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The Effect of Identities and Expectations on Emotions, Behavior, and Cognitive Changes

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Sociology

by

Ryan Parks Trettevik

June 2015

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The Dissertation of Ryan Parks Trettevik is approved:

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ABSTRACT OF THE DISSERTATION

The Effect of Identities and Expectations on Emotions, Behavior, and Cognitive Changes

by

Ryan Parks Trettevik

Doctor of Philosophy, Graduate Program in Sociology

University of California, Riverside, June 2015

Dr. Jan E. Stets, Chairperson

This dissertation advances identity theory, a sociological theory focusing on one's self-view and the emotions, behaviors, and cognitive changes that result when others view us in a manner that is different than we view ourselves. It also extends the control model of affect, a psychological theory focusing on goals and the emotions, behaviors, and cognitive changes that occur based on one's rate of progress towards a goal relative to their expected rate of progress. I test each theory's predictions of emotions, behavior, and cognitive changes as individuals work to confirm their self-views. I also examine how these processes operate simultaneously.

After collecting longitudinal survey data focusing on the student identity, I tested these predictions using structural equation modeling. The results indicate the discrepancies each theory focuses on independently influence the emotions individuals experience as they progress towards or away from identity verification. These discrepancies also lead to changes in one's self-view, their expectations for their future rate of progress, and their behavior.

These findings extend identity theory by examining the rate at which individuals achieve verification and how this influences the emotions and behavioral outputs of the control process. This work also extends the control model of affect by showing how emotions, behavior, and cognitive changes emerge not only from the discrepancy between the rate of progress and expected rate of progress, as theorized, but also from the distance one is from achieving their goal, or identity verification. Further theoretical implications of these findings are discussed in the final chapter along with practical applications and recommendations for future research.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
CHAPTER 2: THEORY AND LITERATURE REVIEW	7
CONTROL SYSTEMS	7
IDENTITY THEORY AND EMOTIONS	10
CONTROL MODEL OF AFFECT AND EMOTIONS	17
EXAMINING THE TWO CONTROL MODELS SIMULTANEOUSLY	25
EMOTIONS	26
THE DUAL PROCESS MODEL	28
BEHAVIORAL AND COGNITIVE CHANGES	32
IDENTITIES AND BEHAVIOR	33
EXPECTATIONS AND BEHAVIOR	35
IDENTITY CHANGE	39
CHANGING META-MONITORING STANDARD	44
THE ROLE OF EMOTIONS IN BEHAVIORAL AND COGNITIVE CHANGES	45
SUMMARY OF HYPOTHESES	47
CHAPTER 3: METHOD	50
STUDY OVERVIEW	50
SAMPLE	51
INSTRUMENTS	53
MEASURES AND CODING	54
INDEPENDENT VARIABLES	54
DEPENDENT VARIABLES	59
OTHER VARIABLES	60
ANALYSES	61
ANALYSIS ONE: EMOTIONS	63
ANALYSIS THREE: COGNITIVE CHANGES	66
ANALYSIS FOUR: BEHAVIORAL AND COGNITIVE CHANGES ACCOUNTING FOR EMOTIONS	68
CHAPTER 4: RESULTS	69
EMOTIONS	69
DISCUSSION	75
BEHAVIORAL CHANGES	79
DISCUSSION	85
COGNITIVE CHANGES	86
DISCUSSION	92
BEHAVIORAL AND COGNITIVE CHANGES ACCOUNTING FOR EMOTIONS	94
DISCUSSION	99

CHAPTER 5: DISCUSSION	102
LIMITATIONS AND FUTURE RESEARCH	111
PRACTICAL APPLICATIONS	115
CONCLUSION	117
REFERENCES	118
APPENDIX A: SURVEY INSTRUMENTS	126

LIST OF FIGURES

Figure 1 Identity Verification Process (Burke and Stets 2009)	14
Figure 2. Control Model of Affect	20
Figure 3. Timeline of Surveys	53
Figure 4. Relationship Between Emotion and Squared Identity Discrepancy	63
Figure 5. Relationship Between Emotions, Meta-Monitoring Discrepancy, and Identity Discrepancy (Including the Interaction Term)	64
Figure 6. Relationship Between Emotions, Meta-Monitoring Discrepancy, and Identity Discrepancy	65
Figure 7. Relationship Between Identity Discrepancy and Behavior	65
Figure 8. Relationship Between Identity Discrepancy, Meta-monitoring Discrepancy and Behavior	66
Figure 9. Relationship Between Identity Discrepancy and Identity Standard	67
Figure 10. Relationship Between Emotion, Behavior, and Identity Discrepancy	68
Figure 11. Graph of Negative Emotions Depending on an Identity Discrepancy and Meta-monitoring Discrepancy	78

LIST OF TABLES

Table 1. Control Model of Affect Predictions of Emotion (Carver and Scheier 1998) _	21
Table 2. Means and Standard Variations of Variables Used in Analysis One _____	69
Table 3. Correlations among Variables Used in Analysis One _____	71
Table 4. Coefficients for Effects of Identity Discrepancy on Emotion _____	73
Table 5. Coefficients for Effects of Meta-Monitoring Discrepancy on Emotion _____	73
Table 6. Coefficients for Effects of Meta-Monitoring Discrepancy and Identity Discrepancy on Emotion _____	75
Table 7. Means and Standard Deviations of Variables Used in Analysis Two _____	80
Table 8. Correlations among Variables Used in Analysis Two _____	81
Table 9. Coefficients for Effects of Identity Discrepancy on Behavior _____	82
Table 10. Coefficients for Effects of Meta-monitoring Discrepancy on Behavior _____	83
Table 11. Coefficients for Effects of Meta-monitoring Discrepancy and Identity Discrepancy on Behavior _____	84
Table 12. Means and Standard Deviations of Variables Used in Analysis Three _____	87
Table 13. Correlations among Variables Used in Analysis Three _____	88
Table 14. Coefficients for Effects of Identity Discrepancy on Identity Standard _____	90
Table 15. Coefficients for Effects of Meta-monitoring Discrepancy on Meta-monitoring Standard _____	91
Table 16. Means and Standard Deviations of Variables Used in Analysis Four _____	94
Table 17. Correlations among Variables Used in Analysis Four _____	96
Table 18. Coefficients for Effects of Identity Discrepancy and Emotion on Behavior _	97
Table 19. Coefficients for Effects of Identity Discrepancy and Emotion on the Identity Standard _____	99
Table 20. Summary of Hypotheses and Results _____	103

CHAPTER 1: INTRODUCTION

This doctoral dissertation advances theorizing and empirical work on two social psychological theories using a control model to explain emotions, behavior, and cognitive changes: Identity Theory (Burke and Stets 2009) and the Control Model of Affect (Carver and Scheier 1998). Identity theory is a sociological theory focusing on one's self view and the resulting emotions, behaviors, and cognitive changes when others view us in a different manner than we view ourselves. The control model of affect is a psychological theory focusing on broader goals (which could include properly enacting an identity) and the emotions, behaviors, and cognitive changes that occur as a result of how quickly we progress towards those goals relative to our expected rate of progress. Often, theoretical and empirical developments occur in parallel in sociological social psychology and psychological social psychology (Stryker 1977; Thoits 1995). In an attempt to bridge ideas across disciplinary lines, this dissertation builds on two theories, one from each discipline, by investigating competing predictions as well as the ways in which each theory can inform the other.

