>
</table>

**General Implicit Personality Theory Measure**

To assess dispositional implicit personality theories, an eight-item domain-general “kind-of-person” measure developed by Levy and Dweck (1998) and used in previous studies by Chiu et al., (1997), Levy et al., (1998), Heslin et al., (2005) and Heslin et al., (2006) was used here. The measure is called “Beliefs about Human Nature” and is designed to measure the degree to which one believes that human attributes are fixed,
static and unchangeable (i.e. ‘entity theory’) or that they are capable of change and development (i.e. ‘incremental theory’). This measure is domain-general in that it does not measure people’s views about the malleability (or lack of malleability) of very specific attributes or abilities or domains. Other measures have used more specific questions around the malleability of physical ability, or intelligence or moral values, for instance, but this measure is targeted at implicit theories about malleability in general. The measure has four items that measure incremental beliefs (e.g. “People can substantially change the kind of person they are”) and four that measure entity beliefs (e.g. “Everyone is a certain kind of person, and there is not much they can really change about that”). While the more commonly used general measure is a three-item measure (Dweck et al., 1995), this eight-item measure was selected because it assesses both incremental and entity theories, whereas the three-item measure focuses on entity theory. Moreover, the selected eight-item measure has been shown to have a test-retest reliability of .82 over a 1-week period and .71 over a 4-week period (Levy & Dweck, 1997) as well as high internal consistency (α = .93; Levy et al., 1998; α = .92; Heslin et al., 2006). For the current study, a modified version that measures implicit personality theories as they apply to the self was used (e.g. “I am a certain kind of person, and there is not much I can really change about that”). This simple modification brings the model of implicit theories of personality to bear on a new realm hitherto unexplored: the area of the self. This version was found to be an adequate measure of self-referent general implicit personality theories, with internal consistency reliability ranging from .75 (incremental condition) to .80 (entity condition) to .82 (control sample). Exploratory factor analyses using a Maximum Likelihood extraction as well as Principal Axis Factoring with an oblique
rotation (Direct Oblimin) yielded a two-factor solution, with the entity items loading on one factor and the incremental theory items loading on the second. The factor intercorrelation was -.49, and the factor loadings ranged from .41 to .80. This two-factor solution is consistent with the way the items were written to tap into the two different theories.

Specific Implicit Personality Theory Measure

In addition to the general measure, a more specific measure of implicit theories around the malleability of procrastination in particular, was also used. This is based on the recommendation by various authors to consider that implicit theories may differ based on the domain (e.g. Dweck et al., 1993; Anderson, 1995). That is, people’s views about whether or not change is possible might differ based on the domain within which this possibility of change is considered. For instance, one might hold implicit theories about the fixed/stable nature of physical ability (i.e. hold an entity theory of physical ability) but an implicit notion that moral values or morality is more capable of change (i.e. hold an incremental view of morality). Since the domain of interest in the current study is the tendency to procrastinate, a specific ‘implicit theories about procrastination’ scale was developed. This measure consists of four items such as “People's tendency to procrastinate is something very basic about them and it can't be changed very much”.

This measure too, was modified to make it more self-referent (e.g. “My tendency to procrastinate is something very basic about me and it can’t be changed very much”) after pilot studies confirmed the appropriateness of doing so. In a pilot study, this scale showed good internal consistency (α=.90) and a strong relationship with a general measure of implicit theories (r=.61, p<.01). However, in the final study, while its index of internal
consistency remained strong (α = .87 in the control condition and .82 in each experimental condition), its relationship with the general measure reduced to half the magnitude of the relationship observed earlier. Specifically, its relationship with the domain general measure ranged from .28 (p < .01) in the entity condition, to .30 (p < .01) in the incremental condition to .38 (p < .01) in the control condition.

_Personality Beliefs Inventory_

Chapter II described the extended implications of the implicit theory model such as a corresponding trait versus process focus for entity and incremental theories respectively. One aspect of such an ‘extended model of implicit beliefs’ was measured in the current study using the Personality Beliefs Inventory (Church et al., 2003) which is a measure of people’s implicit beliefs about the traitedness or contextuality of personality/behavior. The original PBI consists of five subscales within each of the two scales (traitedness and contextuality). For the present study, two of these subscales within each dimension were selected on the basis of representing the closest theoretical relationship to the implicit theories model as well as being applicable to the self. The subscales thus identified were the longitudinal stability and cross-situational consistency subscales of traitedness, and the longitudinal instability and cross-situational inconsistency subscales of the contextuality dimension. As with the previous measures, self-referent versions of these subscales were piloted and used in the final study. Even though the sub-scales were written by Church et al. (2003) to tap into the larger constructs of traitedness and contextuality beliefs, the current study considered their factor structure independently as well as in combination. Specifically, the assumption that the longitudinal stability and cross-situational consistency subscales collapse into a
general traitedness factor, and that the longitudinal instability and cross-situational inconsistency subscales combine into a general contextuality factor was tested prior to their use in the analyses of hypotheses. The traitedness measure used twelve items (six in each of its subscales) and the contextuality measure had fourteen items (six in the longitudinal instability and eight in the cross-situational inconsistency subscales). Internal consistency is reported separately for the implicit traitedness beliefs dimension (α ranges from .81 to .85 in the various conditions) and for the contextuality beliefs dimension (α ranges from .75 to .83 in the various conditions). Exploratory factor analysis using Maximum Likelihood and an oblique (Direct Oblimin) rotation, with two factors specified, yielded the expected factor solution. Specifically, the longitudinal stability items loaded on to the same factor as did the cross-situational consistency items, with loadings ranging from .37 to .77. Similarly, the cross-situational inconsistency and longitudinal instability items loaded on to the second factor, with loadings ranging from .37 to .63. The factor intercorrelation was -.27.

Additional Measures: Demographics

Important demographic variables like age, gender, ethnic identity, work experience were measured and reported. See Appendix E.

Table 3.4 provides a quick overview of the procedure and sequence of steps used in the study for both, the control and the experimental samples.
### Table 3.4. Study Procedure

<table>
<thead>
<tr>
<th></th>
<th>Control Sample</th>
<th>Experimental Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>Informed Consent; Release of Information Form</td>
<td>Informed Consent; Release of Information Form</td>
</tr>
<tr>
<td><strong>Cover Story</strong></td>
<td>“E-Friends Study on the Nature of Personality”</td>
<td>“E-Friends Study on the Nature of Personality”</td>
</tr>
<tr>
<td><strong>Implicit Personality Theories and Beliefs Measures</strong></td>
<td>General IPTs; Specific IPTs; Traitedness; Contextuality</td>
<td>General IPTs; Specific IPTs; Traitedness; Contextuality</td>
</tr>
<tr>
<td><strong>Manipulation</strong></td>
<td>---</td>
<td>Self-Persuasion Paradigm to induce Entity theory: “Personality is stable and fixed”</td>
</tr>
<tr>
<td><strong>Filler Measures</strong></td>
<td>Organizational Citizenship Behavior; Environmental Attitudes; Proactive Personality</td>
<td>---</td>
</tr>
<tr>
<td><strong>Self-report</strong></td>
<td>Self-reported Procrastination</td>
<td>Self-reported Procrastination</td>
</tr>
<tr>
<td><strong>Supplementary Questions and Conclusion</strong></td>
<td>Scheduling Conflicts; Demographics; Validity and Manipulation Checks; Extra Credit Information; Debrief; Thank You Page</td>
<td>Scheduling Conflicts; Demographics; Validity and Manipulation Checks; Extra Credit Information; Debrief; Thank You Page</td>
</tr>
<tr>
<td><strong>Procrastination Behavior Criterion</strong></td>
<td>Test-taking behavior (at end of Fall 2007 semester)</td>
<td>Test-taking behavior (at end of Fall 2007 semester)</td>
</tr>
</tbody>
</table>

**Procedure – Control Group: Sample I**

Participants were recruited from Introduction to Psychology classes where they were told that this study involves them answering some questions on a survey online in return for extra credit points. They were told that their data would be entirely confidential and used only in aggregate form. Interested participants provided their email address to
which the survey link was sent. They were asked to find a conducive time and place to participate in the study.

The survey link took participants directly to the first page of the survey which contained the Informed Consent Form per Institutional Review Board Requirements. Moreover, since one variable of interest is the date they were taking their Introduction to Psychology exams, their consent for release of this information was requested. After providing their consent by clicking on a button stating “I agree”, participants were taken to the survey containing the measures of interest. In order to reduce demand characteristics and tedium, items from the implicit personality theory and beliefs measures (Appendix A) were scrambled as were items from the self-reported procrastination measure (Appendix B). To separate the presentation of the implicit personality theory and beliefs measures and the self-reported procrastination measure as well as to equate the time taken and the study experience across the control and experimental conditions, a series of unrelated questions were asked. Specifically, modified measures of Organizational Citizenship Behaviors (Williams & Anderson, 1991; Van Dyne, Graham, & Dienesch, 1994), Proactive Personality (Siebert, Crant, & Kraimer, 1999) and Attitudes towards the Environment (Schultz & Zelezny, 1998; Schultz, 2001) were presented. Then, the self-reported procrastination measure items were inter-mixed with filler items measuring such unrelated constructs as regulatory focus (Lockwood, Jordan, & Kunda, 2002). The items were presented using a self-referent frame to make them more proximal variables of interest compared to asking about ‘people in general’. Pilot studies were conducted to ensure that these self-referent measures were as simple to understand and easy to respond to as the generic ones, as well
as appropriate in terms of the meaning associated with the constructs. The response scale used was a six-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”.

After participants complete this section, they were asked to supply a few routine voluntary demographic details about themselves (See Appendix E). Then they were provided a brief explanation about the study (See Appendix F), and thanked for their participation.

At the end of the semester, records from the participants’ test-taking behaviors were obtained in order to develop an index of actual procrastination (i.e. when did they take the Introduction to Psychology test within the testing window, across five exams over the semester) as well as a proxy measure of procrastination/conscientiousness (i.e. the index of whether participants took each exam just once or availed of their second chance to take it). Participants’ grades on their exams were also requested in order to carry out certain supplementary analyses to ensure that the criterion of procrastination was untainted by performance on the exams. Participants’ consent for release of this information was also requested along with the other informed consent/release of information forms in the beginning of the study.

Procedure – Experimental groups: Sample II

Similar to the control group, participants were recruited from Introduction to Psychology classes after being given information about what the study will involve. Participants were informed that in return for extra credit points, they were asked to complete an online survey, responses to which will remain confidential and analyzed at an aggregate level. Interested students provided their email address to which the survey
link was sent. The first page of the survey contained the Informed Consent Form per Institutional Review Board Requirements. To provide consent to release their Introduction to Psychology test records (dates and/or grades) as well as to participate in the study, participants clicked a button stating “I agree”.

All participants in this sample first completed a set of pre-measures of dispositional implicit personality theories and beliefs (described earlier in the ‘measures’ section). These self-referent measures were randomized and mixed in their presentation so as to (a) minimize acquiescence bias, (b) reduce the transparency of the study’s purpose (c) to mitigate the frustration reported on account of the repetitive nature of some of the questions as well as (d) to create a sense of distinction from the next step which involves inducing either an entity or an incremental theory of personality. They then underwent an elaborate exercise designed to induce a specific implicit theory. Participants received either the entity theory induction or the incremental theory induction, and were placed in these two experimental groups randomly.

After completing this inventory of pre-measures, participants (who were randomly assigned into one of the two groups) underwent an interactive self-persuasion exercise designed to induce a certain implicit theory. The exercise focused on inducing either an incremental or entity theory, depending on the condition participants were in, based on self-persuasion principles shown to be effective in prior research in the area of social judgment. The exercise is described in detail following this description of the procedure (also, see Appendix C).

Following this elaborate induction process, participants responded to manipulation check questions. Participants then completed the self-reported
procrastination measure comprised of items from the Aitken Procrastination Inventory (short form) and the Conscientiousness Biographical Data Questionnaire (short form) as described earlier. Items from this measure were scrambled and intermixed with filler items measuring such unrelated constructs as regulatory focus (Lockwood et al., 2002).

After this, participants complete a few validity and manipulation check questions and demographic information. When finished, all participants were thanked for their participation and fully debriefed regarding the intent of the study using a short explanation.

This completed the participants’ direct involvement with the study. At the end of the semester, their records were obtained from the Introduction to Psychology exam center, in order to calculate an index of actual procrastination as well as a proxy measure of conscientiousness, as described earlier. The same measures taken with Sample I to clean up the procrastination score were used with Sample II as well. That is, intra-individual variability in test behavior was investigated and possible confounding factors such as past test performance and scheduling constraints which might affect test behavior in addition to procrastination, were considered.

**Manipulation: Inducing Entity theory and Incremental theory of Personality**

After completing the pre-measures, participants underwent an exercise designed to induce either an entity or an incremental theory (they were randomly assigned to one of these conditions). Predicated on the principles of self-persuasion (e.g. Aronson et al., 2002; Heslin et al., 2005), the intervention used the following methods: participants read a ‘scientific testimonial’, then engaged in counter attitudinal reflection, counter attitudinal
idea generation, counter attitudinal advocacy and finally, cognitive dissonance. The actual length of instructions, reading level, and as far as possible even the actual words used in both conditions were the same, changing only the key ideas that would induce the relevant implicit theory. The description of each of these steps follows.

Cover Story

In order to ensure adequate interest and engagement from participants, a cover story was used. This cover story which was piloted and found to be believable is presented here:

“Thank you for participating in this study designed to develop a new online networking website and support program called ‘E-Friends’. Encouraged by the success of websites such as MySpace and Facebook, and realizing the special needs of the sixteen to eighteen year old age group on the verge of entering college, E-Friends was set up to facilitate the transition from high school to college for these students.

Your participation in this study will help us understand how we might tap individuals like you to become mentors for the target group of sixteen to eighteen year old high school students. You will be asked to engage in a series of exercises that ask you to think about changes in personality. Please answer these as honestly and with as much detail as you feel necessary. Your feedback will be very useful to the creators of E-Friends in setting up personality profiles for various types of students who will benefit from being matched with mentors similar to you. Please click on the “Next” button to start the exercise.”
Scientific Testimonial

Participants were then provided this introduction: “We are interested in learning about people’s beliefs regarding personality. Lots of scientific research has explored this area and arrived at certain conclusions.” followed by the condition-specific instructions. Participants in the entity theory condition read: For instance, in his talk at the American Psychological Association’s annual convention held in Washington D.C. in August, Dr. George Medin argued that “In most of us, by the age of ten, our character has set like plaster and will never soften again.” He reported numerous large longitudinal studies which show that people “may develop, but only on the foundation of enduring dispositions which last even into their late sixties. Participants in the incremental theory condition on the other hand, read: For instance, in his talk at the American Psychological Association’s annual convention held in Washington D.C. in August, Dr. George Medin argued that “No one’s character is hard like a rock that cannot be changed. Only, for some, greater effort and determination are needed to effect changes.” He reported numerous large longitudinal studies, which show that “people can mature and can change their character, even in their late sixties.”

Counterattitudinal Idea Generation

The following instruction is common to both conditions, Please consider the argument by Dr. Medin as you answer this next question.

The entity theory condition prompted participants to respond to this question: What are at least three reasons why it is important to realize that people remain the same across time and situations? Include implications for yourself as well as people you interact with at school. The corresponding question for the incremental condition was:
What are at least three reasons why it is important to realize that people can change over time and situations? Include implications for yourself as well as people you interact with at school.

**Counter attitudinal reflection**

Participants were then asked to *Now please take a moment to reflect on your own life.* Then in the entity theory condition, participants responded to these questions: *What is an area in which you were able to remain the same person you’ve always been despite external demands to change? How were you able to do this?* In the incremental theory condition, participants responded to the corresponding question: *What is an area in which you were able to be different from the person you’ve always been due to external demands to change? How were you able to do this?*

**Counter attitudinal Advocacy**

This involved participants advocating a certain viewpoint to another person. They were provided this general instruction: *Having reflected on your own personality please take a moment to consider the case of Max. Max is an eighteen-year old, on the verge of entering college and with it, a host of new situations and challenges. Write an email to Max, as if you were his mentor.*

In the entity condition, participants were then told: *Max is afraid that he is losing his identity. Explain to him (with examples from your own life) why he need not be worried about his personality changing or about losing his identity in the face of the new situation.* In the incremental theory condition, participants were told instead: *Max is afraid that he cannot change to meet the new challenges. Explain to him (with examples*
from your own life) why he need not be worried about his ability to change/develop to meet the needs of the new situation.

**Cognitive Dissonance**

In this final step, participants were asked to think of instances where they behaved in ways that reflect the theory being induced. Specifically, entity theory condition participants were told: *You might have encountered others like Max in your life. Identify three instances of when you have observed someone maintain their personality and sense of self even when you were convinced that they would change. Why do you think this occurred? What are the implications of this stability of personality?*

Participants in the incremental theory condition were told: *You might have encountered others like Max in your life. Identify three instances of when you have observed someone change their personality and sense of self even when you were convinced that they would not change. Why do you think this occurred? What are the implications of this changeability of personality?*

**Manipulation and Validity Checks**

A number of questions were included as a means of checking whether the manipulation was engaging and believable, whether participants attended to the study procedures and to estimate the nature and extent of careless responding. See Appendix G for a complete list of these questions.