This dissertation investigates the following outputs from these two control models: emotions, behavior, and cognitive changes (i.e. changes in one's self-view and expectations). Examining the emotions resulting from both control models simultaneously has implications for the sociology of emotions. The key difference between these theoretical approaches is that identity theory focuses on emotions

given identity verification, while the control model of affect focuses on emotions resulting from the rate of achieving a goal, or identity verification.

A variety of sociological theories on emotions focus on the feelings that emerge based on the cognitive consistency principle. According to this principle, when individuals compare what they experience in a situation with what they expect to experience, they will feel positive emotions when their expectations are met and negative emotions when their expectations are not met. For example, in expectations states theory positive emotions are predicted when people behave in ways that are consistent with the performance expectations associated with their status; violating these performance expectations results in negative emotions (Ridgeway 2006).

In social exchange theory and justice theory, expected rewards lead to positive emotions and unexpected rewards lead to negative emotions (Jasso 2006; Lawler and Thye 2006). Similarly, identity theory and affect control theory maintain that when people's identities are confirmed in a situation, they will feel positive emotions; negative emotions emerge from disconfirmation (Robinson, Smith-Lovin, and Wisecup 2006; Stets 2006). Despite the very different focus of these theories - status, identities, exchange, rewards - they all share the idea that when individuals compare what they expect in a situation with what they actually experience, they will feel good when expectations are met and bad when they are not met.

I extend this principle by considering the expected *rate* of achieving consistency. People not only experience emotions as a result of met or unmet expectations, but they also experience emotions when the pace at which they meet

their expectations is slow, fast, or somewhere in between the two (Carver and Scheier 1998). In the first analysis, I examine both the degree to which people's expectations are met and the rate at which they are met to assess how each independently and jointly influences one's feeling state.

Since emotions trigger a shift between automatic and deliberative processing, incorporating the emotions resulting from the rate of progress towards verification would also improve the understanding of when the identity verification process occurs at the automatic level or the deliberative level. If emotions result from both an identity discrepancy as well as a difference in the rate of progress compared to the expected rate of progress, these two discrepancies would both influence the shift from automatic to deliberative processing. Positive emotions resulting from progressing faster than expected may temper the negative emotions resulting from an identity discrepancy. This would delay the shift from automatic to deliberative processing. Negative emotions resulting from progressing slower than expected toward verification added to the negative emotions resulting from an identity discrepancy could increase the extent to which deliberative processing occurs.

Negative emotions cause processing to shift to the deliberative level as people search for other behaviors that may bring the feedback they receive back into alignment with how they see themselves (Burke and Stets 2009). Similar to emotions, behavioral changes are expected based on two different processes in each theory. In identity theory, individuals are expected to change their behavior in a manner that counters an identity discrepancy. In other words, if people think others view them as

less hardworking than they view themselves, they would begin to work even harder in order to bring other's views of them in line with their self-view. In the control model of affect, behavioral changes result from the difference between the rate at which one is progressing towards identity verification and their expected rate. People could feel others view them as less hardworking than they view themselves, but as long as they felt others were beginning to see them as hardworking at a rate the individual expected, they would not change their behavior. In the second analysis, I examine the behavioral changes resulting from both processes to see how each discrepancy influences behavior.

Just as people may change their behavior resulting from a discrepancy, they can also experience cognitive changes. The individuals in the prior example that began to work harder in order to bring others view of themselves into alignment with their own self-views could experience a cognitive change instead of, or in addition to, this behavioral change. When they received feedback indicating others view them as less hardworking than they viewed themselves, they could begin to see themselves as less hardworking. Here the individuals' identity standards are shifting in the direction of the non-confirming feedback they received. Similarly, in the control model of affect, the expected rate of progress could change as a result of people progressing towards their goal at a faster or slower rate than expected. The cognitive changes resulting from each of these processes are examined in the third analysis.

Finally, the fourth analysis incorporates emotions into the examination of the behavioral and cognitive changes resulting from an identity discrepancy. According

to identity theory, it is the negative emotions tied to an identity discrepancy that motivate people to change their behavior or their self-views. This means that increased negative emotions resulting from an identity discrepancy should result in greater changes in behavior and self-views. This process is well theorized in identity theory, but has not been empirically examined.

Having a better understanding of how goal accomplishment and progress toward goal accomplishment influences individuals over time has potential practical applications. It may provide insights into better ways to help people as they work towards their goals. It may be important for individuals to modify their goals, or modify the rate at which they expect to reach their goals in order to stay motivated and continue persisting in their efforts. This would have implications in all areas of life including at school, at work, at home, and in relationships. Employers, coaches, teachers, and mentors may be more effective in guiding others when they face difficulties if they have a better understanding of the ways in which people view themselves, their goals, and the anticipated pace at which they expect to achieve their goals since these aspects of the self influence the emotions individuals experience and impact how they respond behaviorally and cognitively.

To test these various processes, I conducted a longitudinal study on a sample of college students during a 10-week period (one quarter) of the school year. The way students thought others viewed them based on the exam grades they received throughout the quarter served as important feedback as to whether their student identity was being verified, and whether it was being verified at the expected rate.

Students' emotional reactions to how they thought others' viewed them based on their exam grades, behavioral changes between exams, and cognitive changes between exams were obtained. The source of their emotional responses (identity verification or the rate of identity verification) was examined as well as the implications of discrepancies on behavior and self-views. Structural equation modeling was used to test the effects of identity discrepancies and the rate of identity verification on emotions, behavior and self-views. Overall, the findings indicate the identity discrepancy as well as the difference between the rate of progress towards verification and the expected rate of progress, both influence emotions, behavior, and self-views.