**Effect of the Manipulation on Implicit Theories of Personality**

One of the assumptions underlying the study is that the manipulation used will succeed in changing beliefs (or strengthening existing beliefs if pre-existing beliefs
matched the condition participants were in) about the malleability or stability of personality. To answer this supplementary research question (not hypothesized as a main part of the study), a post-manipulation measure was used in the form of a commonly used three-item general measure of implicit beliefs (Dweck et al., 1995). These three items are: “The kind of person someone is, is something basic about them, and it can’t be changed very much”, “People can do things differently, but the important parts of who they are can’t really be changed” and “Everyone is a certain kind of person, and there is not much that they can do to really change that.” Internal consistency (alpha) estimates for this measure range from .73 to .96 in various studies and was consistent here: .77. Participants in the experimental sample responded to these items on a six-point scale where 1=Very Strongly Agree and 6=Very Strongly Disagree.

Other validity and manipulation check items merely tell us whether participants attended carefully to the study and in particular, to the manipulation. This scale provides a simple but telling index of the extent to which the manipulation was successful in changing people’s implicit theories. Even though the scale is worded entirely in entity terms, Dweck and her colleagues (e.g. Dweck et al., 1995; Levy & Dweck, 1998) defend the use of this scale because (1) in many studies they found that those who disagreed to these items provided incremental theory reasons for doing so; thus one may assume that disagreement to entity theory items equals agreement with incremental theory items, (2) when they did use incremental items, they tended to ‘pull’ respondents towards them due to high social desirability and (3) there is a very high correlation (.73 to .83) between scales that do measure both entity and incremental theories and this three-item scale.
This measure along with the manipulation checks and validity checks would provide some sense of whether effects, if any, might be attributed to the manipulation or not. There is reason to believe that the manipulation would be successful in changing beliefs from past studies using similar methods to manipulate or induce implicit theories of personality in people (e.g. Heslin et al., 2005). However, there is also evidence that implicit theories of personality are not easily replaced or manipulated and instead, the effects of pre-existing implicit beliefs can overwhelm any effects of situationally induced beliefs (e.g. Tabernero & Wood, 1999).
CHAPTER IV

RESULTS

Data Screening

Before starting to test the hypotheses, the data obtained were scrutinized for both invalid data and missing values. As this study was conducted online, it was possible to structure it such that participants were required to answer all questions on one screen before moving on to the next screen. Hence, missing values were generally not a problem. However, participants could stop the study any time they wished and that resulted in several incomplete records with missing data. 59 (approximately 13.9%) cases were removed for missing more than 5% of the data; most of these people only completed a couple of initial questions, just enough of the study to ensure that they were given extra credit points, and were therefore removed from consideration in the analyses.

Per Institutional Review Board requirements, for all key items of interest which required a response, along with the response scale (e.g. “strongly agree” – “strongly disagree”), participants were provided an additional option of “I choose not to respond”. This option provided a useful index with which to remove data where more than 5% was ‘missing not at random’. 23 (out of the initial 425 cases) or approximately 5.4% of the initial dataset were removed by this criterion. Additionally, about 10 cases (2.3%) were removed because their responses showed zero variance across all items within key scales
and/or the entire survey, indicating that they ‘clicked through’ or selected the same response option throughout the survey. Such a pattern suggested that they did not take the study seriously. Finally, for those who had duplicate records, the first record was retained especially since in most cases, the subsequent records were incomplete.

Then, cases were matched with the criterion data – introduction to psychology test data – to yield the final dataset. This matched, cleaned dataset contained 340 cases across the control and experimental conditions. For the analyses however, these conditions were treated separately.

Validity Checks and Manipulation Checks

A few items were used as validity checks designed to measure the extent to which participants completed the study seriously. A pattern of incorrect responding on all these checks was used as the basis to remove those who seemed to be careless responders. For instance, because a non-trivial number of people (about 20.8%) answered “not sure” to the question “What was the name of the researcher in the study?” incorrect responses to this question were not used to remove participants. However, a pattern of incorrect responses to this and other questions such as “Did you complete this study online?” and “What was the purpose of the study?” would have been a compelling reason to remove cases but based on this criterion, no cases were eliminated. To further justify not eliminating anyone based on any single validity check indicator, open-ended responses to the manipulation questions were scrutinized to ensure that the remaining participants did indeed complete all the questions in earnest and the examination, as described next below, was found to be satisfactory.
Before running the main analyses of this study, it is useful to first address the issue of whether the main manipulations in the experimental condition (i.e. inducing either an entity theory or an incremental theory) were induced as expected. Participants were presented with manipulation check items, designed to evaluate the extent to which they perceived and remembered the main manipulations of this study. For instance, when asked what the name of the researcher the participants read about in the manipulation task was, 74.9% answered correctly, 21.5% said they were ‘not sure’ but only 3.6% of those who answered this question were wrong, showing that a large majority were paying enough attention to even recall details like a name in the text they read. One item designed to check the extent to which participants attended to the ‘scientific testimonial’ aspect of the manipulation was “I read about a researcher who indicated that”; the options presented were:

a. ‘A person’s character is like rock music, unpredictable’ (distracter)
b. ‘A person’s character is set, like plaster’ (expected response for entity group)
c. ‘A person’s character is like a stone, unchangeable’ (distracter)
d. ‘A person’s character is changeable, unlike a rock’ (expected response for incremental group)

In the entity condition, about 61% selected option b and about 24% selection option c (which, despite being a distracter, retains the conceptual meaning of option b and may therefore be considered acceptable). Only about 15 people (12 %) selected option d. In the incremental condition, nobody selected option b (the ‘wrong’ answer) and 75.2% selection option d, as should be expected. These numbers indicate that the majority of people (at least 75% in each group) retained the message of the ‘scientific testimonial’
step in the manipulation. Even more compelling, most participants recalled the scenarios in one of the steps (‘counterattitudinal advocacy’) involved in the manipulation accurately; in describing the problem they were asked to assist an 18-year old with, 98.2% correctly said it was “his anxiety about new situations college brings”.

In addition to computing these frequencies, participant responses to the other steps in the manipulation paradigm were carefully scrutinized to ensure that they were engaged and thinking carefully in either an entity or incremental manner as intended. Some responses to the various steps of the manipulation are presented in Table 4.1 below:

Table 4.1. Sample Responses to Manipulation Questions

<table>
<thead>
<tr>
<th>Entity condition</th>
<th>Incremental condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Counterattitudinal Idea Generation</strong></td>
<td>“Reliability in a person is important in how one approaches them”; “For consistency to be able to participate in any kind of relationship”; “Help people with making better marriage decisions (so they don’t think ‘oh, I can change him/her’)”; “If I know my dispositions, I know what kind of things to avoid, such as avoiding high traffic roads if I am an impatient person.”</td>
</tr>
<tr>
<td><strong>Counterattitudinal advocacy</strong></td>
<td>“Dear Max, There is no need to worry about losing your identity. I know how you feel because I have been through the same situation. Just look back and realize who you truly are and be yourself. You will meet people who will accept who you are and you will be able to fit in comfortably with them. It may take some time but don’t give up hope. You will find people that will push you to find yourself again. No worries. Just relax and be yourself.”</td>
</tr>
</tbody>
</table>
Table 4.1. Sample Responses to Manipulation Questions (continued)

<table>
<thead>
<tr>
<th>Counterattitudinal Reflection</th>
<th>“I've always been myself, despite outside pressures such as peer pressure. I always stay true to myself and my beliefs and don't really conform for anyone.”</th>
<th>“I used to be shy toward strangers, but I was able to change by making a lot of friends who have helped out to change it.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Dissonance</td>
<td>“My brother joined the Navy and I thought he would change a lot, though he is different, he is the same person inside.”; “Entering college, I thought some of my friends may try to conform to the normal 'college party' ways, but they stayed the same.”; “My sister-I was convinced she would change when she entered high school and she didn’t.”</td>
<td>“As grades drop because of constant partying some people will change their habits to study more.”; “My brother changed because he realized he had to mature to take on the role of being a good father to his kids.”; “Car accident, they almost died, they had to change and needed to in order to make their life better.”</td>
</tr>
</tbody>
</table>

These responses, combined with the frequencies with which various validity check items were endorsed in expected manners provide support for the fact that most participants seemed to have been engaged and attentive during the manipulations and recall relevant information as would be anticipated. For instance, 60.2% agreed or strongly agreed that the purpose of the study was simple to understand and 66.5% agreed or strongly agreed that the purpose of the study was easy to believe. In response to the statement “I was interested and engaged throughout the study”, about 38.8% were neutral and 31.1% agreed or strongly agreed to it. About 63% did not agree with the statement “The tasks I did (e.g. listing reasons why people change or remain the same over time) were monotonous and boring”.

Whether or not this general attentiveness and engagement in the study procedures actually led to a change in participants’ implicit personality theories in obvious and measurable ways is a question that can be looked at next. To answer this, a post-
manipulation measure of the three-item general measure of implicit beliefs (Dweck et al., 1995) was used. The internal consistency (alpha) estimate of this scale was .77, consistent with past estimates. This scale is framed such that high scores indicate entity views. The relationship of this scale with the pre-manipulation self-referent implicit personality theory measure (where high scores indicate incremental beliefs) was -.48 ($p<.01$). This significant correlation indicates that people’s IPT remained largely unchanged despite the manipulation. As if to support this, people’s self-reported view about the statement “I was led to believe things that I didn’t believe earlier” revealed that 51.1% disagreed or strongly disagreed to this, 38.6% were neutral and only about 10.3% agreed. Further, to check whether the manipulations had any effect on the group-level IPT, the means were examined to see if this post-manipulation measure was different in the entity group versus the incremental group. Participants assigned to the entity group showed slightly higher entity beliefs ($M=3.87$, $s=.84$) than those in the incremental group ($M=3.55$, $s=.77$).

Thus, it seems like although participants attended to and seemed to respond to the manipulation as expected, it was not strong enough to overcome existing implicit personality theories or be induced as a state. This is not consistent with some past attempts at experimentally or situationally manipulating people’s implicit theories using a similar paradigm (e.g. Heslin et al., 2005). Reasons why this might be the case are explored in the discussion along with implications for extending the model of implicit personality theories into the field of the self and personality.

In post-hoc analyses, the experimental sample was classified based on a rational judgment regarding the degree of engagement or involvement in the manipulation. Using
the responses to four of the five exercises used to induce entity and incremental theories (counter-attitudinal idea-generation, counter-attitudinal self-reflection, counter-attitudinal advocacy and cognitive dissonance), participants were grouped into those that were fully engaged, and those who were not. By this scheme, which used the number of responses as well as their quality and depth, only about 19.2% were classified as ‘less engaged’. Given the thorough data cleaning that preceded analyses, and the fact that the exercises were designed to be as realistic and involving as possible, this low number is not surprising. Retesting the hypotheses using this new variable of engagement in the manipulation did not change results. It may be concluded therefore, that the manipulation was not influential in the relationship between self-reported procrastination and actual procrastination, even if we only considered those who fully ‘bought in’ to the induction and were engaged in the exercises.

Descriptive Statistics and Correlations

Having cleaned the data and established that participants whose data were retained had taken the study seriously and attended to the instructions and manipulations, it is possible to start analyzing the data with the assurance that it is of satisfactory quality. The first step in the analysis is to describe the data in terms of trends and relationships among key variables.

The ‘Self-reported Procrastination’ scale used in the study was a composite of 19 items derived from the Aitken Personality Inventory (Aitken, 1982) and the Conscientiousness Biographical Data Questionnaire (Gee & Snell, 1998). Higher scores on this combined measure indicated higher self-reported tendency to procrastinate. The
‘Traitedness Beliefs’ scale was derived from two subscales of the Personality Beliefs Inventory or PBI (Church et al., 2003) – cross-situational consistency and longitudinal stability. This scale was created based on theoretical and empirical grounds; the original PBI measure had these sub-scales load onto the traitedness factor and in the current study as well, exploratory factor analyses (EFAs) supported this pattern. The traitedness scale was scored such that higher scores indicated stronger beliefs in the fact that attributes remained stable and consistent across time and situation. Similarly, the ‘Contextuality Beliefs’ scale was composed of the PBI sub-scales of cross-situational inconsistency and longitudinal instability based on theory as well as EFA results. As opposed to the ‘Traitedness Beliefs’ scale, higher scores on the contextuality scale indicated stronger beliefs that attributes were changeable and inconsistent across time and situation. The eight-item general implicit personality theory measure (Levy & Dweck, 1998) as well as the four-item procrastination-specific implicit personality theory measure used in this study were scored such that higher scores indicated a greater tendency to endorse an incremental theory. Factor analyses were also used in confirming the factor structure of the eight-item general implicit personality theory measure. Various methods yielded a single factor solution accounting for more than 45% of the variance, with items showing high factor loadings ranging from .42 to .78.

The means, standard deviations, scale reliability and correlations among the key measures of the study in the entire sample (control and experimental conditions; n=340) are presented in Table 4.2. Scale alphas are reported along the diagonal.
Table 4.2. Means, Standard Deviations, Reliabilities and Intercorrelations of Key Variable in Full Sample.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Implicit Personality Theory</td>
<td>3.32</td>
<td>0.68</td>
<td>(.78)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Procrastination-Specific Implicit Personality Theory</td>
<td>3.67</td>
<td>0.93</td>
<td>.31**</td>
<td>(.83)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Traitedness Beliefs</td>
<td>4.43</td>
<td>0.64</td>
<td>-0.19**</td>
<td>.00</td>
<td>(.83)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Contextuality Beliefs</td>
<td>3.45</td>
<td>0.59</td>
<td>0.05</td>
<td>-.24**</td>
<td>-.20**</td>
<td>(.80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Self-reported Procrastination</td>
<td>2.77</td>
<td>0.65</td>
<td>0.06</td>
<td>-.33**</td>
<td>-.39**</td>
<td>.33**</td>
<td>(.88)</td>
<td></td>
</tr>
<tr>
<td>6. Actual Procrastination on Tests</td>
<td>2.75</td>
<td>0.82</td>
<td>-.03</td>
<td>-.02</td>
<td>.02</td>
<td>-.01</td>
<td>.26**</td>
<td>(.83)</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2 tailed).

The means, standard deviations, scale reliability and correlations among the key measures of the study in the control condition (n=51) are presented in Table 4.3 with alphas along the diagonal.

Table 4.3. Means, Standard Deviations, Reliabilities and Intercorrelations of Key Variables in Control Sample.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Implicit Personality Theory</td>
<td>3.46</td>
<td>0.70</td>
<td>(.82)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Procrastination-Specific Implicit Personality Theory</td>
<td>3.89</td>
<td>0.93</td>
<td>.38**</td>
<td>(.87)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. Traitedness Beliefs</td>
<td>4.33</td>
<td>0.66</td>
<td>-0.09</td>
<td>.07</td>
<td>(.85)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Contextuality Beliefs</td>
<td>3.40</td>
<td>0.58</td>
<td>-.13</td>
<td>-.20</td>
<td>-.25</td>
<td>(.80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Self-reported Procrastination</td>
<td>2.85</td>
<td>0.59</td>
<td>-.14</td>
<td>-.43**</td>
<td>-.44**</td>
<td>.37**</td>
<td>(.85)</td>
<td></td>
</tr>
<tr>
<td>6. Actual Procrastination on Tests</td>
<td>2.90</td>
<td>.73</td>
<td>-.04</td>
<td>-.04</td>
<td>-.04</td>
<td>.07</td>
<td>.24</td>
<td>(.78)</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2 tailed).

The means, standard deviations, scale reliability and correlations among the key measures of the study in the entity group of the experimental condition (n=150) are presented in Table 4.4. and those of the incremental group of the experimental condition (n=139) are presented in Table 4.5. Scale alphas are along the diagonal.
Table 4.4. Means, Standard Deviations, Reliabilities and Intercorrelations of Key Variables in Experimental Sample (Entity Group).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Implicit Personality Theory</td>
<td>3.30</td>
<td>0.70</td>
<td>(.80)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Procrastination-Specific Implicit Personality Theory</td>
<td>3.70</td>
<td>0.89</td>
<td>.28**</td>
<td>(.82)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Traitenedness Beliefs</td>
<td>4.48</td>
<td>0.64</td>
<td>-0.22**</td>
<td>-0.02</td>
<td>(.84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Contextuality Beliefs</td>
<td>3.42</td>
<td>0.63</td>
<td>0.11</td>
<td>-0.28**</td>
<td>-0.25**</td>
<td>(.83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Self-reported Procrastination</td>
<td>2.71</td>
<td>0.63</td>
<td>0.09</td>
<td>-0.33**</td>
<td>-0.45**</td>
<td>.41**</td>
<td>(.88)</td>
<td></td>
</tr>
<tr>
<td>6. Actual Procrastination on Tests</td>
<td>2.71</td>
<td>0.81</td>
<td>-0.07</td>
<td>-0.11</td>
<td>.10</td>
<td>-0.00</td>
<td>.28**</td>
<td>(.83)</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2 tailed).