CHAPTER 2: THEORY AND LITERATURE REVIEW

The literature review addresses four main areas: control systems, identity theory and emotions, the control model of affect and emotions, and behavioral and cognitive changes. The overview of control systems provides a basic description of how they operate and their history and uses in sociology. The section on identity theory and emotions provides a description of the theory as well as empirical work on emotions. Similarly, the section on the control model of affect and emotions provides a description of the theory and covers the empirical work on emotions. The following section examines how these processes could simultaneously lead to emotions. The final section covers the theoretical and empirical work on behavior and cognitive changes in both identity theory and the control model of affect.

Control Systems

Both identity theory and the control model of affect use a perceptual control model. This model grew from ideas surrounding control systems and cybernetics. Instead of focusing on human behavior or cognition, cybernetics was used to help engineers control and regulate the output of mechanical systems (Carver and Scheier 1998). Wiener (1948) outlined the use of feedback in this process. A control system involves four main elements: input, comparator, standard, and output. The input gathers information about the element the system is controlling. The standard is the goal value for the system to achieve. The comparator compares the input to the standard so that the output can be adjusted accordingly or kept constant. This is a negative feedback loop, where feedback is used to reduce a discrepancy. There are

also positive feedback loops where the goal of a system is to increase the distance from a reference value (Carver and Scheier 1998). The control model of affect includes both positive and negative feedback loops. However, identity theory focuses solely on negative feedback systems, where feedback is used to decrease the distance from the goal, or size of the identity discrepancy.¹ Negative feedback systems are the focus of this dissertation.

These cybernetic models were first used in situations where the input needed to be adjusted to control the output of a system (Wiener 1948). A common example of this is a steam engine. In order to know how much steam to put in the engine (input) the speed (output) was compared to the desired speed (standard). If the steam engine was going too fast, the amount of steam fed into the engine would be lowered. Similarly, if the steam engine was going too slow, the amount of steam fed into the engine would be increased. This system is designed to maintain a steady output by controlling the input.

These ideas first began to be applied to human behavior in the mid 1940s when Margaret Mead and Gregory Bateson advocated for the use of cybernetic systems thinking to be applied to social systems (Robinson 2007). However, the explicit use of control systems did not occur until thirty years later when Powers (1973) developed his theory of perceptual control. For human behavior, Powers pointed out that it is not the output that needs to be controlled as it was in the

¹ McCall's (2003) work on the "not-me" would be an area where the positive feedback loop could be incorporated into identity theory. Here, people would be distancing themselves from an idea of who "they are not" instead of getting closer to an idea of who they are.

engineering models. Instead, it is the input (perceptions of the situation) that is controlled by adjusting the output (behavior).

A thermostat is a common example of a control system we interact with today where it is the input that is being controlled as opposed to the output. The temperature one would like to keep the room at is the standard. The thermostat gathers data regarding the temperature in the room and compares this to the standard. If the thermostat compares the input to the standard and finds that these do not match, it will change the output in order to bring the input into alignment with the standard. If the room is hotter than the standard, the thermostat will begin cooling the room. If the room is cooler than the standard the thermostat will begin heating the room.

If this example is translated to human behavior, the temperature the thermostat is set at represents the standard for one's perceptions. The heating or cooling action of the thermostat represents one's behavior. The perceptual control model is therefore a model where individuals control their perceptions of a particular aspect of the situation by varying their behavior to match those perceptions to a standard.

Powers work (1973, 1998) on the perceptual control model was adopted and made central to sociological theories such as affect control theory (Heise 1977, 1979), identity theory (Burke and Stets 2009), and theories of collective behavior (McPhail 1991). It was also adopted in psychological theories, where its adaption by Carver and Scheier (1998) has been highly influential in the field of self-regulation (Forgas, Baumeister, and Tice 2009). I will turn next to the history of identity theory and its use of the perceptual control model before discussing the control model of affect.

Identity Theory and Emotions

Identity theory stems from two sets of ideas, one of which is the perceptual control model discussed above. The other is symbolic interactionism. Symbolic interactionism focuses on the development of the self, the ability to communicate with others through symbols, and the way these symbols are used to maintain interactions (Stryker [1980] 2002). Many ideas that are central to identity theory, such as what makes up an identity and ways identities function, stem from symbolic interactionism.

One of these important ideas is the development of the mind and self. Mead (1934) described how the mind and self develop as part of a social process. The mind and self are seen as developing through interactions and experiences with others, and are therefore embedded in society. Importantly, he saw the self as being reflexive, or able to see and treat the self as an object. This means that individuals are capable of thinking and acting on the self, just as they are able to think and act on any other object in a situation. Mead suggested that people act on themselves and their environments in the pursuit of goals. One might clean their house in an attempt to appear tidy or spend more time exercising in an attempt to lose weight. There is a connection between perception and action here, which is important for identity theory. One must perceive their house to be dirty in order to be driven to clean it if the goal is appearing tidy. Similarly, one must perceive himself as overweight in order to feel the need to exercise in the pursuit of a weight loss goal. This idea that

behavior is goal driven and that goals emerge out of perceptions is key for identity theory.

Another idea central to identity theory is the use of symbols to communicate. A symbol represents something other than itself and has a shared meaning, such that it will evoke the same meanings for anyone encountering the symbol. More importantly, symbols have the same meaning for the person using them and the person receiving them. Examples of symbols include words, objects, sounds, gestures, and behavior, as long as these have a shared meaning attached to them. This shared meaning develops through experiences and interactions where we learn the meanings of a symbol from one another. As will be discussed in more detail, meanings and the ability to communicate them are very important for identity theory.

The idea of multiple selves that James (1890) discussed is another key contribution by a symbolic interactionist to identity theory. James pointed out the complexity of the self and acknowledged that each individual has multiple selves. This means that each individual can occupy multiple positions in society and therefore have as many selves as they had positions. For example, one individual could be a husband, a father, and a salesman. James called these “multiple selves” and was one of the first to recognize how complex the self is and that this complexity is tied to societal roles. In identity theory, each of these selves is referred to as an identity that contains its own set of meanings and expectations.

Another important idea, specifically for identity theory and emotions, came from Cooley’s (1902) work. Cooley pointed out that emotions arise based on the way

the self interacts with others. He saw these emotions as resulting from how individuals thought others viewed them and termed this the “looking-glass self.” People perceived themselves in a particular way based on how they thought others saw them and then evaluated themselves positively or negatively based on this perception. Given this evaluation, they felt good for positive evaluations and bad for negative evaluations based on the reactions of others. This idea can be seen in identity theory through the role of reflected appraisals, which is discussed in more detail later in this chapter.

Stryker, the originator of identity theory, drew on these ideas and outlined the way in which identities are tied into the larger structure of society based on the role they play. Stryker ([1980] 2002) pointed out that a set of expectations is attached to positions in society. Thus, the individual that is a father, husband, and salesman would have a set of expectations attached to each of those roles such as attentive, respectful, and productive. An identity is therefore a set of *meanings* attached to roles (Stryker [1980] 2002), groups, and person identities such as being moral or submissive (Stets 1997; Stets and Carter 2011). These meanings make up individuals’ views of themselves in an identity (Burke and Stets 2009). For example, individuals may view themselves as “hardworking” or “motivated” in their student identity (Burke and Stets 2009). These meanings attached to an identity organize an individual’s “place” in an interaction and guide behavior (McCall and Simmons 1978).

Burke's work (1991) incorporated the perceptual control model into identity theory as the identity verification process. He outlined the process through which people work to confirm the identity meanings they attach to themselves. This confirmation is identity verification. The verification process operates as a control system that contains the four components of a feedback loop discussed in the prior section: the identity standard (composed of identity meanings or how people see themselves), an input (reflected appraisals or how people *think* others see them in situations), a comparator (a comparison of the way people see themselves with how they *think* others see them in situations), and output (behavior) (Burke and Stets 2009; See Figure 1). Identity verification occurs when the input matches the identity standard, or when individuals think others see them in the same way they see themselves in situations. There is no discrepancy between self-views and reflected appraisals when verification occurs. If there is a discrepancy, individuals' behavior or output will be altered in an attempt to change the situational meanings so that the reflected appraisals match the identity standard.

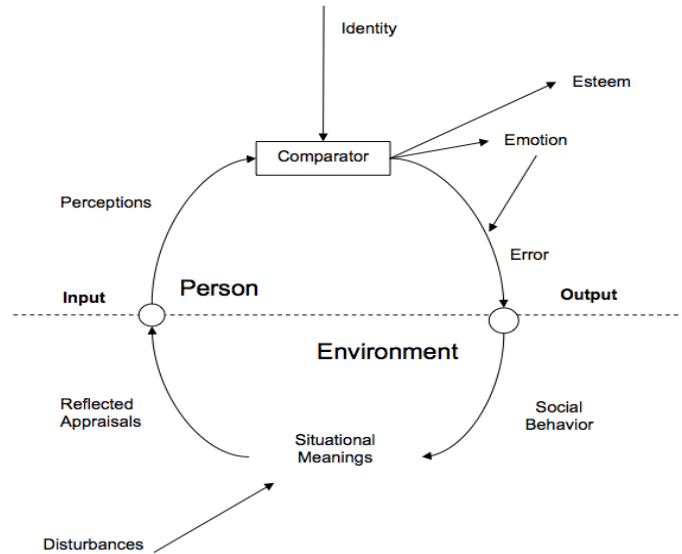


Figure 1 Identity Verification Process (Burke and Stets 2009)

According to identity theory, people have an emotional response to identity verification. When people think others see them in the same way they see themselves positive emotions will develop (Burke and Stets 2009). For example, if students have meanings attached to their identity such as being “hardworking” and “motivated,” and they receive feedback from a professor that they are these things, they will feel positive emotions such as happiness. When there is a difference between how they see themselves and how they think others see them (a discrepancy between the identity standard and reflected appraisals), they will experience negative emotions such as sadness.

These negative feelings will emerge irrespective of whether individuals think that others see them more positively than they see themselves or more negatively than they see themselves. For example, if the same students in the prior example received feedback indicating they were *not* “hardworking” or *too* “hardworking,” they would feel badly. In the first case, the students are falling short of their standard and in the

latter they are exceeding it. Both types of a discrepancy will lead to negative feelings. The intensity of this emotional response is expected to be in proportion to the size of the discrepancy. A larger difference between one's self views and the way they think others view them will lead to more intense negative emotions than a smaller difference.

Based on the identity theory predictions of emotions resulting from a discrepancy, I expect to find that:

H₁: Individuals will experience negative emotions when their identity is not verified.

The emotional outcomes from the identity verification process have been examined in a variety of studies. Using a longitudinal survey that followed newly married couples during their first three years of marriage, Burke and Harrod (2005) found that when people received feedback indicating their spouse viewed them differently than they viewed themselves (either more negatively or more positively), they experienced negative emotions. Burke and Stets (1999) used data from the same longitudinal survey focusing on the spousal identity to demonstrate the positive feelings associated with identity verification. Identity verification was found to decrease negative feelings such as depression and distress and increase positive feelings such as self-esteem and mastery.

In a series of experimental studies simulating the worker identity (Stets 2003, 2004, 2005; Stets and Asencio 2008; Stets and Osborn 2008), Stets and her colleagues consistently found that individuals experienced negative emotions when

they thought others saw them as failing to meet their identity standard. However, when individuals thought others viewed them as exceeding their identity standard, these laboratory studies found individuals experienced positive feelings. This finding is supportive of a self-enhancement process where people feel good when they receive positive evaluations, as opposed to the cognitive consistency process predicted in identity theory (Stets and Asencio 2008).

A recent study examining the moral identity using both survey and laboratory data helps clarify these mixed findings for an identity discrepancy in a positive direction and provides additional support for identity theory predictions of emotion (Stets and Burke 2014). The results indicate the enhancement findings in the prior laboratory studies may have been due to measurement issues. The prior laboratory studies did not specifically measure reflected appraisals as more recent work has done. Instead, the reflected appraisals were assumed based on the objective feedback that was given. However, the way in which people interpret the feedback they receive, and the way they think others view them based on that feedback is far more important for the identity control process than the actual feedback they receive because it is these perceptions that are compared to their identity standard.

Similarly, in order for the identity control process to be operating, meanings in the situation must call up and activate a particular identity. In the prior laboratory studies that simulated a work situation, the situation may not have invoked the worker identity. The more relevant the situation is to a particular identity, the more that particular identity should be activated or “turned on” (Burke and Stets 2009). If an

identity is not activated in a situation, the verification process will not operate and the emotions that identity theory would predict may not be experienced. Essentially, in the series of laboratory studies simulating the worker identity, it is possible that the simulation did not activate the worker identity. Thus, the verification process was not influencing the subject's emotions. In contrast, the moral dilemmas in the survey and moral tasks in the lab used by Stets and Burke (2014) were highly relevant to the moral identity. This activated the moral identity, "turned on" the verification process, and resulted in the expected emotional responses to non-verification.

When the situational meanings and reflected appraisals were taken into account, Stets and Burke's (2014) findings supported a consistency effect rather than an enhancement effect. In other words, when individuals received feedback that others viewed them differently than they viewed themselves they felt badly, regardless of the direction of this difference.