Table 4.5. Means, Standard Deviations, Reliabilities and Intercorrelations of Key Variables in Experimental Sample (Incremental Group).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Implicit Personality Theory</td>
<td>3.28</td>
<td>0.66</td>
<td>(.75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Procrastination-Specific Implicit Personality Theory</td>
<td>3.56</td>
<td>0.97</td>
<td>.30**</td>
<td>(.82)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Traitenedness Beliefs</td>
<td>4.40</td>
<td>0.62</td>
<td>-.19*</td>
<td>.02</td>
<td>(.81)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Contextuality Beliefs</td>
<td>3.51</td>
<td>0.55</td>
<td>.06</td>
<td>-.21*</td>
<td>-.10</td>
<td>(.75)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Self-reported Procrastination</td>
<td>2.81</td>
<td>0.68</td>
<td>.08</td>
<td>-.30**</td>
<td>-.31</td>
<td>.24**</td>
<td>(.89)</td>
<td></td>
</tr>
<tr>
<td>6. Actual Procrastination on Tests</td>
<td>2.74</td>
<td>.85</td>
<td>.02</td>
<td>.06</td>
<td>-.05</td>
<td>-.04</td>
<td>.25**</td>
<td>(.85)</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2 tailed).

* Correlation is significant at the .05 level (2 tailed).

All scales showed high internal consistency, across all conditions. The alpha, mean and standard deviation values did not differ much from control condition to the entity or incremental conditions.

An examination of the three tables reveals that the scales’ means and SDs remained more or less invariant across the three groups – control, entity and incremental. The pattern of relationships among the various key variables remained consistent across the three groups, although the magnitude and statistical significance varied slightly. This latter finding is not surprising given that significance levels are sensitive to sample sizes.
In all cases, it seemed that the general implicit personality theory was only moderately (though significantly) related to the specific, procrastination-related implicit personality theory scores. These scales were related in the .28 to .38 range, showing only a moderate relationship and thus warranting the inclusion of a separate scale for the procrastination-specific theory, especially since they did not relate in the same way with other variables of interest. Specifically, the tendency to endorse general incremental theories was negatively related to traitedness beliefs (although non-significantly in the control condition) but the procrastination-specific implicit theory measure was not significantly related to traitedness beliefs at all.

Stated another way, those who endorsed an entity view (low end of the general IPT scale) tended to endorse traitedness beliefs but this relationship was non-significant within the procrastination-specific IPT realm. On the other hand, the tendency to endorse an incremental theory specifically regarding procrastination (high scores on the procrastination specific IPT measure) was negatively related to contextuality beliefs (although non-significantly in the control condition) but the general IPT measure was not even related to contextuality beliefs. This implies that those who endorsed an entity view when it came to procrastination specifically tended to endorse contextuality beliefs but those who endorsed an entity view in general tended to endorse traitedness beliefs. Past research has established moderate relationships between the general implicit theories people hold and their beliefs in traitedness or contextuality; Church et al. (2005) for instance, found modest tendencies for people who endorsed stronger entity theory views to exhibit stronger traitedness beliefs ($r = .28, p < .01$) and weaker contextuality beliefs ($r = -.19, p < .01$). In the current study, the relationships were even weaker, with correlations
ranging from small and non-significant \( r = .05 \) to moderate \( r = -.22, p < .01 \) for incremental theories and traitedness beliefs. This establishes the fact that these theories are related to the Church constructs of traitedness and contextuality but at the same time, are distinct enough to be studied as separate constructs. The other consideration which could account for weaker relationships than those observed in the past is the use of only two sub-scales in the traitedness and contextuality scales in the present case.

Interestingly, those who endorsed more of an entity view when it came to procrastination were the ones who reported having a higher tendency to procrastinate whereas general IPTs were not significantly related to self-reported procrastination at all. Self-reported procrastination in fact, was significantly related to all key variables of interest except the general implicit personality theories measure; it was significantly positively related to contextuality beliefs, significantly negatively related to traitedness beliefs (non-significant in the incremental group) and significantly negatively related to procrastination-specific incremental beliefs. This unexpected finding wherein the procrastination-specific and general theories had opposing patterns of relationships with traitedness and contextuality is further explored in the discussion. It is worthy of further investigation especially because the relationship of traitedness and contextuality beliefs with the procrastination-specific implicit theories as well as with the self-report run counter to expectations based on the sparse evidence on these beliefs collected in the literature so far. It seems therefore that any conclusions to be drawn at the distal level of beliefs regarding the broad traitedness or contextuality of human attributes may best be drawn with respect to beliefs about malleability in general. But when it comes to predicting responses to specific areas (such as self-reported procrastination), domain-
specific beliefs about malleability might be better inasmuch as they are likely to be different from general beliefs about malleability.

Criterion Variable

The criterion variable in the present study is procrastination behavior operationalized in the form of delayed test-taking behavior. Specifically, participants in the study were students at the University of Akron who were given a five-day window within which to take their Introduction to Psychology tests (of which there were five spread over a semester). The day of their first attempt (of two possible attempts) was coded to yield a score on each of the five attempts, from 1 (i.e. test taken on first day) to 5 (i.e. test taken on fifth day). The mean of these five scores is the test-taking behavioral criterion of procrastination.

Most students took their first attempt on day 3 and their second attempt on day 5, as indicated by the mode. Table 4.6 displays the distribution of when people take their first attempt by day. The consistent picture points to most people taking the test over the second and third days of each test window.

Table 4.6. Percentage of students taking their first attempt at each of the tests by day within test window

<table>
<thead>
<tr>
<th></th>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
<th>Test 4</th>
<th>Test 5</th>
<th>Average across tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>10.88%</td>
<td>14.41%</td>
<td>10.00%</td>
<td>8.82%</td>
<td>12.35%</td>
<td>11.29%</td>
</tr>
<tr>
<td>Day 2</td>
<td>33.53%</td>
<td>33.82%</td>
<td>27.35%</td>
<td>25.59%</td>
<td>21.76%</td>
<td>28.41%</td>
</tr>
<tr>
<td>Day 3</td>
<td>28.53%</td>
<td>28.24%</td>
<td>33.82%</td>
<td>30.29%</td>
<td>31.76%</td>
<td>30.53%</td>
</tr>
<tr>
<td>Day 4</td>
<td>14.12%</td>
<td>12.35%</td>
<td>17.94%</td>
<td>23.82%</td>
<td>20.59%</td>
<td>17.76%</td>
</tr>
<tr>
<td>Day 5</td>
<td>5.00%</td>
<td>3.53%</td>
<td>3.53%</td>
<td>5.00%</td>
<td>6.18%</td>
<td>4.65%</td>
</tr>
</tbody>
</table>
To the extent that the test taking behavior criterion is to be treated as a global score derived as an average across the five tests, it is important to establish that there is little variability in test taking behavior across these five times. In the current study, this criterion appeared to have high internal consistency reliability (α = .83) in line with past findings of around .82 (e.g. Fluckinger et al., 2007). The mean value of the criterion variable (procrastination on the first attempt) is 2.74 and there is very little dispersion around this mean (σ = .82). Further, correlations between the first attempts on the five tests range from .39 (p < .01) to .64 (p < .01) and on the second attempts they range from .38 (p < .01) to .64 (p < .01), meaning that there is a high degree of relationship or consistency between when people took the tests each time.

**Examination of possible confounds in operationalization of the criterion**

In order to ensure that test behavior is uncontaminated by confounds and can serve as an adequate criterion for the present study, five controls or precautions were taken. First, independent sample t-tests run across the two samples (control and experimental) confirmed that the average test procrastination criterion did not differ significantly between the two groups. Specifically, the average day on which participants took their first attempt, their second attempt and participants’ performance on the Introduction to Psychology examinations as indicated by the average score on the tests did not show significant differences between the control and experimental groups. Second, the relationship of test taking behavior (attempts one and two) to demographic variables was measured to look for systematic differences or contamination. Results of this analysis is presented in table 4.7.
Table 4.7. Relationships between test-taking behavior on the first and second attempts averaged across five tests to demographic variables in control and experimental conditions

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Race (1=white; 2, 3, 4, 5=others)</th>
<th>Gender (1=male, 2=female)</th>
<th>Employment Status (0=not currently employed, 1=employed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempt 1</td>
<td>.01</td>
<td>.04</td>
<td>.00</td>
<td>.09</td>
</tr>
<tr>
<td>Attempt 2</td>
<td>.26</td>
<td>.01</td>
<td>-.02</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note: None of the correlations were significant; control group sample size ranged between 40 and 41 for these variables; experimental group sample size ranged between 265 and 276 for these variables.

Next, cases in which participants indicated scheduling conflicts or constraints that made it difficult for them to take the exams earlier than they did were noted. (See Appendix D for a list of possible reasons participants could indicate as ‘scheduling conflicts’). In such cases, if indeed it were impossible for them to have taken the exam earlier, then any delays would be attributed not to procrastination but to scheduling inflexibility and would therefore contaminate any effects to be uncovered in the analyses. This, however, was not found to be the case; isolating such cases and running the analyses with and without these participants did not change the relationship between the key variables at all.

In past research (e.g. Fluckinger et al., 2007), the number of test attempts over the five exams was found to be a good proxy of conscientiousness when it comes to test-taking behavior and procrastination as well. This was replicated to a certain extent in the present study. While the relationship of this proxy index, namely, number of attempts over the five tests, unlike in the previous study, was not significantly correlated with self-reported procrastination, it was significantly negatively correlated with the variable of procrastination on the first attempt ($r = -0.33, p < 0.01$). That is, those who tended to take
each test twice also tended not to procrastinate or delay using their attempts. The non-significant relationship of the number of attempts and self-reported procrastination might be a result of the high number of participants who took advantage of the two-attempt policy, which might not have been the case earlier. Specifically, 49.1% took every test twice and 89.7% took at least one exam twice.

Finally, the relationship between previous exam score and test taking behavior was considered in order to rule out any systematic effect of prior performance on the inclination to take the subsequent exam earlier or procrastinate on it. It is conceivable for instance, that by doing well on test 1, a student might ‘coast’ and tend to procrastinate on test 2. Conversely, doing poorly on test 1 might prompt one to either take test 2 earlier in order to be able to try again and improve their performance or it might prompt one to postpone the subsequent attempt either due to aversive associations or in order to use as much time to prepare as possible. While the current study was not designed to directly address these kinds of questions, it is still prudent to consider the possible effects that previous performance might have on procrastination behavior on future tests. Towards this end, the relationship between test score and test-taking behavior on the next test was plotted. As seen in table 4.8, only two of the eight correlations in question are significant, allowing for the assumption that there is a lack of a systematic relationship between how people perform on exams and their subsequent procrastination test-taking behavior. The general negative trend in the correlations represents the fact that higher performance is related to lower tendency to procrastinate on subsequent attempts; in other words, those who perform poorly are also the ones who procrastinate more. This relationship is more pronounced and statistically significant when considering the bivariate relationship
between procrastination behavior and test scores ($r = -.22, p < .01$ on attempt 1 and $r = -.21, p < .01$ on attempt 2). This relationship shows that the higher the test performance, lower the tendency to procrastinate. As seen from the low and statistically non-significant relationships between performance on each test and the tendency to procrastinate on the subsequent test, though, this does not seem to be a temporally variant effect. In other words, the general relationship to procrastinate is related to poor test performance, but it is not something that varies greatly based on performance from test to test.

Table 4.8. Tracking the Relationship between Test Performance and Day of First Attempt on Subsequent Test

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Score on First Attempt</th>
<th>Score on Second Attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score on Test 1 – First Attempt Day for Test 2</td>
<td>-.11</td>
<td>-.07</td>
</tr>
<tr>
<td>Score on Test 2 – First Attempt Day for Test 3</td>
<td>-.17**</td>
<td>-.08</td>
</tr>
<tr>
<td>Score on Test 3 – First Attempt Day for Test 4</td>
<td>-.13*</td>
<td>-.06</td>
</tr>
<tr>
<td>Score on Test 4 – First Attempt Day for Test 5</td>
<td>-.11</td>
<td>-.12</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2 tailed). * Correlation is significant at the .05 level (2 tailed).

This pattern seems to suggest that it is not possible to predict or even detect a systematic significant relationship between past test performance and subsequent test-taking behavior. This finding, along with the other four controls described above provide some justification that what is being referred to as procrastination in the present study bears little or no contamination from performance on the previous exam.

Analyses of Hypotheses

The following section describes the analyses conducted to test the hypotheses put forth in the previous chapter.
Hypothesis 1

The first hypothesis states that chronically held (dispositional) general implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors. To test this hypothesis, a moderated regression was used, wherein the eight-item general measure of implicit theories (Levy & Dweck, 1998) framed in self-referent terms served as the moderator on the relationship between self-reported procrastination and test behavior. This test was designed to evaluate whether the interaction term of the implicit theory measure and self-reported procrastination adds incremental variance in the prediction of actual procrastination.

For the first step of this analysis, self-referent implicit personality theory/IPT (with higher scores implying more incremental dispositional beliefs) and the self-reported personality measure of conscientiousness/procrastination tendency (with higher scores implying higher propensity to procrastinate) were entered. This first step did not significantly predict procrastination, accounting for only about 6% of the variance in actual procrastination behavior index, \( F(2, 38) = 1.21, p > .05 \) (ns). The dispositional IPT by self-reported procrastination interaction term was entered as the second step. This second step added very little incremental variance in predicting actual procrastination, \( F(3, 37) = .98, p > .05 \) (ns). There is therefore little or no support that dispositional general implicit personality theories moderate the relationship between self-reported procrastination and actual procrastination behaviors.

The results of the regression analysis that was conducted are presented in the following table.
Table 4.9. Results of Regression Analysis for Hypothesis 1

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.76</td>
</tr>
<tr>
<td>Dispositional General IPT</td>
<td>.47</td>
</tr>
<tr>
<td>Self-reported Procrastination x Dispositional General IPT</td>
<td>-.63</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.07</td>
</tr>
</tbody>
</table>

Note: $N=41$. Standardized regression coefficients are reported in the table.

In other words, the relationship between self-reported and actual procrastination did not change based on the implicit theories of personality that people held chronically as dispositions. Their tendency to believe in the malleability of personality in general (general incremental theory) or lack thereof (general entity theory) did not influence their self-reports of procrastination to make them more or less related to actual behavior.

Hypothesis 2

The next hypothesis states that chronically held (dispositional) procrastination-specific implicit theories of personality will influence relationship between self-reported procrastination and actual procrastination behaviors. Similar to the previous hypothesis, a moderated regression analysis was performed to ascertain whether a procrastination-specific self-referent implicit theory serves as a moderator in the relationship between self-reported procrastination and procrastination behavior in taking tests.

This hypothesis was included to investigate differences, if any, between the influence of general and procrastination-specific implicit personality theories on the relationship between self-reported personality and actual behavior. Therefore, the dispositional self-referent domain-specific (the domain in this case being procrastination)
implicit personality theory measure (where higher scores implied more incremental beliefs) was entered in the first step, along with the self-reported personality measure of conscientiousness/procrastination tendency (with higher scores implying higher propensity to procrastinate). Similar to results from the first hypothesis, only about 7% of the variance in actual procrastination behavior index, $F(2, 38) = 1.32, p > .05$ (ns) was explained by entering the main effects of these two variables. Next, the procrastination IPT by self-reported procrastination interaction term was entered as the second step. Again, this second step added just about 1% incremental variance in predicting actual procrastination, $F(3, 37) = 1.01, p > .05$ (ns). Thus, there seems to be no evidence that dispositional procrastination-specific implicit personality theories moderate the relationship between self-reported procrastination and actual procrastination.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.82</td>
</tr>
<tr>
<td>Dispositional Procrastination IPT</td>
<td>.62</td>
</tr>
<tr>
<td>Self-reported Procrastination x Dispositional Procrastination IPT</td>
<td>-.59</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note: N = 41. Standardized regression coefficients are reported in the table.*

Earlier discussions around the relationships of the general and specific implicit theories of personality with the other variables of interest in the current study established that these two levels of measurement of implicit theories are warranted. This is because, as suggested earlier (e.g. Dweck et al., 1995) one’s ideas about malleability might not transcend domains and one could possibly hold entity theories in some domains but
incremental theories with respect to others. In the current study, it does not appear however, that studying implicit theories of personality at the level of the specific domain (namely, procrastination) added much by way of significantly moderating the relationship between self-reported procrastination and actual procrastination.

**Hypothesis 3**

The third hypothesis states that chronically held (dispositional) implicit personality beliefs about the traitedness of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors. To see whether implicit traitedness beliefs (comprising beliefs about longitudinal stability and cross-situational consistency) about one’s own personality moderate the relationship between self-reported procrastination and actual procrastination in taking tests, a moderated multiple regression was used.

Before running the analysis for this hypothesis and the next one (both of which use scales from the same measure by Church and his colleagues), factor analyses were carried out on the relevant items to justify combining the *a priori* ‘cross-situational consistency’ and ‘longitudinal stability’ scales into a single ‘traitedness’ scale. With sufficient evidence to allow for this, the moderated multiple regression was carried out.

First, the self-referent traitedness measure (with higher scores implying more beliefs about the traitedness – consistency and stability – of one’s personality) and the self-reported personality measure of procrastination tendency (with higher scores implying higher propensity to procrastinate) were entered. About 7% of the variance in actual procrastination could thus be explained, which was not statistically significant $F$
(2, 38) = 1.32. In the second step, the interaction term for traitedness by self-reported procrastination was added, which resulted in almost double the variance being explained: 13%. The interaction terms was not statistically significant however.

Table 4.1. Results of Regression Analysis for Hypothesis 3.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>-1.75</td>
</tr>
<tr>
<td>Traitedness</td>
<td>-1.31</td>
</tr>
<tr>
<td>Self-reported Procrastination x Traitedness</td>
<td>1.89</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.13</td>
</tr>
</tbody>
</table>

*Note:* $N$ = 41. Standardized regression coefficients are reported in the table.