Control Model of Affect and Emotions

In the control model of affect, human behavior is viewed as a process of moving closer to or further away from one's goals (Carver and Scheier 1998). This movement towards or away from goals occurs through a feedback loop. The development of the control model of affect stemmed from Powers (1973) perceptual control model, as well as some key ideas about behavior. Behaviorists share one of these ideas: the idea that the consequences of behavior are important to the individual enacting them. The control model of affect is focused on the fact that the consequences of behavior provide information about whether that behavior moved

one closer or further from a goal. That means the information can help individuals decide if they should continue the behavior, change it, or stop their activity. Therefore, the feedback in the situation is the information conveyed by the consequences of actions.

In the control model of affect, it is argued that all behaviors function as a process of a feedback loop. This idea stems from Powers (1973) work as well as an earlier generation of psychologists focusing on behaviors resulting from a feedback loop (Hunt 1965; MacKay 1963, 1966; Miller, Galanter, and Pribram 1960). Miller, Galanter, and Pribram (1960) outlined a view of human behavior as guided by plans and goals. This behavior was thought to be self-regulated by a discrepancy-reducing feedback process or negative feedback loop.

The control model of affect has many similarities with the identity theory model. For example, both models focus on individuals controlling the feedback they receive from others in response to their behavior. Just as an identity needs to be activated in order for the verification process to occur, an individual must be “engaged” in a goal for the control model of affect to be “turned on.” In the same way individuals have multiple identities, they have multiple goals that can conflict or support each other. One view of the organization of multiple identities is by importance or prominence (Stryker and Serpe 1994). Similarly, the control model of affect outlines the ways in which goals can be organized based on importance to the individual (Carver and Sheier 1998). In the control model of affect, goals are seen as being arranged in a hierarchy based on levels of abstraction. For example, the goal of

being a good student is highly abstract while the goal of passing a test is more concrete and would be at a lower level of abstraction. Burke and Stets (2009) have also stated that identities can be arranged based on levels of abstraction with person identities being located higher than role or group identities.

Despite these similarities, there are two key differences: the reference value and the incorporation of a second feedback loop. Instead of using an identity standard as a reference value, the control model of affect uses goals as a reference value. Behavior is therefore adjusted to match the goal. These goals could be larger long-term goals, such as obtaining a PhD, or small goals such as getting groceries for the week. The goal can also be properly enacting one's identity or achieving verification of one's identity standard.

The incorporation of an additional feedback loop into the control model of affect leads to predictions of emotions, behavior, and cognitive changes that differ from the predictions of identity theory. As can be seen in Figure 2, the control model of affect begins with an "action loop" that is essentially the same as the control model in identity theory. Individuals have a standard or reference value and this control model monitors the results of their behavior, making adjustments to reduce discrepancies between feedback in the situation regarding their behavior and their behavioral standard.

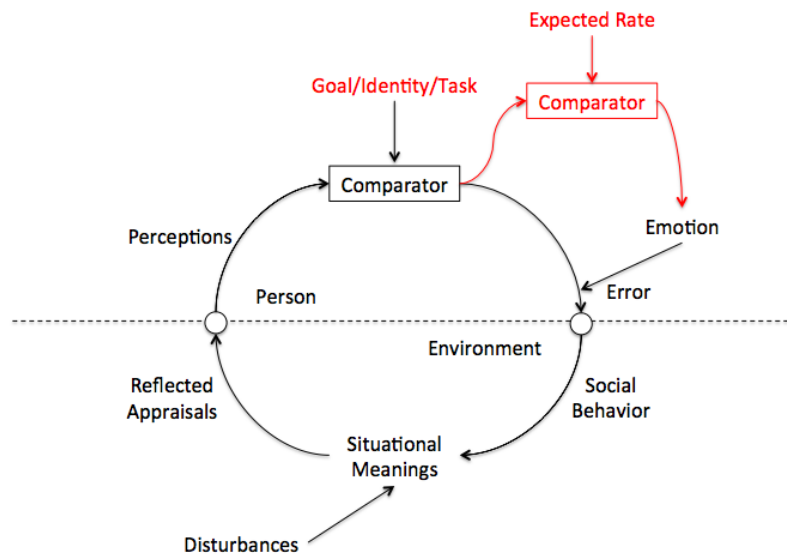


Figure 2. Control Model of Affect

In addition to this “action loop,” the control model of affect also includes a “meta-monitoring loop” (See Figure 2). The meta-monitoring loop operates simultaneously with the action loop and is evaluating how well the action loop is reducing any discrepancies that arise. The key for this loop is the rate at which discrepancies are being reduced. In the meta-monitoring loop, the standard is the rate at which one expects to achieve their goal. When the goal is to achieve identity verification, the standard is then the rate at which one expects to achieve identity verification. This standard for the rate at which individuals will achieve their goal can be imposed by others, come from within, or result from a social comparison process (Carver and Scheier 1998). The meta-monitoring loop operates simultaneously and evaluates the action loop. In this evaluation, it takes into account the rate at which discrepancies in the action loop are decreasing or enlarging. Thus, in addition to

comparing feedback in the situation to one’s standard, individuals are also monitoring and reflecting on the rate at which they are reducing discrepancies.

Unlike identity theory, which predicts that emotions emerge from a discrepancy in the “action loop,” the control model of affect predicts that it is the discrepancy in the meta-monitoring loop (between the expected rate of progress and the actual rate of progress) that results in emotions (Carver and Scheier 1990; 1998; 2002). Therefore, in the control model of affect, a discrepancy in the action loop does not lead to negative emotions as it does in identity theory. According to this model, negative emotions will only arise when people think the discrepancy cannot be reduced or when it is being reduced at a rate slower than expected. Specifically, negative emotion will be felt when individuals are progressing toward their goal at a rate lower than their meta-monitoring standard, not progressing toward their goal, or moving away from their goal. Positive emotions will be experienced when people progress toward their goal at a rate higher than expected. Emotions of either positive or negative valence are not expected to be felt when people progress toward their goal at a rate equal to their standard. Table 1 shows the emotions predicted based on a discrepancy in the meta-monitoring loop.

Table 1. Control Model of Affect Predictions of Emotion (Carver and Scheier 1998)

Affect	Behavioral Situation	Situation at Action Loop	Construal at Meta Loop
None	<i>when:</i> Progress toward goal, at a rate equal to standard	Discrepancy reduction	No discrepancy
Negative	<i>when:</i> Progress toward goal, at a rate lower than standard	Discrepancy reduction	Negative discrepancy
Positive	<i>when:</i> Progress toward goal, at a rate higher than standard	Discrepancy reduction	Positive discrepancy
Negative	<i>when:</i> No progress toward goal	No discrepancy reduction	Negative discrepancy
Negative	<i>when:</i> Movement away from goal	Discrepancy enlargement	Negative discrepancy

Based on these predictions, I hypothesize:

H₂: The meta-monitoring discrepancy will have a linear, positive, relation to emotions such that individuals will experience negative emotions when they fail to meet their meta-monitoring standard and positive emotions when they exceed this standard.