Thus, even the third hypothesis gained no support and it does not seem that belief in the traitedness of personality moderates the relationship between one’s self-reported tendency to procrastinate and actual procrastination behavior.

**Hypothesis 4**

The fourth hypothesis states that chronically held (dispositional) implicit personality beliefs about the contextuality of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors. This hypothesis may be taken as a corollary to the previous hypothesis in that it is meant to check whether implicit contextuality beliefs (namely, longitudinal instability and cross-situational inconsistency; the opposites of traitedness beliefs in a way) about one’s own personality moderate the relationship between self-reported procrastination and actual procrastination in taking tests. To test this therefore, a moderated multiple regression was used.
As described previously, factor analyses were undertaken on items written around the *a priori* constructs of ‘cross-situational consistency’ and ‘longitudinal stability’. These collapsed as would be theoretically expected, into a single ‘contextuality’ factor. With the rational/theoretical expectation thus confirmed by empirical factor analyses, the next step was the moderated multiple regression.

To do this, the self-referent contextuality measure (with higher scores implying more beliefs about the contextuality – inconsistency and instability – of one’s personality) and the self-reported personality measure of procrastination tendency (with higher scores implying higher propensity to procrastinate) were entered first. This contributed to about 6% of the variance in actual procrastination, which was not significant: $F(2, 38) = 1.23, p > .05$ (ns). Adding the interaction term for contextuality by self-reported procrastination added almost nothing to the $R^2$ which remained .06. The interaction term was not statistically significant.

Table 4.12. Results of Regression Analysis for Hypothesis 4.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.37</td>
</tr>
<tr>
<td>Contextuality</td>
<td>.05</td>
</tr>
<tr>
<td>Self-reported Procrastination x Contextuality</td>
<td>-.17</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.06</td>
</tr>
</tbody>
</table>

*Note: N = 41. Standardized regression coefficients are reported in the table.*

Thus results from the first four hypotheses seem to rule out the possible contribution of dispositional implicit beliefs (whether entity-incremental or traitedness-contextuality) as moderator/s of the relationship between self-reported procrastination
tendencies and actual procrastination behaviors. The next obvious question therefore is whether situationally induced beliefs are more influential and the next couple of hypotheses test this.

**Hypothesis 5**

The fifth hypothesis states that induced (situational) implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors. This hypothesis was tested using the main sample, which had two experimental conditions: one, an entity theory induction condition and two, an incremental theory induction condition. These induced theories serve as the moderator on the relationship between self-reported procrastination and actual procrastination behavior, in the moderated regression analysis that was used to test this hypothesis. The two experimental conditions were given group membership in order to dummy code them for the analysis: ‘0’ was the entity condition and ‘1’ was the incremental condition. First, the self-report procrastination measure and the entity/incremental condition variable were entered, yielding a model which contributed approximately only 7% to the prediction of actual procrastination behaviors which was nevertheless, significant: $F (2,274) = 10.16, p<.01$. Next, the interaction term was added but was shown not to be statistically significant. Adding the interaction resulted in a negligible change in R-square, which remained .07.
Table 4.1. Results of Regression Analysis for Hypothesis 5.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.28**</td>
</tr>
<tr>
<td>Situational IPT</td>
<td>.06</td>
</tr>
<tr>
<td>Self-reported Procrastination x Situational IPT</td>
<td>-.08</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.07</td>
</tr>
</tbody>
</table>

Note: $N = 277$. Situational IPT condition coded as 0=Entity, 1=Incremental. Standardized regression coefficients are reported in the table.

** $p < .01$.

Figure 4.1 illustrates the direction of the interaction between experimental condition and the relationship between self-reported and actual procrastination.

Figure 4.1. Interaction Graph showing the (statistically non-significant) Influence of Induced Implicit Theories

It is clear that there is virtually no difference in the relationship between self-reported personality and behavior as a function of the experimental condition; the relationship was almost the same when the condition manipulated participants into thinking of personality as malleable (incremental condition) and when it induced the
belief that personality is fixed (entity condition). The manipulations used did not really have the effect of changing people’s beliefs that their own personality was malleable or fixed and that may be partly the reason for the lack of effects detected. On the other hand, there may be no effects of these implicit theories or beliefs in this area, a possibility which is further explored in the discussion in the next chapter.

To summarize the results so far, there was no support for the assumptions that either dispositional or induced implicit personality theories, considered separately, significantly influenced the relationship between self-reported tendency to procrastinate and actual procrastination. The last hypothesis will test whether in conjunction they will produce a classic state-trait or person-situation type interaction influence on this relationship.

**Hypothesis 6**

The sixth hypothesis states that there will be an interaction between dispositional and situational implicit theories of personality such that differences in the relationship between self-reported and actual procrastination will be observed based on whether there is a match or a mismatch between the two theories. A moderated regression with a three-way interaction term being computed between dispositional implicit theories, situational implicit theories and self-reported procrastination was used to test this hypothesis.

As the first step in the hierarchical regression, the three variables were entered separately: self-reported procrastination tendency, dispositional general implicit personality theories and induced implicit personality theories. This model contributed about 7.2% to explaining the variance in actual procrastination, with a significant
Next, the interaction terms of two variables taken at a time were entered as the second step (i.e. dispositional implicit theories * self-report, situational implicit theories * self-report, dispositional implicit theories*situational implicit theories). There was a negligible increase in variance accounted for, with R-square now .074. None of the two-way interactions were significant, a finding which is consistent with the results so far from the other hypotheses. The third step of the hierarchical regression included the three-way interaction term (dispositional implicit theories * situational implicit theories * self-report). This model accounted for a trivial quantity of more variance which now amounted to 7.5%. A significant regression coefficient for the three-way interaction term here would show that indeed, the relationship between the self-report and actual procrastination depends on the interaction between dispositional and situational implicit theories. However, none of the interactions were significant, three-way or two-way.

Table 4.14. Results of Regression Analysis for Hypothesis 6.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.30</td>
</tr>
<tr>
<td>Dispositional General IPT</td>
<td>-.07</td>
</tr>
<tr>
<td>Situational IPT</td>
<td>.44</td>
</tr>
<tr>
<td>Self-reported Procrastination x Dispositional General IPT</td>
<td>-.02</td>
</tr>
<tr>
<td>Self-reported Procrastination x Situational IPT</td>
<td>-.67</td>
</tr>
<tr>
<td>Dispositional General IPT x Situational IPT</td>
<td>-.40</td>
</tr>
<tr>
<td>Self-reported Procrastination x Dispositional General IPT x Situational IPT</td>
<td>.63</td>
</tr>
<tr>
<td>Three-way Interaction ( R^2 )</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note: \( N = 277 \). Standardized regression coefficients are reported in the table.
These results once again suggest that the relationship between self-reported and actual procrastination is almost immune to the influence of implicit theories of personality whether general, specific or in the form of related belief systems, and whether dispositional, situational or considered in interaction with each other. Whether people think of themselves as malleable or fixed, and whether these views are held in general, or specifically in the domain of interest or are about the implications of these views on the traitedness or contextuality of attributes it does not seem to significantly influence the manner of self-reporting such that these reports are more or less related to actual behavior in any of these situations.

Figure 4.2. Three-Way Interaction Graph showing the (statistically non-significant) Influence of Dispositional and Situational Implicit Theories

The visual pattern of the slopes as plotted above seem to point to a few general conclusions, some of which are evident by the data and results presented. First, in general, there is a linear relationship between self-reported procrastination and
procrastination behaviors, which points to the utility of a self-report measure such as the one used in the present study to predict relevant criteria. On closer examination, it appears that regardless of the specific theory, the slopes are slightly steeper for the conditions where there was a match between state and trait implicit personality theory, namely for the trait incremental-state incremental and trait entity-state entity lines. A different way to view this is the fact that the least steep slope belongs to the group where trait entity theorists were given an incremental theory induction; for these people, the contradiction to their implicit theory belief might be related to the fact that their subsequent self-report was not as predictive of actual behavior as it was for other conditions. However, with lack of significant results to support this, it may be premature to make such a conclusion. Another observation is that those who dispositionally endorsed more of an incremental theory when measured tended to have a lower intercept than trait entity theorists, meaning that other things being equal, they tended to procrastinate less to start with. Finally it appears that all these trends notwithstandung, these effects are marginal and not statistically significant as the data has shown, and should therefore be interpreted with caution.

Post-Hoc Reanalyses of Hypotheses 1-4

One of the limitations of the current study lies in the small sample available to test the first four hypotheses (N=51). Another somewhat disappointing finding lies in the absence of any effects produced by the experimental manipulation in the larger main sample (N=289). However, this lack of an effect might turn out to yield an unanticipated benefit. The control group was used to test the first four hypotheses to study the direct
influence of measured or dispositional implicit theories of personality, if any, on participants’ self-reports. This direct influence was assumed to be impossible to extricate in the main sample because those participants provided their responses to the measure of dispositional implicit theories but then underwent the manipulation prior to providing their self-report. However, inasmuch as there is no discernable effect of the manipulation, it might be possible to use the main experimental sample as well to study the influences (if any) of dispositional implicit theories with the assumption that any ‘tainting’ of these influences by the manipulation would be minimal.

The study was originally designed such that the control group will solely be used to test the influence of chronically held implicit theories. It is conceivable that any failure of the small control group to yield effects of measured or chronically held implicit theories due to lack of power will be overcome with a larger dataset. With the finding that the experimental manipulations did not show any influence in the experimental condition, it is possible to use that dataset which also contained measures of chronically held implicit theories. An attempt was still made therefore, to combine the experimental and control group data to test the first four hypotheses with a view to detecting the effects of dispositional implicit theories and beliefs on the relationship between self-reported and actual procrastination. Prior to re-running the analyses for the hypotheses however, it is necessary to ensure that the two samples are similar in other important ways. As such, t-tests were run on the key variables of interest between the experimental and control groups. Results are reported in table 4.15.
Table 4.15. T-tests to Establish Equivalence before Combining the Control and Experimental Groups’ Data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Results of t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Implicit Theories of Personality</td>
<td>Control</td>
<td>51</td>
<td>3.46</td>
<td>.70</td>
<td>( t(338)=1.65, p&lt;.10 )</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>289</td>
<td>3.29</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td>Procrastination-Specific Implicit Theories of Personality</td>
<td>Control</td>
<td>51</td>
<td>3.89</td>
<td>.93</td>
<td>( t(338)=1.83, p&lt;.07 )</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>289</td>
<td>3.63</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>Traitedness Beliefs</td>
<td>Control</td>
<td>51</td>
<td>4.33</td>
<td>.66</td>
<td>( t(338)=-1.20, p&lt;.23 )</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>289</td>
<td>4.44</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>Contextuality Beliefs</td>
<td>Control</td>
<td>51</td>
<td>3.40</td>
<td>.58</td>
<td>( t(338)=-.64, p&lt;.52 )</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>289</td>
<td>3.46</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>Self-Reported Procrastination</td>
<td>Control</td>
<td>51</td>
<td>2.85</td>
<td>.59</td>
<td>( t(338)=.92, p&lt;.36 )</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>289</td>
<td>2.76</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>Actual Procrastination Behavior</td>
<td>Control</td>
<td>41</td>
<td>2.90</td>
<td>.73</td>
<td>( t(316)=1.25, p&lt;.21 )</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>277</td>
<td>2.73</td>
<td>.83</td>
<td></td>
</tr>
</tbody>
</table>

Finally, to ensure that the specific condition (control versus entity versus incremental) does not influence the relationships or the results observed, these groups were used in tests of the hypotheses, as covariates. Specifically, effect coding was used to consider the condition as a categorical variable with three levels, and these variables were used in tests of the hypotheses. This did not significantly influence the relationship between self-reported personality and actual procrastination behavior, consistent with the main findings in the study.
Hypothesis 1

The first hypothesis held that chronically held (dispositional) general implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors. In retesting this hypothesis, as before, a moderated regression was used, wherein the eight-item general measure of implicit theories (Levy & Dweck, 1998) framed in self-referent terms served as the moderator on the relationship between self-reported procrastination and test behavior.

The first step where self-referent general IPT (with higher scores implying greater endorsement of incremental views) and self-reported procrastination (with higher scores implying greater tendency to procrastinate) were entered individually, accounted for about 7% of the variance in actual procrastination behavior index, $F(2, 315) = 12.09, p<.01$. Adding the interaction term added no more variance but the F-test was still significant $F(3,314) = 8.05, p<.01$. In reviewing the regression coefficients, the interaction term was not significant.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.22</td>
</tr>
<tr>
<td>Dispositional General IPT</td>
<td>-.08</td>
</tr>
<tr>
<td>Self-reported Procrastination x Dispositional General IPT</td>
<td>.06</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.07</td>
</tr>
</tbody>
</table>

Note: $N = 318$. Standardized regression coefficients are reported in the table.
Figure 4.3. Interaction Graph showing the (statistically non-significant) Influence of General Dispositional Implicit Theories using the Full Sample

It seems therefore, that even considering the entire dataset, dispositional general implicit theories of personality did not seem to significantly moderate the relationship between self-reported procrastination and actual procrastination behaviors. Just like with the smaller group, it seemed that people’s tendency to believe that personality in general was malleable or fixed did not influence how they self-reported on their procrastination tendency to make their self-reports either more or less related to actual procrastination.

Hypothesis 2

Next, the hypothesis that chronically held (dispositional) procrastination-specific implicit theories of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors was retested using the larger dataset. Again, a moderated regression analysis was performed to ascertain whether a procrastination-specific self-referent implicit theory serves as a moderator in the
relationship between self-reported procrastination and procrastination behavior in taking
tests.

Entering the dispositional self-referent procrastination-specific implicit
personality theory measure (where higher scores implied more incremental beliefs), along
with the self-reported personality measure of conscientiousness/procrastination tendency
(with higher scores implying higher propensity to procrastinate) in the first step yielded
results similar to the first time around. Only about 7.5% of the variance in actual
procrastination behavior index, \( F(2, 315) = 12.73, p < .01 \) was explained by entering these
two variables. Adding the procrastination IPT by self-reported procrastination interaction
term as the second step added zero incremental variance in predicting actual
procrastination, \( F(3,314) = 8.47, p < .01 \). This is reflected in the interaction term being
non-significant, as were the individual variables, when considering the regression
coefficients.

Table 4.17. Results of Regression Analysis for Retesting Hypothesis 2 on Full Sample

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.33</td>
</tr>
<tr>
<td>Dispositional Procrastination IPT</td>
<td>.12</td>
</tr>
<tr>
<td>Self-reported Procrastination x Dispositional Procrastination IPT</td>
<td>-.05</td>
</tr>
<tr>
<td>Interaction ( R^2 )</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note: N = 318. Standardized regression coefficients are reported in the table.*

Thus, even with more power to detect any effects that might be present, there
seems to be no evidence that dispositional procrastination-specific implicit personality
theories moderate the relationship between self-reported procrastination and actual
procrastination. In other words, holding an implicit theory that one’s tendency to
procrastinate was somewhat innate and unchangeable (entity theory) did not significantly
influence the prediction of actual behavior from self-reports, compared to holding an implicit theory that one’s tendency to procrastinate is changeable (incremental theory).

*Figure 4.4. Interaction Graph showing the (statistically non-significant) Influence of Procrastination Specific Dispositional Implicit Theories using the Full Sample*

**Hypothesis 3**

Next, the third hypothesis, that chronically held (dispositional) implicit personality beliefs about the traitedness of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors, was retested using the larger dataset. Another moderated multiple regression was used to look for a moderating effect of implicit traitedness beliefs (comprising beliefs about longitudinal stability and cross-situational consistency) about one’s own personality on the relationship between self-reported procrastination and actual procrastination in taking tests.

About 8.7% of the variance in actual procrastination was explained by the self-referent traitedness measure (with higher scores implying more beliefs about the
traitedness – consistency and stability – of one’s personality) and the self-reported personality measure of procrastination tendency (with higher scores implying higher propensity to procrastinate). This model was statistically significant $F(2, 315) = 15.04$, $p<.01$. Adding the interaction term for traitedness by self-reported procrastination in the second step resulted in marginal incremental variance being explained: 8.8%. The interaction term was not significant, however.

**Table 4.18. Results of Regression Analysis for Retesting Hypothesis 3 on Full Sample**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.17</td>
</tr>
<tr>
<td>Traitedness</td>
<td>.05</td>
</tr>
<tr>
<td>Self-reported Procrastination x Traitedness</td>
<td>.14</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.09</td>
</tr>
</tbody>
</table>

*Note: N = 318. Standardized regression coefficients are reported in the table.*

![Interaction Graph showing the (statistically non-significant) Influence of Traitedness Beliefs using the Full Sample](image)

**Figure 4.5. Interaction Graph showing the (statistically non-significant) Influence of Traitedness Beliefs using the Full Sample**

Apparently then, it seems that believing in the cross-situational consistency and temporal stability of one’s personality or one’s ‘traitedness’ does not influence the
prediction of actual procrastination behavior from self-reported procrastination. This is in line with what was found in the smaller dataset using the control group alone and provides confidence in the fact that the lack of detected effects was not solely due to lack of power.

Hypothesis 4

Finally, the fourth hypothesis which states that chronically held (dispositional) implicit personality beliefs about the contextuality of personality will influence the relationship between self-reported procrastination and actual procrastination behaviors was retested using the full dataset. Logically, any results from this test should follow the opposite pattern of that observed in the previous hypothesis inasmuch as contextuality beliefs are opposite of traitedness beliefs. To test whether implicit contextuality beliefs (namely, longitudinal instability and cross-situational inconsistency) about one’s own personality moderate the relationship between self-reported procrastination and actual procrastination in taking tests, therefore, a moderated multiple regression was used.

Similar to previous cases, the self-referent contextuality measure (with higher scores implying more beliefs about the contextuality – inconsistency and instability – of one’s personality) and the self-reported personality measure of procrastination tendency (with higher scores implying higher propensity to procrastinate) were entered as the first step in the regression. This contributed to about 8.1% of the variance in actual procrastination, a model which turned out to be statistically significant: $F(2, 315) = 13.96, p < .01$. The R-square remained unchanged when the interaction term for self-
reported personality and contextuality beliefs was added. The interaction term was not statistically significant.

Table 4.19. Results of Regression Analysis for Retesting Hypothesis 4 on Full Sample

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Actual Procrastination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported Procrastination</td>
<td>.33</td>
</tr>
<tr>
<td>Contextuality</td>
<td>-.10</td>
</tr>
<tr>
<td>Self-reported Procrastination x Contextuality</td>
<td>-.04</td>
</tr>
<tr>
<td>Interaction $R^2$</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note: $N = 318$. Standardized regression coefficients are reported in the table.

Again, it appears that people’s endorsement of beliefs around their personality’s cross-situational inconsistency and temporal instability was not related significantly to the relationship of how they self-reported and actually behaved with respect to procrastination.

Figure 4.6. Interaction Graph showing the (statistically non-significant) Influence of Contextuality Beliefs using the Full Sample
These four retests taken as a whole support the assumption that the small sample used in the control condition was not to blame for the failure to detect effects of chronically-held or dispositional implicit theories or beliefs regarding the malleability of personality. On the other hand, it appears that this lack of influence generalized to the larger dataset and may therefore in itself, be an effect. That is, these results seem to suggest that no matter what one’s dispositional theories and beliefs regarding the malleability of personality are, the ability to predict actual behavioral procrastination from a self-report measure of one’s tendency to procrastinate, remains unchanged.

Alternative Conceptualizations of the Criterion Variable

In order to fully understand the processes that led to the results in the present study, an attempt to re-conceptualize the criterion variable was made. The following section describes the result of some of these alternative conceptualizations.

Non-linear trends in ‘procrastinating’ within test window

In defining procrastination as voluntary delaying of tasks with the knowledge that this delay is counter-productive, one must take into account the fact that for a student in the current study, delaying the first attempt of the test from day 1 to day 2 may not be as counter-productive as delaying it from day 4 to day 5. This is because the penalty in delaying the first attempt is less time to study and take a second attempt within the five-day window. As such, the nature of procrastination as defined here might differ from day to day within the test window. To accommodate such a possibly non-linear trend therefore, the procrastination variable within each window was log-transformed and so
was the aggregate procrastination across tests. Hypotheses were tested for each of these (individual tests as well as aggregated) and results were unchanged from the previous analyses treating the procrastination criterion as an interval-scaled continuous variable.

**Modeling intra-individual (within person) differences in ‘procrastination’**

In order to examine the amount of within-person variation in the timeframe for the first attempt on the five test windows, a multilevel linear modeling (MLM) approach was used. In this analysis, individuals were treated as separate ‘groups’ and the first test attempt across the five tests was treated as the within ‘group’ information. An intercepts-only model (no predictors) produced a within-individual variance of .57. Based on the between-individual variance of .55, the intra-class correlation coefficient indicated that 49% of the variance in first test attempts was a function of differences between people. This relatively large amount of intra-individual variation suggests that averaging procrastination scores across the five test windows may not be appropriate. In an effort to address this potential concern, the hypotheses were re-analyzed with the MLM approach. Even with this more sophisticated modeling technique, none of the hypotheses were supported. This is consistent with earlier results obtained using averaged test attempt timeframes.

**Exploring ‘test-taking strategy’ as a new criterion variable**

Attempts to rule out any confounding influence of scheduling conflicts have been described earlier. Despite allowing for this possibility, there is still some uncertainty about whether the observed delay in taking the first attempt of the tests is due to
procrastination or some more deliberate test-taking strategy involving delaying in order to put in the optimal effort required to do well. Such a strategy might be influenced by performance on previous attempts or tests in an ongoing calibration of what amount of effort is required, including time required to study, in order to improve on subsequent attempts or tests. If the basic premise that performance in Introduction to Psychology tests depends largely on the effort one puts into studying for them is accepted, the test-taking strategy then reduces to a simple one – how does one optimize the chances of succeeding by taking the first attempt early enough to allow for a second attempt if needed and yet study enough to perform adequately? The winning ‘formula’ then comes down to studying regularly and consistently, taking the first attempt early and studying strategically after that to retake the test and improve sufficiently to get a good grade. In the current database, there are a few variables which might be considered proxy indicators of these various testing strategy decisions. For instance, the average difference between when people took their first and second attempt on the tests could be an indicator of a strategy to maximize or optimize the time between attempts to study and do better. However, this variable was neither related to performance nor to improvement in scores from one attempt to the next. Implicit theories did not influence the relationship of this variable to procrastination either. Next, a number of indices were considered in combination in order to make meaningful distinctions between ‘good’ and ‘bad’ strategists. These indices were: day of first attempt (the original criterion variable), score on first attempt and final score on test. The two scores were included in the combination index of test-taking strategy to use the idea of performance influencing the delay in test-taking in order to separate it out from procrastination. The final score was used instead of
the score on second attempt for a couple of reasons: the final score is the best of the two attempts, and as such includes the notion of retaking the test – itself a significant indicator of a good strategy – and also the notion of score improvement. This is a cleaner index than an earlier one which involved resorting to difference scores (‘score improvement’ between test attempts) and the inherent confounds. Second, for those who only took the tests once (a small minority), the notion of final score is a useful proxy of how successful this single attempt was – if they only took it once and scored well, they were seen as conscientious and hard-working test-takers since they clearly put in the effort to score well and did not need to take it twice. If they took it once and scored poorly, this was a proxy indicator of less effort and a worse strategy than studying throughout and taking it just once, and also worse than taking it twice and scoring poorly. Thus, a new variable was created which created scores based on this combination of indicators. Those who rose to the top of this distribution – good strategists – were those who took the first attempt early in the window, studied hard, took the second attempt later and improved their scores considerably. Those who were at the bottom of this distribution – bad strategists – were those who took the tests just once, late in the window and did poorly. In between these extremes were those who took the test once and did well, those who took the test twice but did not improve considerably, and other such combinations. This new variable was used as a criterion variable in testing all the hypotheses – considering one test at a time and also in aggregate. There were no significant relationships of implicit theories moderating the relationship between self-reported personality and this new criterion variable.
It thus appears that whether considering the criterion variable to be a test-taking strategy or pure procrastination, the hypotheses around the influence of IPTs on the relationship between self-reports and behavior are not supported.
CHAPTER V
DISCUSSION

Goals of the Current Study

A long research tradition, chiefly in the fields of social judgment and achievement, has established that people hold certain implicit theories about how malleable various human attributes such as ability and intelligence are. Such implicit theories usually fall into one of two categories; entity theory holds that attributes are more or less fixed whereas incremental theory holds that they are changeable and may be improved or developed. Interestingly, these theories themselves are not fixed across domains. It is possible, in other words, that people’s ideas about the malleability of some attributes or domains are different from their ideas about the malleability of others. Despite a few cautions around this however, a majority of studies have studied the influence of these implicit theories at a rather broad level – targeting ability or personality or intelligence as a whole rather than dealing with narrower domains within these (e.g. Chiu et al., 1997). The current study therefore uses both broad or general implicit theories of personality as well as a narrower, domain-specific measure of procrastination-related implicit theories.

There is some evidence that such implicit theories, while held rather strongly and stably, can also be situationally (e.g. experimentally) induced (e.g. Aronson et al., 2002;
Heslin et al., 2005). The apparent discrepancy in this idea, that what seems to be a chronic/dispositional implicitly held theory can be manipulated or changed by external factors such as experimental manipulations, may be resolved using ideas from the social-cognitive literature. Specifically, the reasoning is that both ideas – entity and incremental theories – can be held simultaneously but with differing levels of cognitive accessibility or activation. Then, “…with direct intervention from the outside, the weaker theory can gain strength or accessibility and thus be more readily elicited in the future.” (Dweck et al, 1995, p.324). In experimental or other situational influences where the opposing or weaker theory is thus primed or made accessible, it seems to have similar results as a pre-existing chronic implicit theory does (Dweck, 1996). There have not been many attempts however, to discern the patterns of interactions that occur when people are faced with an externally induced implicit theory that may match or be incongruent with their pre-existing implicit theory, especially when it comes to the effects of these interactions on self-perception. The current study therefore endeavors not just to bring the implicit theory model into the field of self-perception but does so using a state-trait paradigm whereby the interaction between chronically held implicit theories and manipulated implicit theories is tested.

The current study is therefore an attempt to bridge various gaps in the literature and as such represents an exploration into a variety of untapped areas. The main question of interest in the current study is whether implicit personality theories influence the relationship between self-reported personality and actual behavior. If they do, there are obvious implications for the field of industrial/organizational psychology in areas such as
employee selection using non-cognitive tests, career development and performance appraisals.

The first question addressed was whether participants’ dispositional implicit personality theories influence the relationship between self-reported tendency to procrastinate and actual procrastination behavior. Second, to answer the question of whether situational implicit theory manipulations influence this relationship, a self-persuasion paradigm was used to induce implicit personality theories in the main experimental sample. Third, the experimental design allowed the test of the person-situation or state-trait influence on the relationship between self-report and behavior. Specifically, interactions between dispositional/pre-existing measured implicit theories and situationally manipulated implicit theories were studied to investigate whether a match or congruence between these two actually affects the relationship between self-reported and actual procrastination more than a mismatch or incongruence.

The way these three research questions or goals were approached in the current study, and how this differs or is similar to previous implicit theory studies, is described next.

Operationalizing the Implicit Theories Model

In understanding the results of the current study, let us first take a step back and recognize the various ways in which it differed from previous attempts to study the implications of the implicit theories model. Primary amongst these differences is the way in which the implicit theories model was operationalized and used here.
A multi-faceted approach to the implicit theories model

To start with, the traditional conception of a general entity theory and incremental theory (measured with an eight-item measure developed by Levy and Dweck, 1998) was used. Next, based on recommendations (e.g. Dweck, 1996) to treat domain-specific implicit theories differently from general ones, a specific measure related to procrastination (developed for the current study in 2007) was used. Third, the more recent extension of IPTs into traits and contextuality beliefs (measured using the Personality Beliefs Inventory developed by Church et al., 2003) seemed to be a natural fit with the goals of the current study in expanding the applications and understanding of the implicit theory model. Two sub-scales for each of these beliefs was used: the cross-situational consistency and longitudinal stability for traits, and the cross-situational inconsistency and longitudinal/temporal instability sub-scales for contextuality. Finally, an attempt was made to manipulate or induce IPTs using a self-persuasion paradigm inspired in part by the work of Heslin and his colleagues (e.g. Heslin et al., 2005). Thus, expanding the ways in which we might approach the implicit theory model using various measures and manipulations was a key contribution of this study.

Applying the implicit theories model to the domain of the self

There is a large body of literature surrounding the ways in which self-perceptions differ from perceptions about others. Classic attributional theory for instance (e.g. Jones & Nisbett, 1972), maintains that people view themselves as motivated by more complex situationally driven factors but use more simplistic trait-based or personality-based explanations for others’ behaviors. This distinction is directly related to the implicit theories model whereby entity theorists are inherently more likely to use traits as the
focus of explanation of others’ behavior and incremental theorists are more attuned to using situational, dynamic process variables to explain others’ behaviors (e.g. Chiu et al., 1997; Erdley & Dweck, 1993). It is thus possible that the classic actor-versus-observer distinction studied by attribution theorists works differently for incremental theorists compared to entity theorists. Phrased differently, there is an open question as to how these implicit theory tendencies apply to the self (versus how they apply to others, which has been established by two decades of research), and how they influence self-reporting on one’s personality. Knobe & Malle (2002) in fact, in a review of the classic Jones & Nisbett (1972) view of actor-observer asymmetry pointed out that when it comes to the self, neither the situational nor the dispositional view of attribution might be appropriate. They favored instead, a view whereby the actor (the self) uses a ‘reason-based explanation’ for their actions. It therefore seems somewhat open to debate whether or not the implicit theory model will apply to the self in the same way as it does to others. Thus, another major difference in the current setup compared to previous attempts at using the implicit theories model is that given the focus of interest in the current study, (namely, the self and not beliefs about ‘people in general’ as has been the focus in previous studies), all the measures were modified to be self-referent.

Applying the implicit theories model to self-reported personality

Another key area in which the current study is distinctive, is in its focus on personality, and specifically, on the area of self-reported tendency to procrastinate. Past research has focused almost solely on the areas of social judgment such as stereotype formation and maintenance (e.g. Plaks et al., 2001), the area of educational achievement and motivational goals (e.g. Dweck & Leggett, 1988) and more recently, the area of
managerial perceptions of employees (e.g. Heslin et al., 2005). There is virtually no research on the influence of implicit theories on the act of self-reporting to personality tests despite the recognition that the model is so intricately tied to the domain of the self (e.g. Kruglanski, 1995). This focus by educational and social psychologists on children and students (e.g. Dweck & Leggett, 1988; Kamins & Dweck, 1999) might or might not translate into findings in adult populations and in other non-motivational areas such as self-perception due to the more complex and differentiated conceptions that adults hold compared to children (Kanfer, 1990). Given that some implicit theory studies have failed to replicate the strong relationships seen amongst children in adults, even in the more commonly studied areas of intelligence and goal orientation (e.g. Vandewalle, 1997), it is important that such boundaries be explored so that parameters around the applicability of the implicit theories model be drawn.

*The person-situation paradigm*

The design of the current study also differs from several before it in its attempt to capture the interaction effects, if any, between dispositional and situational implicit theory influences. In order to do so, two groups or samples were used. The main experimental sample responded to measures of general IPTs, procrastination-specific IPTs, traitedness and contextuality beliefs and then participated in an intervention designed to induce either an entity or an incremental theory. This sample was thus used to study the possible state-trait (person-situation) interaction influence on the relationship of interest. A separate control sample provided data for the influence of dispositional or trait IPTs alone. The relationship between personality and behavior was operationalized in the current study as the relationship between a self-reported measure of procrastination
tendency and the behavior of actually procrastinating on taking a series of tests required for a course participants were enrolled in.

*The challenge of manipulating implicit theories of one’s own personality*

One of the key endeavors of the current study was to investigate the influence of situationally manipulated implicit theories in conjunction with pre-existing ones. As such, the manipulation of implicit theories was crucial. Results suggest an inability to detect influences of both pre-existing and manipulated implicit theories on the relationship between self-reports and behavior. Before diving into the results of the study and trying to understand what caused them, it is useful to recognize the challenges in manipulating implicit theories in the area of the self.

Past research has shown that implicit theories can be changed by situational cues as trivial as a paragraph about a ‘scientific testimonial’ provided during experimental procedures (e.g. Bergen, 1991) and as intense as long-lasting cultural factors (e.g. Choi et al., 1999). However, not all experimental manipulations have been equally successful in inducing changes. For instance, some have been able to detect effects using merely written persuasive materials (e.g. Chiu et al., 1997; McConnell, 2001) but others have found that replacing existing implicit theories requires “more than an exhortation” (Tabernero & Wood, 1999, p. 124). The paradigm that the manipulation used in the current study was modeled after for instance, was a 90-minute workshop where the researchers used five self-persuasion techniques to induce a change in managers’ implicit theories (Heslin et al., 2005, 2006).
The current study used modified versions of the same five techniques but instead of a workshop intervention, relied on an online survey to relay the induction. Participants were placed randomly into either an entity or an incremental condition where they went through a number of activities designed to induce the relevant theory – strengthening the existing theory if it was congruent with the manipulated theory or replacing the existing theory with the manipulated/induced theory. The manipulation used here (see Appendix C) was almost identical to that used by Heslin et al (2005) except for a few details and the mode of presentation.

The reasons why the manipulation did not yield any significant effects in the present case might come down to two interrelated factors. One, the hypothesized effects are in an area hitherto unexplored by implicit theory researchers, an area which appears to be more robust to influences than other areas in which implicit theories have been shown to have influences; and two, the manipulation itself might have not been strong enough to cause a change in the theories held by participants. Regarding the latter argument, it does not seem like the manipulation was weak or went unnoticed – on the contrary, as reported in the previous chapter (see table 4.1 for instance), participant responses indicated that they were clearly engaged in the activities composing the manipulation. It seems however, that remembering or being interested in the manipulation and being influenced by it were two very different things in the present case – the manipulation simply did not seem to succeed in changing views to the extent that significant effects could be observed. Perhaps, ultimately, a 30-minute online survey for extra credit is not sufficiently powerful compared to a 90-minute workshop for manager training, in creating strong mechanisms to change one’s implicit theories, especially in
relation to oneself. More critically, the participants used in the Heslin studies tended to be managers with definite interests and motivations in engaging in the workshop in order to become better at rating and coaching their employees in the future. Even in studies in which students were used, it was MBA students for whom making appraisals was role-salient and even then, entity theorists were hand-picked for the manipulation workshop. In fact, to increase the salience of the appraisal process and engagement of their manager participants, Heslin et al., (2005) repeated instructed them “to give an evaluation ‘as if’ they were being held accountable by their organization for providing an accurate appraisal of the employee” (p.845).