To illustrate the difference between these predictions and identity theory predictions, imagine a group of students perceiving themselves as “studious” and “ambitious” (their identity standard in their student identity). Their emotional response to feedback that implies they are *not* “studious” or *not* “ambitious” may not simply be due to the discrepancy between this feedback and their student identity standard, but also the rate at which they are moving closer to their student identity standard. For example, students may believe they are very studious and expect to get an “A” in a class. Receiving a “C” on the first assignment might make them think others see them as not studious. A “B” on the next assignment might make the students think others see them as moderately studious and they would feel good if this was their expected rate of improvement. According to the control model of affect, even though the meanings attached to getting a “B” would not verify their student identity, they would still experience positive emotions because they are moving towards verification at the expected rate.

This prediction differs from the prediction based on identity theory. In identity theory, individuals would experience negative emotions due to an identity discrepancy. Further, these negative emotions would be expected to be more intense

after receiving a “B” on the second exam due to a repeated discrepancy (i.e. experiencing an identity discrepancy for getting a “C” and then again for getting a “B”) (Burke 1991; Burke and Stets 2009). Essentially, incorporating a meta-monitoring loop into the analysis allows us to consider the pace at which identity verification is achieved over time. Where individuals are in the process of verifying (or not verifying) the student identity, and the direction they are moving (towards or away from verification at an expected or unexpected rate), should both be taken into account.

Despite the fact that the control model of affect is widely cited in the psychology literature, a direct test of emotions resulting from a meta-monitoring discrepancy does not exist. Empirical work that is often used to support the control model of affect has various measurement issues. For example, the following discussion of prior work shows research supports the idea that emotions are influenced by the rate of progress toward goal attainment (with those progressing faster or in a positive direction feeling more positive emotions), but this research has failed to take into account the *expected* rate of progress (Affleck et. al. 1998; Brunstein 1993; Lawrence, Carver, and Scheier 2002). Instead, the standard was inferred based on people’s emotional reactions to their progress.

In one study where individuals performed a repeated task, those whose performance improved across the tasks showed a positive mood shift while those whose performance had decreased showed a negative mood shift (Lawrence, Carver and Scheier 2002). Interestingly, subjects with the most negative mood, whose

performance had decreased, actually had the best cumulative performance. Subjects with the most positive mood, whose performance had increased, had the worst cumulative performance. This study did not account for the meta-monitoring standard, but did demonstrate that the overall level of performance mattered less for the mood of the subject than did the direction in which they were progressing.

Similarly, in a study focusing on college students' progress toward their personal goals over a period of months, those who saw that they were making progress at each measurement point reported higher subjective well being (Brunstein 1991). Similar findings emerged for patients with fibromyalgia (Affleck et al. 1998). Progress towards their social-interpersonal goals was associated with increases in positive mood and decreases in negative mood. Again, these studies did not measure the expected rate of progress.

Other studies have gone beyond positive and negative emotions and examined specific emotions resulting from the control model of affect. In one laboratory study, participants were led to believe that they could receive a certain reward if they performed well on a task (Carver 2004). However, the subjects were later told they performed poorly and failed to receive the reward. In this situation, subjects experienced negative emotions including annoyance, frustration, discouragement, sadness and depression. It is not clear from the design of this study how one would differentiate between emotions resulting from the action loop and the meta-monitoring loop. The emotions may have resulted from failing to meet a goal instead of failing to achieve that goal at the expected rate. Another limitation of this design is

the assigned standard or goal (the reward individuals were told they would receive), as opposed to a naturally held standard. This is problematic because it can be difficult to distinguish the extent to which an individual takes on an assigned standard.

The meta-monitoring loop needs further empirical testing. The exclusion of a measure of the standard for the rate of progress toward a goal prevents prior work from providing a direct test of the predictions of emotions resulting from the control model of affect. The current study accounts for limitations in prior research in two ways: 1) the effect of both the action loop and meta-monitoring loop are measured, and 2) the standard for the meta-monitoring loop (the expected rate of progress) is measured instead of being assumed or assigned. This allows for a more accurate test of the control model of affect, but also allows for contributions to the development of both the control model of affect and identity theory. The study design allows for a direct comparison of the identity theory and control model of affect predictions in order to understand how both models operate simultaneously to influence emotions.

Examining the Two Control Models Simultaneously

Understanding how the processes in these two theories occur simultaneously has implications for emotions and the level of processing (deliberative vs. automatic) at which the identity verification process occurs. Predictions of emotions based on both theories operating at once are outlined in this section. Following those predictions I discuss the implications they would have for understanding when processing occurs at the automatic or deliberative level.

Emotions

The identity verification process is seen as operating continuously. However, emotions are viewed as stemming from the current situation, specifically the size of an identity discrepancy in the current situation. Theoretical work on repeated non-verification (see for example Burke 1991; Burke and Stets 2009) as well as longitudinal studies (Burke 2006; Cast, Stets, and Burke 1999; Cast 2003a, 2003b) have allowed for identity processes to be examined over a longer period of time, but the model itself does not account for how prior levels of verification or expectations for future discrepancies (or a lack thereof) can influence the emotions a current discrepancy produces.

Incorporating the emotions produced by the meta-monitoring loop allow for the examination of expectations of verification or non-verification in the current situation and the progress towards or away from verification. For example, if someone failed to verify their identity, the negative emotions experienced may be in proportion to the meta-monitoring discrepancy. If they are moving faster than expected towards verification, they may feel very low levels of negative emotions. Conversely, if they are moving slower than expected towards verification or further away from verification, they may experience very high levels of negative emotions. Based on this, I hypothesize:

H₃: The direct negative effect of an identity discrepancy on emotions will be moderated by the meta-monitoring discrepancy such that individuals with a negative meta-monitoring discrepancy (progressing slower than expected)

will experience more negative emotions as a result of an identity discrepancy and those with a positive meta-monitoring discrepancy (progressing faster than expected) will experience less negative emotions as a result of an identity discrepancy.