This brings us to focus on the first option regarding why the manipulation failed to have significant effects. The outcome of interest in the present case (self-reported personality) is very different from those in other studies that focused more on perceptions of others or change in achievement-oriented behavior. The current outcome represents a move in focus to the domain of the self, which is governed by different and more complex sets of relationships. It could be for instance, that theories about change or malleability of ‘people in general’ could be subtly manipulated and differences observed in other domains but when it comes to the domain of one’s own personality, we are more resistant to change. In fact, there is partial support of this idea in the fact that over 53% of the sample in the experimental conditions seemed to think that they were being led to believe things that seemed incongruent with their own prior beliefs.

Using the social-cognitive framework that was proposed in chapter II to understand how implicit theories are held and might be changed is beneficial in understanding the challenges present in the current situation. Implicit theories, which
may be considered to be knowledge structures, operate by having both chronic and immediate accessibility (Poon & Koehler, 2006). For a non-chronic theory to gain temporary accessibility, situational influences (such as an experimental manipulation of implicit theories) are likely to be effective inasmuch as they are salient, accessible and specific (Trope & Gaunt, 2000). For a non-chronic theory to gain accessibility when it comes to the self, there is an additional layer of complexity to overcome.

Attribution theory suggests that people view themselves differently from the way they view others’ behaviors and motivations. The present results however, cannot be explained strictly by this theory except perhaps to the extent that it points to the fact that it is difficult to generalize a model developed at a certain level (‘people in general’) to that of the self (‘my personal attributes’). More targeted evidence comes from literature that looks at the reported predictability of one’s own behavior versus others’ behaviors. Knobe and Malle (2002), Sande, Goethals and Radloff (1988) and others for instance, confirmed that people see themselves as having rich, multifaceted and adaptive personalities compared to others. As a result we see ourselves as possessing more traits than other people and being less predictable than others. To the extent that this view that we are more complex and multi-faceted operates, any attempts to influence the implicit theories we hold about our own malleability is bound to have limited efficacy.

According to a widely applicable account of how social inferences are made (Krull, 1993), perceivers assemble social inferences across a number of stages – first categorizing what type of behavior is being performed, then characterizing what this behavior might imply about the persons or social situations involved and finally correcting initial characterizations in the light of possible alternatives. These separate
stages differ in the cognitive effort and resources required, with correction considered the most deliberate (e.g. Ham & Vonk, 2003). Inasmuch as self-reports or self-judgments involve similar processes, the correction stage under cognitive load might be compromised and people might revert to their natural instinct or implicit personality theories (Molden & Dweck, 2006). While it is uncertain as to whether the current study posed considerable cognitive load on participants, it is possible that they were resistant to the manipulation to the extent that it contradicted their existing beliefs and as such would require ‘correction’ under cognitive load.

Thus, in the absence of any significant effects of the manipulation, the investigation becomes one of the influence of dispositional implicit theories alone. As described in the previous chapter, with this rationale (that manipulation effects if any were too trivial to count), the control and experimental conditions’ data were combined to examine the influence that dispositional implicit theories had on the relationship between self-reported tendency to procrastinate and actual procrastination. The bulk of the discussion of the results therefore, focus on the dispositional variables having established the trivial effect the manipulation seemed to have had.

Summary of Results and Contributions to the Literature on Implicit Theories

The overall finding of the study was that no statistically significant effects were uncovered pointing to the influence of implicit personality theories on the relationship between self-reported tendency to procrastinate and actual procrastination. Specific findings will be discussed next, using the following structure. First, I will explore the relationships between the various operationalizations of dispositional implicit theories
and beliefs were operationalized. Next, the relationship of these variables to self-reported procrastination will be examined. Last, the influence of dispositional and situational implicit theories on the relationship between self-reports and behavior will be reexamined, in light of the features of the study discussed so far. Specifically, the reasons why no significant effects emerged will be reviewed, and implications discussed.

Dispositional implicit theories and beliefs

Instead of being limited to a single operationalization of general implicit theories, the current study used four different ways of studying the influence of dispositional implicit theories: general IPTs, procrastination-specific IPTs, traitedness beliefs and contextuality beliefs. These four conceptualizations were included because they were closely related yet sufficiently distinct from each other to warrant inclusion in order to expand the nomological network of the implicit theories model.

Past research and theory holds that compared to incremental theorists, entity theorists assume lesser variability in trait-relevant behaviors across situations and greater temporal stability in trait characteristics (Chiu et al., 1997; Poon & Koehler, 2006). Similarly, incremental theorists’ inferences about others refer to specific, context-dependent and time-dependent behavioral tendencies as opposed to entity theorists who tend to make more global, unconditional person judgments (Trope, 1986; Dweck et al., 1993). These very implications of entity and incremental theories are captured as traitedness and contextuality beliefs respectively, and measured using the Personality Beliefs Inventory (Church et al., 2003). Specifically, the PBI sub-scales used to measure traitedness in the current study were cross-situational consistency and longitudinal
stability; the sub-scales used to measure contextuality were cross-situational inconsistency and longitudinal/temporal instability.

The inherent assumption, that traitedness beliefs are closely related to holding an entity theory in general, is borne out by the relationship between the traitedness measure and the IPT measures, as well as in the fact that they had similar influences on the relationship between self-reported and actual procrastination. As seen in Table 4.2 in the previous chapter, the relationship between the traitedness beliefs measure and the IPT measure (scored such that higher scores indicate incremental beliefs) was -.19 ($p < .01$) overall. This meant that the more incremental one tends to be, the less traitedness they professed to believe in (this relationship was not significant in the control condition). However, examining the relationship of contextuality beliefs with the tendency to endorse a general incremental theory, no significant relationship emerged. Entity theory and traitedness beliefs were not just related to each other, they also showed similar patterns of relating with other things. For instance, the slope for the entity theory was steeper than that for the incremental theory (Figure 4.1) and similarly, the slope for the traitedness beliefs was steeper compared to the contextuality beliefs (Figure 4.3). Thus, if believing that attributes are fixed (entity theory) led to beliefs about the consistency and stability of traits (traitedness beliefs) these two belief systems certainly displayed the same pattern of relationships in this study when it came to general entity/incremental theories and traitedness/contextuality beliefs.

These findings, however, break down when considering procrastination-specific implicit theories. Specifically, the procrastination-related IPT theory measure (also scored such that higher scores indicate tendency towards incremental beliefs) was not
related to traitedness beliefs at all in any condition and was in fact, *negatively* related to contextuality beliefs. From theoretical rationalizing, believing in the inconsistency and instability of traits across time and situation (contextuality beliefs) should follow from believing that attributes are malleable (incremental theory) and these constructs if anything, should be positively related. Similarly, incremental theory should be negatively related to traitedness beliefs, a pattern that did not emerge with the procrastination-specific measure but which did for the general measure.

To summarize these findings, endorsing traitedness beliefs was positively related with endorsing a general entity theory whereas endorsing contextuality beliefs were positively related with endorsing a procrastination-specific entity theory. While these results with the procrastination-specific theory are unexpected and to an extent, counter-intuitive, a possible explanation lies in the fact that these investigations took place at different levels of specificity and these levels change the nature of what were initially considered predictable relationships. Implicit theories may be quite general in some individuals and narrower in others. Some people seem to hold entity (or incremental) theories across achievement and moral domains, for instance, whereas others hold one theory in one domain of human activity and the other theory in a different domain (Anderson, 1995). As such, it is possible that having a general entity view – that in general, attributes are static – relates to traitedness beliefs that attributes in general remain the same across time and context. But having an entity view when it comes to procrastination in particular – that their own tendency to procrastinate is something unchangeable – might conceivably have nothing to do with traitedness beliefs that transcend domains for some people.
The self-referent general implicit theory one holds is at a level of specificity that is distal compared to the very specific level provided by self-referent procrastination-specific questions. The latter provide people very clear and specific instances from people’s lives for them to draw from when agreeing or disagreeing to a series of statements about the malleability of their tendency to procrastinate. The former (general IPTs) are less proximal and require people to make generalizations calling upon various situations and times in their life to provide anchors for their responses. As Werth and Forster (2002) established, entity theorists, who believe in people’s consistency over time and situation use top down processing and therefore rely on metacognitive knowledge (such as how they are in general, across situations). The traitedness and contextuality beliefs measure was written to be broader and more encompassing than even the general IPT measure (Church et al., 2003). Previous studies that established therefore that entity theories are related to traitedness beliefs focused on this general or broad level. As is clear from current findings, at the more granular, proximal level of the domain of interest (procrastination), entity theories might not be related in the same way to traitedness beliefs. These procrastination-specific entity views might even relate positively to broader contextuality beliefs inasmuch as their specific entity belief regarding procrastination might not generalize across other domains and by extension other times and contexts. This latter possibility, that one’s domain-specific theories might not necessarily correspond to their domain-general theories, is borne out to an extent in the relatively moderate albeit statistically significant correlation between these two: .31** (p <.01).
Another perspective to consider here is the fact that what is being called ‘traitedness’ (and ‘contextuality’) here is actually an amalgamation of sub-scales measuring cross-situational consistency (and inconsistency) and longitudinal stability (and instability). Some results from the literature on the consistency of personality itself suggest that when it comes to people’s personality, "considerable stability over time has been demonstrated" (Mischel, 1968, p. 36), and "although behavior patterns may often be stable, they are usually not highly generalized across situations" (Mischel, 1968, p. 282). This idea was supported by research which showed, by aggregating multiple behavior observations across occasions, that mean cross-situational consistency coefficients were at best, modest but temporal stability was considerable and impressive (e.g. Mischel & Peake, 1982). Butler (2000) found that the effects of temporal (over time) feedback/comparisons influences incremental theorists more, and normative (across people) feedback affects entity theorists more. Thus, in combining sub-scales that measure cross-situational consistency and temporal or longitudinal stability, any such nuanced effects are probably overwhelmed. It must be noted however, that even considering the cross-situational consistency/inconsistency and temporal stability/instability sub-scales individually instead of combining them into the traitedness and contextuality scales did not change results in the current study.

Of course, the measures used in the present study targeted *implicit beliefs* about cross-situational consistency and temporal stability and as such, might be different than actual consistency and stability. But in any case, the research cited above provides some cautionary evidence against considering stability of personality over time to be equivalent or even strongly related to consistency across situations.

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The relationship between dispositional implicit theories/beliefs and self-reported procrastination

An important variable of interest in the current study is the self-reported personality measure of one’s tendency to procrastinate. The relationship between self-reported and actual procrastination, incidentally, seemed to be consistently positive and significant regardless of the condition and may thus be robust to influences in and of itself. In any case, it is interesting to try and understand the relationship of the implicit theory and beliefs measures to this variable of self-reported procrastination tendency.

Considering first the implicit personality theory measures, the general measure seemed to have no significant relationship with the self-report measure whereas the procrastination-specific measure did. The tendency to endorse incremental views when it comes to procrastination was negatively related to self-reported procrastination tendency. Framed slightly differently, the more one felt that their tendency to procrastinate was something that was fixed and stable, the greater their self-reported tendency to procrastinate happened to be. The more one felt procrastination was something that was malleable, the less one’s self-reported tendency to procrastinate was.

Plaks et al. (2005) proposed that people seem motivated to protect their chronic implicit theory, even resorting to biased or distorted processing when it is violated. As such, implicit theories seem to be closely related to ideas of control and predictability, and might well display the motivations to selectively attend, perceive, recollect and scrutinize information only as it confirms their beliefs. Thus, inasmuch as incremental theorists view personality (including the tendency to procrastinate) as malleable, the more inclined they might be to want to believe that their tendency to procrastinate is
changeable and controllable and therefore, self-report on being lower on that construct. This might be a form of psychodynamically defending one’s own self from the negative connotations of being a trait procrastinator.

There might be a motivational element to why people with procrastination-specific incremental theories differ from those with procrastination-specific entity theories on these self-reported tendencies. Senecal, Lavoie and Koestner (1997) for instance, found that high-trait procrastinators who were expecting to be evaluated, tended to procrastinate or delay working on an aversive task the longest compared to those who were not expecting to be evaluated. Entity theorists have been shown to react negatively to the possibility of feedback/evaluation compared to incremental theorists, seeing negative feedback as proof of failure, for instance (Molden & Dweck, 2006). By extension, it is not surprising therefore, that those who held entity theories in the realm of procrastination were also those who self-reported as tending to procrastinate more than those who had incremental theories. This is more relevant in the present case because the behavioral outcome was procrastination on taking tests for a college course – a situation laden with the potential for evaluation.

The level of specificity issue also relates to why the procrastination-specific theories were related to self-reported tendency to procrastinate but general theories were not. This view has long been proposed in various forms by researchers in this and other fields. For instance Dweck (1999) herself proposed that incremental or entity beliefs in specific domains might differ. Hogan and Roberts (1996), Bartram (2005) and other researchers, in a different context, recommend that the levels of predictor and criterion must match if one were to achieve effective prediction. In the current study, these
recommendations were proven wise, in that the strongest relationships were to be found with the procrastination-specific measure of implicit personality theories compared to the general measure.

Next, in considering the traitedness and contextuality beliefs, a different pattern emerges. It was seen that procrastination-specific entity theories are positively related to contextuality beliefs and to the self-reported tendency to procrastinate. So it follows that contextuality beliefs are positively related to self-reported procrastination and traitedness beliefs are negatively related to it.

In trying to understand these results it is important to bear in mind the construct in question: procrastination. Almost by definition, procrastination is the tendency to get side-tracked and delay starting or completing important tasks. As such, it implies that those who procrastinate tend to be distracted by situational factors that come in their way of completing their goals. Contextuality beliefs by definition imply that people believe their attributes as being influenced by context and time. As such, those who believe in the contextuality of attributes might be the same people who tend to get influenced by contextual factors and therefore tend to procrastinate more than those who believe that they are the same regardless of context.

Some research shows that those who endorse traitedness beliefs tend to show self-enhancement in the evaluation of one’s own traits (e.g. Heine et al., 1999). Also, they tend to overestimate the likelihood of related traits to coexist in someone (Church et al., 2003). Drawing from these two findings in the literature then, it is plausible that those who tend to have traitedness beliefs might evaluate themselves as having a number of inter-related self-enhancing traits. By definition, those who endorse traitedness beliefs
with respect to themselves see themselves as consistent over time and situation. They might draw related trait-inferences about themselves therefore as being dependable, reliable and conscientious also, and therefore, less likely to procrastinate. This might therefore explain why those who endorsed traitedness beliefs tended to self-report having lower tendencies to procrastinate.

*The influence of implicit theories of personality on the relationship between self-reported procrastination and actual procrastination*

Having discussed the patterns of bivariate relationships that exists between the main variables of interest in the study, the main research question is tackled next. Even though one of the main questions of interest in the current study lies in the interaction between dispositional and manipulated IPTs on the relationship between self-reported procrastination and actual behavior, a small control group was used to investigate the role dispositional IPTs play on their own. As described earlier, four different operationalizations of dispositional implicit theories were used – general, procrastination specific, traitedness and contextuality. The overall finding was that none of these turned out to be a significant moderator of the relationship of interest. Even considering the entire dataset (if the lack of effects from the manipulation is seen as justification enough to do so) dispositional implicit theories seemed to have no influence in changing the relationship between self-reported procrastination tendency and actual procrastination.

As seen in figures 4.1, 4.2, 4.3 and 4.4 however, the general trend seemed to be that of steeper slopes in the case of entity theory and traitedness beliefs. That is, for those who tended to endorse an entity theory or professed beliefs in the traitedness of attributes,
the relationship between their self-reported procrastination and actual procrastination tended to be stronger than for those who endorsed more incremental views and contextuality beliefs. It should be noted that none of these findings were statistically significant and generalizing based on observed trends in a small sample is premature.

There is a line of research which approaches the predictability of one’s own personality from the perspective that people differ in the extent to which their self-report or self-perception of predictability itself is accurate. The findings of the current study echo some of this seminal work which sparked off several debates in the literature about the consistency of personality itself. The work in question was initiated by Bem and Allen (1974) who asked people to rate the degree to which their behavior varied when it came to given traits (friendliness and conscientiousness) and found that this variability moderated the relationship of their self-reports to others’ reports of these traits. Specifically, for people who had high consistency (low variability), self-reports were more highly correlated with others’ reports than for those who had low consistency. Later, some researchers (e.g. Mischel & Peake, 1982; Chaplin & Goldberg, 1984) did not have much success replicating these results whereas others (e.g. Lippa & Mash, 1981; Zanna, Olson, & Fazio, 1980) did incorporate self-report measures of consistency into their studies and found that this definitely seemed to be a moderator in the validity relationship of self-reports and outcomes. This research seems to be consistent with the current findings which, albeit not statistically significant, seem to follow a pattern. Bem and Allen (1974) and others in their tradition found that people differed in the extent to which they reported their behaviors to be variable or consistent. This is in line with the Dweck model used in the current study, which holds that people differ in the extent to
which they believe attributes in general are variable or consistent. Finally, the Bem and Allen (1974) finding that those who self-reported with behavioral consistency showed stronger relationships between their self-reported personality and criteria of interest is consistent with some patterns detected in the current case. Specifically, slightly stronger (albeit not significantly) relationships between self-reported procrastination and actual procrastination were found for those who endorsed entity theories and traitedness beliefs – namely, those who believed in the consistency of traits.