While it is important to take into account how an individual is progressing towards or away from identity verification in comparison to their expected rate of progress, it also makes sense that the current situation may have more weight for producing emotions. In stating that emotions stem from the meta-monitoring loop only, the control model of affect fails to account for this. This therefore overlooks the importance of where one is currently at relative to their goal. It is possible that the meta-monitoring discrepancy will have more or less of an effect on emotions depending on the distance individuals are from their goal (i.e. the size of their identity discrepancy). For example, if someone is very far away from verifying their identity, whether or not they are progressing at their expected rate may have a larger effect on their emotions. Conversely, if they are very close to verifying an identity or achieving a goal, the rate they are progressing compared to their expected rate may matter less and have a smaller effect on their resulting emotions. Based on this, I would expect to find:

H4: The meta-monitoring discrepancy will have a direct positive effect on emotions that is moderated by the identity discrepancy. An identity discrepancy will increase the negative emotions resulting from a negative

meta-monitoring discrepancy and increase the positive emotions resulting from a positive meta-monitoring discrepancy.

Alternatively, it is also possible that these two discrepancies both produce emotions independent of one another. An identity discrepancy may produce negative emotions that would be coupled with negative emotions from the meta-monitoring loop if the individual was progressing slower than expected. This could result in increased negative emotions, but would not mean that the identity discrepancy produced more negative emotions due to the rate of progress. Similarly, someone could feel good that they are progressing faster than expected, but also have negative emotions because they have not yet verified their identity. In this case the size of the identity discrepancy would not influence how good the individual felt as a result of their positive meta-monitoring discrepancy, they would simply be feeling emotions produced by two different processes. If this were true, it would still be important to account for both discrepancies to understand how each discrepancy independently impacts emotions. Based on this, I predict:

H₅: The meta-monitoring discrepancy will have a positive, linear effect on emotions and the squared identity discrepancy will have a negative effect on emotions. These effects will be independent of one another.

The Dual Process Model

The meta-monitoring loop, and emotions it produces, acts to temper or amplify the signal produced by the action loop, or verification process. Because negative emotions are viewed in both identity theory and the control model of affect as

triggering a shift in the level at which processing occurs (Burke and Stets 2009; Carver and Sheier 1998), this has implications for when the identity verification process is automatic or deliberative. Before discussing this in detail, I will first provide a brief description of the dual-process model and how it is at play in the identity verification process.

Moving beyond purely intuitive or rationalistic views of human cognition, dual-process models examine the ways in which people process stimuli in the environment in a conscious and unconscious manner. These models have been applied to behavior in cognitive and social psychology for the past 30 years (Evans 2008). There has been a wide variety of terms used to describe the two systems across theories including conscious processor vs. intuitive processor (Smolensky 1998), rule based vs. associative (Sloman 1996), and reflective vs. reflexive (Shastri and Ajjanagadde 1993). Regardless of the terms used, dual-processes models all include three components: 1) an account of automatic processing (i.e. processing in a “quick and dirty” fashion), 2) an account of deliberative processing (i.e. engaging in extensive thought), and 3) the conditions encouraging use of deliberative processing (Smith and Decoster 2000).

In identity theory, the feedback loop is a continuous cycle. Individuals perceive how they think others are viewing them while they are behaving. This monitoring of perceptions occurs at all times as people work to verify their identities in a situation. However, they are not aware of this monitoring; it is occurring at the automatic level. They are rapidly comparing (without too much thought) how they

think others in the situation see them with how they see themselves. Over time, individuals learn the behaviors that will produce reflected appraisals aligning with their standard and can carry out the verification process without any focus or concentration. It is not until a discrepancy occurs that processing moves to the deliberative level (Burke and Stets 2009).

When individuals think that others do not see them in the same way they see themselves, this is a disturbance that causes the system to produce an “error” message in the form of negative emotions (Burke and Stets 2009). This error message switches the processing to the deliberative level (Stets 2015). Individuals then have to consciously adjust their behavior in a manner they think will produce feedback that aligns with their standard. As individuals work to determine and implement this behavior, the processing stays at the deliberative level. It is not until they achieve verification again that the process returns to the automatic level (Stets 2015).

Carver and Scheier (1998) also view the negative emotions resulting from an error in the control model as shifting the level of processing from automatic to deliberative, however they are focused on the negative emotions resulting from the meta-monitoring loop that influence the use of automatic or deliberative thought. This has important implications for efficient use of deliberative processing in reducing identity discrepancies.

Deliberative processing requires effort and concentration. People do not have an unlimited supply of energy to devote to deliberative processing in all identities. It is therefore important that deliberative processing is only used when necessary and

that it is invested in the higher priority place (i.e. the identity in most need of attention). The meta-monitoring loop assists in both of these tasks. When negative emotions result from an identity discrepancy, people begin consciously adjusting their behavior. However, if they find a behavior that allows them to progress towards verification faster than their expected rate, the positive emotions resulting from the positive meta-monitoring discrepancy would serve to temper the negative emotions from the identity discrepancy. This would then allow the individual to return to automatic level processing. Instead of waiting until they achieve verification to reduce the effort put into this identity, they can be more efficient and reduce their effort once they are moving towards verification at their expected pace.

Similarly, a discrepancy at the meta-monitoring loop could amplify, or add to, the negative emotions resulting from an identity discrepancy, increasing the amount of deliberative processing and focus applied to an identity. If individuals are unable to determine the behavior needed to verify their identity *and* are not progressing at the appropriate rate, they may need to apply *more* effort and conscience thought to this identity. The negative emotions resulting from a discrepancy in the meta-monitoring loop would serve as an indicator of this.

The signals from the meta-monitoring loop are therefore important for the efficient verification of one identity. However, their importance becomes even clearer when we think about the multiple identities an individual holds at any given time. Only one of these identities can be the focal point at any one point in time. When failing to verify more than one identity, the emotions resulting from the meta-

monitoring loop serve to prioritize one's focus on one identity or another. Positive emotions indicate that the individual may not have reached verification, but the progress toward the goal is at a rate higher than the standard. This may suggest to the person that they are on the right course of action and can shift their focus to another identity. Conversely, negative emotions resulting from the meta-monitoring loop that are added to the negative emotions stemming from an identity discrepancy increase the amount of focus applied to this, more problematic, identity. The individual would be experiencing an identity discrepancy in both cases, however the cues from the meta-monitoring loop allow for energy to be focused where it is more necessary.

Overall, the meta-monitoring loop contributes to a smoother functioning of the action loop, or verification process (Carver and Scheier 1998). Once the deliberative process has been turned on, behavioral and cognitive changes occur. It is these changes that I will turn to now and examine the role of both the identity discrepancy and meta-monitoring discrepancy in producing these outputs.