Considering next, the influence of situationally manipulated implicit theories on the relationship between self-reported personality and behavior, the emergent picture is very similar. No moderating influences were to be detected. As discussed earlier, the failure to successfully manipulate implicit theories was possibly due to a combination of factors. While the possibility that the manipulation was not powerful enough surely exists, the fact is that far less engaging and intensive manipulations have been successful in producing effects in the past (e.g. Thompson & Musket, 2002). However, in the current case, due to the fact that judgments about the self are far more complex and differentiated than social judgment or an evaluation of ability, it may be understandable on hindsight that the relationship of self-reported personality to behavior was seemingly immune to the influence of implicit theories.

Even with the person-situation paradigm proposed, the three-way interaction between dispositional IPT, situational IPT and self-reported personality was not statistically significant, nor were its component two-way interactions. Thus, not only were there no effects of the implicit theories when measured or manipulated, there were no statistically significant effects of these in interaction either.
Other than the mere test of interactive effects on the relationship between self-reports and behavior, a key assumption of the study based on theoretical reasoning and related research in the past, was regarding the nature of the interaction. Specifically, it was hypothesized that a match between dispositional and situational implicit theories would yield stronger relationships between self-reported tendency to procrastinate and actual procrastination. While results were not statistically significant, plotting the three-way interactions suggested by the state-trait interaction (see figure 4.6) was useful. The pattern that emerged suggested support for this assumption. This is consistent with past research. For instance, Tabernero and Wood (1999) proposed that when a person’s preexisting implicit beliefs are matched with induced (social) construals of these beliefs, the predisposition to adopt a particular response for a task will be strengthened.

Regarding the specific theory that emerged as most influential, again, based solely on the plotted results, it seemed to be entity theory. Tying these two findings together, it appears that those with pre-existing entity theories when placed in the entity condition showed the strongest relationship between self-reported personality and behavior. The weakest relationship was observed amongst those with pre-existing entity views who were placed in an incremental condition. This too, finds echoes in past research. For instance, Silvera, Moe and Iversen (2000) found that entity theorists engage in less attributional correction than incremental theorists when faced with competing information. As such they tend to show more reluctance to change their attributions and perceptions despite cues or

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2 In the three-stage model of attribution (categorization, characterization and correction) correction is when initial dispositional inferences are modified to account for other constraints like situational influences.
information to suggest otherwise. These ideas, however promising, must be taken with caution, since none of the results were statistically significant.

While these null results might seem disappointing at first, it is important to consider the fact that this was after all, a single-shot survey-based study, which might not be the best way to study the person-situation or state-trait interaction. Even though an attempt was made to use instructions and an appropriate experimental design to replicate this, there will always be some critics (e.g. Allen & Potkay, 1981) who will point to the fact that state and trait are inextricably tied when a measure of state is used to derive an index of trait.

In fact, some recent research has even cast doubt on the long-standing assumption that implicit theories of personality are themselves stable over time (albeit possible to be manipulated by situations). The stability of lay theories or IPTs has tended to be “assumed or implied rather than formally tested” (Levy et al., 2006, p.9) until now. Recent research by Poon & Koehler (2008) question this assumption by showing that the short-term 1-4 week test-retest coefficients reported in past literature (e.g. Levy et al., 1998) overestimate the long-term stability of these theories. They show that somebody classified as an entity (incremental) theorist has about a 40% chance of reversing themselves two months later even in the absence of experimental interventions intended to produce a theory change. Thus, in interpreting results one should be cautious and understand that they may reflect only one’s theorist status at or near the time of measurement. Some stability or chronicity in the relative accessibility of a certain theory may be reasonable to expect given that one’s dominant theories about the social world may be preserved and kept active through various cognitive mechanisms (e.g. biased
attribution, recall and assimilation) even in light of counter-evidence (Anderson & Lindsay, 1998). In fact, Plaks et al., (2005) found that people process information violating their dominant theory different from that supporting it, in an effort to protect themselves. However, the impact of such differential processing on theory stability was not evaluated in either that study or the current one. The relative accessibility of entity and incremental person theories is a combined outcome of (a) the chronic accessibility of these theories as researchers have long assumed and (b) their temporary accessibility due to short-term influences from idiosyncratic cues or experiences in everyday life or the current situation (Higgins, 1996; Poon & Koehler, 2008). Studies measuring IPTs in close temporal proximity to outcomes of interest will have greater chances of revealing effects if any, than those in which the measurement interval increases. However, the interpretative issue remains.

Another possible reason for the failure to find moderating influences of implicit theories of personality on the relationship between self-reported and actual procrastination might lie in the variable of interest itself. Procrastination is a behavior that might itself be amenable to being predicted only to a certain extent to start with. Although most research has considered it a relatively stable construct which is intrinsic to an individual (e.g. Ferrari, Johnson, & McCown, 1995; Schouwenburg, 1995), there are theoretical (e.g. Harris & Sutton, 1983; Van Eerde, 2000) and empirical bases (e.g., Blunt & Pychyl, 2000; Senecal et al., 1997) for conceptualizing procrastination as a situation specific behavior as opposed to a personality trait. A strength of the present study is the fact that it restricted the operationalization of procrastination to a single area – delays in taking tests observed over five occasions. A second strength is in the fact that this
variable was developed using multiple instances, which was shown to be a reliable and justifiable manner of doing so. Moreover, it was shown that even considering recorded situational scheduling conflicts that presumably caused the delay in taking the test/s (versus an intrinsic tendency to procrastinate) did not change results. This lends credence to the fact that despite small contributions of situation specific factors, procrastination in the present case was more or less controllable by individuals and as such more similar to the commonly held conceptualization of procrastination as a relatively stable characteristic of people.

The possibility that there is still a ceiling on the strength of the relationship between the measured trait-like procrastination and the observable behavior of procrastination on taking test/s still remains. In fact, for behaviors that have generally low consistency across situations, some psychologists have suggested that figures such as .30 or .40 represent the maximum personality correlation coefficients that represent the measures of personality to predict any single act (e.g. Mischel, 1968).

**Theoretical and Practical Implications**

In the remainder of this chapter, the theoretical and practical implications that stem from the findings of the current study are presented. Following that, limitations of this study are discussed. Where applicable, I also suggest directions for future research.

This study was primarily conducted to see whether implicit theories of personality influence the relationship between self-reported personality and behavior. The consistent result seems to be that the relationship of interest remained relatively invariant and
resistant to moderating influences by dispositional, manipulated and interactional effects of implicit theories of personality. While this result is at first surprising considering the wide-ranging effects documented in the literature for implicit theories of personality, it is ultimately both justified and perhaps even heartening.

Regarding why the result is justified on hindsight, it is important to recognize the different ways in which the current attempt differs from previous ones using implicit theories of personality. First, it sought to apply this model to the realm of the self. As explained previously, there are several boundary conditions to the social-cognitive processes that can be extended to the domain of the self from other areas such as social judgment, achievement striving and beliefs about attributes in general. Future research should further explore these boundary conditions in applying the implicit theories model to the self that the current study was not designed to focus on. For instance, the trait versus process focus distinction between entity and incremental theorists (e.g. Levy & Dweck, 1998) is reminiscent of the classic others versus self distinction in attribution theory (e.g. Heider, 1968) but the relationship between these ideas has not been explicitly studied. Second, the study was one of the few that the author is aware of that uses the state-trait or person-situation paradigm in the area of implicit personality theory. Third, the relationship of interest in the current study: self-reported personality and procrastination behaviors is a new domain in the area of implicit personality theories and as such, lacks precedent in terms of setting expectations. Fourth, the study sought to extend the applicability of the implicit theory model by including the idea of traitedness and contextuality implicit beliefs. Fifth, following recommendations from previous
studies, domain-specific implicit theories (about procrastination in this case) were measured in addition to general theories.

This last aspect is where another one of the most important contributions of the study lies. It was found that the general implicit theories measure had few if any strong or significant relationships to any variables of interest whereas the procrastination-specific theories measure did. Moreover, these two constructs seemed to be differentially related to other constructs, confirming the need to treat them separately and make conclusions cautiously regarding ‘implicit theories of personality’ if they do not generalize across domains.

The other promising area is the consistent trend that emerged across hypotheses – those who endorsed more entity views and traitedness beliefs tended to show a stronger relationship between self-reports and behavior, although these interactions were not statistically significant in any of the analyses. If future research does confirm however, that priming or inducing entity theory improves accuracy of self-reporting for dispositionally entity theorists and has little or no influence on dispositionally incremental theorists, perhaps emphasizing the relatively stable nature of personality in instructions of a self-report questionnaire might be useful. However, it must be realized that emphasizing entity theory in some contexts might be counter-productive. For instance, Renaud and McConnell (2007) found that entity theorists who had large self-discrepancies (between their actual and ideal selves) suffered from lower self-esteem than did incremental theories. Thus, wanting to be better but thinking or being told you cannot impacts self-esteem negatively. Also, reinforcing entity views when it comes to areas outside the realm of personality, such as ability or intelligence, can actually have negative
effects (e.g. Aronson et al., 2002). Thus, any such improved validity when considering entity theorists versus incremental theorists must be considered within the broader context of implications of emphasizing entity theory in general. In fact, given the lack of statistically significant results in the current case, concluding anything around the perceived improvements in validity relationships for entity theorists would be premature.

The null result found in the current study around the influence of implicit theories on self-reported personality might be a result of a number of factors. As explained earlier, the current study differed in a number of important ways from past studies in the area of implicit theories. The lack of a moderating influence might therefore be ascribed to any of the factors such as the domain (self-reported personality), the design (state-trait interaction), the measures and manipulation used (self-referent, ‘at school’ frame of reference) or the operationalization of the variable of procrastination. However, to the extent that the study did attempt to control for a number of confounding effects and therefore can be seen as a credible attempt to study the effects of implicit theories in this relatively narrowly defined area, the null results found are also heartening to applied users of personality tests. Such users can perhaps be optimistic that their recipients’ theories about the malleability of personal attributes (whether dispositional or situationally induced) might be too subtle to impact the validity of their self-reported personality. There certainly does not seem to be a reduction in the strength of the relationship between self-reported and actual procrastination due to the implicit theories people bring into the situation or those that are induced within the situation. If the situations in which self-reported personality is used are considered, this null result can be considered encouraging. Whether for employee selection, career guidance or personal
development, to the extent that self-reported personality was shown to be differentially susceptible to the influence of implicit theories, there might have been a concern. For instance, if dispositionally entity or incremental theorists had shown significantly stronger relationships between their self-reported personality and actual behavior, it might have become incumbent upon users to start measuring and controlling for these chronically held schemas in the future. If the manipulation had been shown to be a significant moderator, either by itself or in interaction with dispositional implicit theories, similarly, the recommendation might have been to routinely consider, perhaps even control, the impact of such influences every time self-reports are used. A relatively salient manipulation on which participants spent sufficient time and engaged effort did not seem to produce statistically significant moderating influences in this study. This indicates that the considerably more subtle cues found in test instructions, realistic job previews, test-taking environment or other more ‘incidental’ cues (which might be considered much lower ‘dosage’ manipulations) would not be likely to affect the relationship between self-reported personality and outcomes either. However, more research is required to replicate or attempt to contradict these null findings before recommendations about allowing or not allowing for the influence of implicit theories in the area of self-reported personality can be considered final.

Limitations of the Current Study

In this section, a number of limitations with the current study are discussed. First, the participants in the study were undergraduate students enrolled in an Introduction to
Psychology course at the University of Akron. As such, some may question the generalizability of results found using such a sample to any ‘real life’ situations (e.g. Gordon, Slade, & Schmitt, 1986). However, the study was conducted to investigate the processes involved in the influence of implicit theories of personality on self-reported personality, not necessarily to be able to generalize a phenomenon. Inasmuch as studies like this are able to study the effects by measuring and controlling confounding variables, it is possible to capture psychological processes involved better than with more realistic field samples (Dobbins, Lane, & Steiner, 1988). As future studies understand and more fully develop principles based on their findings around implicit theories as applied to self-reported personality, it may be appropriate to then look at generalizing those findings using applied samples.

Another likely limitation was the failure to uncover strong significant effects of implicit theories and beliefs about personality as moderators of the self-report – behavior relationship. One possible reason for this is that there were no effects to be uncovered at all; as discussed in the previous section perhaps the domain of the self is resistant to the effects of implicit theories found in other areas such as social judgment. The second possible reason is lack of sufficient power to detect effects, due to a small sample size. While this is certainly a plausible reason in the small sample used for the control condition, the larger samples used in the experimental conditions to test the main hypotheses of the study still failed to detect effects. It is the author’s contention therefore that if the effects were so subtle that even samples as large as 139 and 150 failed to detect them, they are probably trivial enough to not be of great concern. More compelling, when
the datasets were combined\textsuperscript{3}, the results were still null. As such, the failure to find strong effects might be seen as a contribution in itself to the literature. This might encourage future researchers to focus on other promising avenues to improving the prediction of behavior using self-reported personality such as actual or reported variability of relevant behaviors (e.g. Mischel & Peake, 1982) instead of the belief in the variability of constructs.

The third limitation of the study lies in the manipulation used. Even though past research as well as pilot studies pointed to the efficacy of the self-persuasion procedure used, the lack of effects in the current study causes one to wonder if and how the manipulation could be improved. A more strong and persuasive environment, perhaps with face-to-face interaction with a researcher instead of a cold online interface might lend more realism to the inductions about the malleability or stability of personality. Also, future research in this area should attempt to focus the manipulation on the way implicit theories are used and defined in the specific study. For instance, in the current study, if the manipulation had focused on the area of malleability of the tendency to procrastinate in particular, the results might have differed.

The fourth limitation of the study is in the use of some of its measures. The Church et al., (2003) measure in particular, is peculiar in its usage of items varying in their level of specificity. For instance the same sub-scale (longitudinal instability) contains items at a general, distal level of specificity such as “My personality characteristics will change quite a bit over time” as well as very proximal, specific and

\textsuperscript{3} In view of the lack of manipulation effects, this was done to re-analyze the data to check if there were any dispositional effects of implicit theories.
behavioral items such as “How selfish I am will tend to change a lot over time”. With the level of specificity issue emerging as important in the current study, exemplified by the differences in the general IPT and procrastination-specific IPT measures, this confounding of levels could be problematic. Moreover, despite its widespread use in cross-cultural studies (e.g. Church et al., 2003) the concept of traitedness and contextuality as measured using these scales, has yet to find widespread acceptance in other fields and by other researchers.

A final limitation is in the choice of procrastination as its variable of interest. With the difficulty in defining and measuring this variable as well as its inherent motivational components, perhaps it was not the cleanest variable on which to study a predictor-criterion relationship. While the current operationalization of procrastination allowed for some useful measurement (such as considering the pattern over five tests) there is still some question around the extent to which delays in taking the first attempt of each test can be called procrastination. Specifically, the set-up in the Introduction to Psychology courses at the University of Akron allows students to retake the test within a five day window. This allowance makes it hard to tease apart any true procrastination from what might be test-taking strategies students might adopt. For instance it is possible that students wait till the third or fourth day of the window to take the test in order to study and not because they were procrastinating. Similarly, students who would ordinarily have procrastinated might take the first attempt early in the test window. This might merely be a half-hearted endeavor to see if they do well enough and thereby avoid having to study more and having to retake the test. The current study did not probe into such possibilities and therefore makes the possibility of criterion contamination real.
Future research using this or a similar criterion should be cautious and control for or at least explore the mechanisms and motivations behind students’ behavior before taking each attempt to see if they might indeed be procrastinating. It is hoped however, that given the alternatives, the current study minimized the influence of confounding variables to the best possible extent and the picture that emerged is close to the truth.
REFERENCES


presented at the International Personnel Management Association Assessment Council, Chicago, Il.


APPENDICES
APPENDIX A

IMPLICIT THEORIES AND BELIEFS MEASURES

Self-Referent General Measure: Beliefs About Human Nature (modified from Levy and Dweck, 1998)

1. The kind of person I am is something basic about me, and it can’t be changed very much. (-)

2. I can substantially change the kind of person I am.

3. I can do things differently, but the important parts of who I am can’t really be changed.(-)

4. No matter who I am, I can substantially change my basic characteristics.

5. I am a certain kind of person, and there is not much I can really change about that. (-)

6. No matter what type of person I am, I can always change very much.

7. As much as I hate to admit it, you can’t teach an old dog new tricks. I can’t change my deepest attributes. (-)

8. I can change even my most basic qualities.

NB: (-) denotes that the item is reverse scored, such that higher scores on this scale denote incremental theory and lower scores indicate entity theory.
Self-Referent Specific Implicit Theories about Procrastination

1. My tendency to procrastinate is something very basic about me and it can’t be changed very much.

2. Once a procrastinator, always a procrastinator.

3. When it comes to procrastination, I am a certain kind of person and there is not much that can be done to really change that.

4. I can do things differently but my tendency towards procrastination cannot really be changed.

Traitedness Beliefs Scales from the Personality Beliefs Inventory (modified from Church, Ortiz, Katigbak, Avdeyeva, Emerson, Flores, & Reyes, 2003)

Longitudinal Stability

1. I will be as industrious in my job as an adult as I am now, as a student.

2. I will probably remain as friendly as I am now, in the future as well.

3. I will probably remain as hardworking as I am now, in the future as well.

4. How kind I am will tend to remain much the same over time.

5. My personality in the future will probably be very similar to my personality now.

6. My personality characteristics will stay much the same over time.

Cross-situational consistency

1. I am as hardworking and responsible at work, as I am at school.

2. I am as relaxed and self-confident meeting new co-workers on the job as I am talking with my boss at work.
3. I am as rebellious at school as I am at home.
4. I care as much about my performance at school as I do about my performance at work.
5. I tend to be as cheerful at work as I am outside work.
6. I am as likely to make lists of things to do at work as I am to make lists of things to do at home.

Contextuality Beliefs Scales from the Personality Beliefs Inventory (modified from Church, Ortiz, Katigbak, Avdeyeva, Emerson, Flores, & Reyes, 2003)

**Longitudinal Instability**

1. How arrogant I am will tend to change a lot over time.
2. How aggressive I am now will probably be how aggressive I will be in the future.
3. How responsible I am will tend to change a lot over time.
4. My personality in the future will probably be quite different from my personality now.
5. My personality characteristics will change quite a bit over time.
6. How selfish I am will tend to change a lot over time.

**Cross-Situational Inconsistency**

1. Knowing that I am a generous person with friends tells you nothing about whether I tend to be generous with brothers and sisters.
2. How stubborn I am depends on the situation.
3. I may be usually stubborn at home but be very cooperative at school (or the other way around).

4. I may be hot-headed at home but be calm and patient with friends (or the other way around).

5. I may be honest with friends but can be dishonest with strangers at times.

6. I can be rude with strangers sometimes but am generally polite with people I know.

7. I am typically cheerful with friends but could be grumpy with other classmates.

8. I am usually neat and orderly at home but could be messy and disorganized at work (or the other way around).
APPENDIX B

SELF-REPORTED PROCRASTINATION MEASURES

Aitken Procrastination Inventory (API) (Aitken, 1982)

1. I’m careful to return school library books on time.
2. I use the vacant hours between classes to get started on other pending work.
3. I delay starting things for school so long that I don’t get them done by the deadline.
4. It often takes me a long time to get started on something for school.
5. If I had an important project to do at school, I’d get started on it as quickly as possible.
6. When I have a test scheduled soon, I often find myself working on other tasks when a deadline is near.
7. I often finish my school work before it is due.
8. If I have an important exam or appointment at school, I make sure that the materials I need are ready the day before.
9. I arrive at college/school appointments with plenty of time to spare.
10. I generally arrive on time to school.
The Conscientiousness Biographical Data Questionnaire (CBDQ) (Gee & Snell, 1998)\(^4\)

1. When you have had an appointment at school scheduled (e.g., test, counseling, research participation), how often were you a few minutes late?

2. In the past, how often have you failed to accomplish a list of tasks for school because you didn’t plan enough time for each one?

3. How often do you realize that it is the end of the day or weekend and you haven’t accomplished what you had originally planned for school?

4. How often are you a day late or a few days late when returning school library books or other material?

5. \textit{In the past, how often have you turned in school projects/papers by the deadline?}

6. In the past, how frequently have you failed to take care of things on time (such as meeting with an advisor, scheduling a make-up exam) because they required planning ahead to make the appointment?

7. \textit{How frequently do you make “to do” lists for school-related work?}

8. \textit{How likely are you to write down school-related appointments or events in a calendar?}

9. How likely are you to leave early for school-related appointments or meetings to make sure that you get there on time?

10. \textit{How likely are you to write out long-range plans months in advance? (e.g., summer vacation, spring break, holidays)}

11. How likely is it that a friend from school would ask you (out of all their friends) to

\(^4\) Italicized items were not used in final analyses based on item analyses (internal consistency estimates)
drive them to the airport if it was extremely important for them to get there on time?

12. If there was a big project or task coming up, such as writing a report for school or work, how likely are you to wait until the last minute rather than spacing the work out over time?

13. How likely are you to get “side tracked” when you are working on a project or task such as homework?
## APPENDIX C

OVERVIEW OF SELF-PERSUASION EXERCISE MANIPULATION (SAMPLE II)

<table>
<thead>
<tr>
<th>Self-Persuasion Type</th>
<th>Verbiage common to both groups</th>
<th>Entity Condition</th>
<th>Incremental Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Testimony</td>
<td>This study is designed to understand people’s beliefs about personality. Lots of scientific research has explored this area and arrived at certain conclusions. For instance, in his talk at the American Psychological Association’s annual convention held in Washington D.C. in August, Dr. George Medin argued that “In most of us, by the age of ten, our character has set like plaster and will never soften again.” He reported numerous large longitudinal studies which show that people “may develop, but only on the foundation of enduring dispositions which last even into their late sixties”.</td>
<td>“No one’s character is hard like a rock that cannot be changed. Only, for some, greater effort and determination are needed to effect changes.” He reported numerous large longitudinal studies, which show that “people can mature and can change their character, even in their late sixties.”</td>
<td></td>
</tr>
</tbody>
</table>

| Counter-attitudinal Idea Generation | Please consider the argument by Dr. Medin as you answer this next question. | What are at least three reasons why it is important to realize that people remain the same across time and situations? Include implications for yourself as well as people you interact with at school. | What are at least three reasons why it is important to realize that people can change over time and situations? Include implications for yourself as well as people you interact with at school. |
| Counter-attitudinal Reflection | Now please take a moment to reflect on your own life. | What is an area in which you were able to remain the same person you’ve always been despite external demands to change? How were you able to do this? | What is an area in which you were able to be different from the person you’ve always been due to external demands to change? How were you able to do this? |
| Counter-attitudinal advocacy | Having reflected on your own personality please take a moment to consider the case of Max. Max is an eighteen-year-old, on the verge of entering college and with it, a host of new situations and challenges. Write an email to Max, as if you were his mentor. | Max is afraid that he is losing his identity. Explain to him (with examples from your own life) why he need not be worried about his personality changing or about losing his identity in the face of the new situation. | Max is afraid that he cannot change to meet the new challenges. Explain to him (with examples from your own life) why he need not be worried about his ability to change/develop to meet the needs of the new situation. |
| Cognitive Dissonance | You might have encountered others like Max in your life. | Identify three instances of when you have observed someone maintain their personality and sense of self even when you were convinced that they would change. Why do you think this occurred? What are the implications of this stability of personality? | Identify three instances of when you have observed someone change their personality and sense of self even when you were convinced that they would not change. Why do you think this occurred? What are the implications of this changeability of personality? |
APPENDIX D

SCHEDULING/TEST BEHAVIOR CONFOUNDING VARIABLE CONTROL

We are interested in how students’ schedules impact their ability to take their 
Introduction to Psychology Tests within the time provided in the five-day test window. 

Please let us know which of the following might have been a reason why you could not 
take the exam/s earlier than you did. Check all that apply.

☐ I had not finished studying

☐ I had scheduling conflicts with other classes

☐ The teacher had not finished teaching the portion

☐ I had scheduling conflicts with work

☐ I just kept putting it off

☐ I had scheduling conflicts with extra-curricular activities

☐ I was unwell

☐ Reason not listed above (please specify: __________ )
APPENDIX E

DEMOGRAPHIC INFORMATION

The following questions ask you for information about your background that we will use for reporting purposes only. They are completely optional and will be kept confidential.

1. Age

2. Gender
   a. Male
   b. Female

3. Race/Ethnicity
   a. Hispanic or Latino
   b. White (Not Hispanic or Latino)
   c. Black or African American (Not Hispanic or Latino)
   d. Native Hawaiian or Other Pacific Islander (Not Hispanic or Latino)
   e. Asian (Not Hispanic or Latino)
   f. American Indian or Alaska Native (Not Hispanic or Latino)
   g. Two or More Races (Not Hispanic or Latino)
   h. Other – Please Specify ________________

4. Do you currently have a job?
   a. Yes / No

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5. Please select from the following, the option that best describes your experience taking personality tests

   a. I have never taken a personality test before
   b. I have taken free online personality tests for fun
   c. I have taken personality tests while applying for jobs
      i. Once
      ii. 2-3 times
      iii. More than 4 times
   d. I have taken personality tests for vocational/career guidance purposes
   e. I have taken personality tests in other contexts
APPENDIX F.

PURPOSE OF THE STUDY (DEBRIEF)

Past research shows that some of us believe that personality is more or less fixed or stable and others believe that personality is changeable. Psychological research shows that even though people’s personality is capable of great change and development over time and situations, there is still some degree of consistency over the course of one’s lifetime.

The purpose of this study is to understand the effects of beliefs that people hold about personality on how they respond to questions about their own personality. Specifically, research has shown that most of us believe strongly in one of two ‘implicit theories’ – implicitly we either believe that personality is stable/fixed/consistent across time and situation, or we believe that personality changes across time and situation. Moreover, these beliefs can be changed by background cues such as what we are told, instructions on a test, living in different cultures or with different people, etc.

This study compares people who believe in the stability of personality (or are persuaded to believe in the stability of personality by means of an experimental manipulation) in how they present themselves on a personality test, to people who believe in the changeability of personality (or are persuaded to believe in the changeability of personality by means of an experimental manipulation). You were randomly selected into a condition that <measured your implicit beliefs> <presented you with information that was designed to make you believe in the stability of personality> or <presented you with information that was designed to make you believe in the changeability of personality>.

Your participation in the current study will help us understand some very basic processes about the ways individuals differ in how they respond to personality tests.

5 The words within “< >” will change depending on which condition the participant is in.
We thank you for participating in this study! We request you to not share the information you have learned about regarding the true purpose of the study so that we collect accurate data from others who participate. If you have any further questions, please contact the researcher Aarti Shyamsunder at as31@uakron.edu. Thank you!
APPENDIX G
MANIPULATION AND VALIDITY CHECKS

Manipulation Check and Validity Check Items

1. I was told that the study is a pilot designed to
   a. Understand my beliefs about personality to help select mentors for an online networking program [expected response]
   b. Understand personality differences between college students and high school students
   c. Create awareness of online networking sites such as Facebook

2. I read about a researcher who indicated that:
   a. A person’s character is like rock music, unpredictable [distracter]
   b. A person’s character is set, like plaster [expected response for Entity condition]
   c. A person’s character is like a stone, unchangeable [accepted response for Entity condition]
   d. A person’s character is changeable, unlike a rock [expected response for Incremental condition]

3. I took this survey online
   a. Yes
   b. No
4. I read about a researcher whose name was:
   a. Dr. Jordan
   b. Dr. Medin [expected response]
   c. Dr. Mayfield
   d. Not sure

5. I was told to advise an eighteen-year old about:
   a. His problems with his parents
   b. His anxiety about new situations that college brings
   c. His difficulty with being in touch with his high-school friends

6. Please state your agreement or disagreement by clicking on the relevant button for each of the following [5-point Likert scale provided ranging from ‘strongly disagree’ to ‘strongly agree’]
   a. The purpose of the study was simple to understand
   b. The purpose of the study was easy to believe
   c. The tasks I did (e.g. listing reasons why people change or remain the same over time) were monotonous and boring
   d. I was led to believe things that I didn’t believe earlier
   e. I was interested and engaged throughout the study

Manipulation Effectiveness Items (Dweck, Chiu, & Hong, 1995).

1. The kind of person someone is, is something basic about them, and it can’t be changed very much

2. People can do things differently, but the important parts of who they are can’t really
be changed

3. Everyone is a certain kind of person, and there is not much that they can do to really change that
APPENDIX H

FILLER ITEMS

Filler Items used in Self-Reported Procrastination Measure

Regulatory Focus (Lockwood, Jordan, & Kunda, 2002)

1. In general, I am focused on preventing negative events in my life.
2. I am anxious that I will fall short of my responsibilities and obligations.
3. I frequently imagine how I will achieve my hopes and aspirations.
4. I often think about the person I am afraid I might become in the future.
5. I often think about the person I would ideally like to be in the future.
6. I typically focus on the success I hope to achieve in the future.
7. I often worry that I will fail to accomplish my academic goals.
8. I often think about how I will achieve academic success.
9. I often imagine myself experiencing bad things that I fear might happen to me.
10. I frequently think about how I can prevent failures in my life.
11. In general, I am focused on achieving positive outcomes in life.
12. I often imagine myself experiencing good things that I hope will happen to me.

Filler Items used along with CBDQ items to introduce variety

1. How often do you ask others for help when you are having difficulty in class?
2. How often do you feel that technology is changing too fast for colleges to keep
up?

3. How often do you feel that you are being treated unfairly in class?

4. How often do you get upset when classmates criticize you?

5. How often do you feel the desire to change your surroundings?

6. How often do you get impatient with classmates’ inability to finish a task?

7. How frequently do you get tense or anxious when working on an important project?

8. How frequently do you stay in the background when working on group projects for class?

9. How frequently do you daydream while you are in class?

10. How often do you get upset while working on an important class-related task?

11. How often do you feel guilty from not contributing as much to a school project compared to other group members?

12. How often do you make small talk that is not related to work or the task at hand?

Control Condition Filler Items used in place of Manipulation

Organizational Citizenship Behaviors (modified from Williams & Anderson, 1991 to make school relevant)

1. I help others who have been absent

2. I help others who have heavy workloads

3. I assist my teachers with work (when not asked)

4. I take time to listen to classmates’ problems and concerns

5. I go out of the way to help new students
6. I pass along information to classmates
7. I take a personal interest in others
8. I take undeserved breaks from school
9. I give advance notice when I am unable to come to school
10. I have an attendance record that is above the norm
11. I adhere to informal rules devised to maintain order

Organizational Citizenship Behaviors (modified from Van Dyne, Graham, & Dienesch, 1994 to make self-relevant and school-relevant)

1. I represent my university favorably to outsiders
2. I do not go out of way to defend my university against outside threats
3. I do not tell outsiders my university is a good place to study
4. I do not defend my university when students criticize it
5. I actively promote my university’s activities and programs
6. I rarely waste time while at school
7. I produce as much as capable at all times
8. I always come to school on time
9. Regardless of circumstances, I produce highest quality of school work
10. I do not meet all school deadlines set
11. I am mentally alert and ready to study when I arrive at school
12. I follow school rules and instructions with extreme care
13. I sometimes waste the university’s resources
14. I sometimes miss school for no good reason
15. I only attend school-related meetings if required by the class
16. I share ideas for new projects or improvements widely
17. I keep informed about the university’s activities and programs and tell others
18. I am not involved in outside groups for the benefit of the university
19. I frequently make creative suggestions to classmates
20. I use professional judgment to assess right/wrong
21. I encourage others to speak up during class
22. I help classmates think for themselves
23. I do not pursue additional training to improve school performance
24. I avoid extra duties and responsibilities at school
25. I do not study beyond what is expected
26. I volunteer for after-school activities when needed
27. I have difficulty cooperating with others on projects

Proactive Personality (Siebert, Crant, & Kraimer, 1999)

1. I am constantly on the lookout for new ways to improve my life
2. Wherever I have been, I have been a powerful force for constructive change
3. Nothing is more exciting than seeing my ideas turn into reality
4. If I see something I don’t like, I fix it
5. No matter what the odds, if I believe in something I will make it happen
6. I love being a champion for my ideas, even against others’ opposition
7. I excel at identifying opportunities
8. I am always looking for better ways to do things
9. If I believe in an idea, no obstacle will prevent me from making it happen

10. I can spot a good opportunity long before others can

*Environmental Motives (Schultz, 2001)*

People around the world are generally concerned about environmental problems because of the consequences that result from harming nature. However, people differ in the consequences that concern them the most. Please rate each of the following items from 1 (not important) to 7 (extremely important) in response to the question:

I am concerned about environmental problems because of the consequences for ______.

- Plants
- Marine life
- Birds
- Animals
- Me
- My lifestyle
- My health
- My future
- People in my community
- People in my country
- Children
- All people
Proenvironmental behaviors (Schultz & Zelezny, 1998)

Please report the extent to which you engage in these behaviors using the following scale:

1 (never)  2 (yearly)  3 (monthly)  4 (weekly)  5 (daily)

_____ Recycling

_____ Using public transportation

_____ Conserving energy

_____ Conserving water

_____ Purchasing products that are environmentally friendly
APPENDIX I
HUMAN SUBJECTS APPROVAL

The University of Akron

November 14, 2007

AATI Shayamurthy
Psychology Department
The University of Akron
Akron, Ohio 44325-3851

Ms. Shayamurthy,
The University of Akron’s Institutional Review Board for the Protection of Human Subjects (IRB) conducted a review of the protocol entitled "The Influence of Implicit Personality Theories on Self-Reports". The IRB application number assigned to this project is 2007-0110.

The protocol qualified for expedited review and was approved on November 14, 2007. The protocol represents minimal risk to subjects and matches the following federal category for expedited review:

(7) Research involving individual or group characteristics, or behavior or performance employing survey, interview, and other non-invasive research methodologies

This approval is valid until November 14, 2008 or until modifications are presented to the project protocol, whichever may occur first. In either instance, an Application for Continuing Review must be completed and submitted to the IRB.

Enclosed are the informed consent documents, which the IRB has approved for your use in this research. Copies of these forms are to be submitted with any application for continuation of this protocol.

Please note that within one month of the expiration date of this approval, the IRB will forward an automatic renewal notice to you by email. It is your responsibility as principal investigator to remember the renewal date of your project’s review. Please submit your continuation application at least two weeks prior to the renewal date, in order to ensure the IRB has sufficient time to complete the review.

Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, you must file a copy of this letter with the thesis or dissertation.

Sincerely,

Andrea Mudgal, Director
Associate Director

CC: Andrea Small, Advisor
Pamela Hall, IRB Chair

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