Behavioral and Cognitive Changes

In addition to emotions, there are two other outputs of both the identity theory perceptual control model and the control model of affect: behavioral changes and cognitive changes. However, the theories have slight variations in how they explain the behavioral and cognitive changes resulting from a discrepancy. I turn first to behavioral changes, since those are thought to occur more immediately, and then discuss cognitive changes (i.e. changes in the identity standard and meta-monitoring standard), which are thought to occur slowly over time. Following that, I will return

to emotions to examine what identity theory says about the role of emotions in the behavioral and cognitive changes stemming from an identity discrepancy.

Identities and Behavior

In identity theory, our identity standards guide our behavior in a particular role (Burke 1991; Burke and Reitzes 1981; Stets and Carter 2011). When individuals receive verifying feedback, they will continue behaving in the same manner.

However, when they receive non-verifying feedback, this causes negative emotions. One way to relieve these negative emotions is to change one's behavior (Burke and Stets 2009). Making behavioral adjustments should generate different feedback. If this new feedback aligns with one's identity standard, they will then feel good and can continue behaving in this new manner. If the new feedback produces a discrepancy, they will have to continue trying to adjust their behavior in order to bring the feedback into alignment with their identity standard.

Based on this link between an identity discrepancy and behavior outlined in identity theory, I predict:

H₆: Individuals will adjust their behavior to counter an identity discrepancy.

Empirical work supports this link between an identity discrepancy and behaviors.

Swann and Hill (1982) used a laboratory experiment to examine this, focusing on the extent to which individuals saw themselves as dominant or submissive. Individuals completed a survey prior to the lab portion of the study indicating how submissive or dominant they viewed themselves. During the lab portion of the study, subjects were given feedback that either confirmed their self-view or conflicted with their self-view.

Their subsequent behavior was examined. Those that received disconfirming feedback adjusted their behavior in a manner that countered this feedback. For example, if subjects viewed themselves as dominant, but received feedback they were submissive; they then increased their dominant behavior. This occurred in the same manner for those that viewed themselves as submissive and received feedback that they were dominant. Those individuals behaved in an even more submissive fashion than they had behaved prior. This over emphasis of behavior aligning with one's self-view is an attempt to bring the feedback received in the situation back into alignment with the self-view.

This effect has also been found outside of the laboratory. In a longitudinal survey examining newly married couples, Burke (2006) found that individuals experiencing a discrepancy in their spouse identity attempted to engage in behavior that better aligned with their self-views. Individuals that engaged in more housework than predicted by their spousal identity standard adjusted their behavior and reduced the amount of housework they performed during the following year. Similarly, those that performed less housework than their identity meanings would predict, increased their engagement in housework during the subsequent year.

More recently, the connection between identities and behavior have been found in studies examining the moral identity (Stets 2011; Stets and Carter 2011). In a multi-part survey and laboratory study, the moral identity was found to guide moral behavior. Stets (2011) examined behavior in more detail by separating commission (actively committing a bad act) and omission (failing to perform a good act). The

results supported identity processes influencing moral behavior for acts of commission but not for acts of omission. Individuals may not feel responsible for acts of omission, which may prevent them from framing the situation in moral terms and understanding their behavior in the context of their moral identity.

Expectations and Behavior

The control model of affect examines behavior as a result of a meta-monitoring discrepancy. It is the difference between the rate of progress towards a goal and the expected rate of progress that is predicted to effect the intensity of behavior. In other words, individuals are predicted to adjust their behavior in order to reduce a meta-monitoring discrepancy. When people are progressing towards their goals at a rate slower than expected, the negative emotions that are experienced motivate them to increase their behavior (Cervone, Kopp, Schaumann and Scott 1994). However, the positive emotions experienced when progressing at a rate faster than expected also lead to discrepancy reducing decreases in efforts.

Based on the control model of affect predictions of behavior, I hypothesize:

H7: Individuals will adjust their behavior to counter a meta-monitoring discrepancy.

At first glance, it may be difficult to understand why someone would be motivated to reduce their effort and avoid the resulting positive emotions. This process through which individuals change their behavior as a result of positive emotions is called “coasting” Carver and Scheier (2002). As described in the control model of affect, the control system works to eliminate any emotions produced, either positive or negative.

This means that when someone experiences positive emotions because they are exceeding their expected rate of progress, they will automatically reduce their effort in that area, or “coast” (Carver and Scheier 1998, 2002; Carver 2003). People will not stop their efforts in an area altogether, they will simply ease back. This process is compared to the cruise control setting on a vehicle. A hill slows the car down and the cruise control provides more fuel. As you crest the hill and go too fast downward, the system cuts back on the fuel. Carver and Scheier (2002) indicate that coasting prevents people from spending energy needlessly. Further, spending less energy in an area that has already been “satisfied” allows people to spend more energy in other areas where they might be struggling.

Positive feelings therefore play a role in the shifting from one goal to another. People manage their goals by shifting among which has the top priority. Positive feelings indicate the priority of a goal can be reduced, while negative feelings indicate it needs to be raised. Translated into identity terms, this means that when individuals experience positive emotions they may put less effort into this identity. The positive emotions would signal that they could shift their focus to verifying a different identity that may be in need of more attention. For example, if a student received feedback through an exam grade that was far better than they expected, they may view this as an indication that they do not need to work as hard as a student and would then prepare less for the next exam.

This same change in behavior (preparing less for the next exam) following feedback that exceeds one’s standard would also be predicted by identity theory, but

reducing negative emotions would be the motivation for this behavioral change. The change in behavior described by identity theory bringing reflected appraisals back into alignment with the identity standard is brought about by purposeful action by the individual. The change in behavior as a result of coasting is an unintended consequence resulting from one's focus shifting to another identity.

Carver (2004) admits that the idea of coasting is “speculative.” While there are no direct empirical tests of this process, there is empirical support that suggests these links between progress towards goals, emotions, and behavior are reasonable. For example, in a series of laboratory studies positive emotions have been found to reduce persistence and increase both distractibility and attention towards new stimuli (Dreisbach and Goschke 2004). This supports the “coasting” idea that when people experience positive emotions in one area they may ease up on their efforts (i.e. reduce persistence) in that area or turn their attention to another goal. Other research focusing on dieters showed that satisfactory goal progress can induce people to switch goals (Fishbach and Dhar 2005). Dieters who believed they made little progress were more likely to behave in ways that were consistent with their weight goal, such as eating an apple. Conversely, those that believed they had made progress were more likely to engage in behavior that was inconsistent with their weight goal, such as eating chocolate.

Louro and colleagues (2007) incorporate the importance of goal proximity into this process. Using data from a longitudinal diary study and two experiments, they showed the varying effects of positive and negative emotions on goal-directed

behavior depending on the distance one is from goal attainment. When individuals were made to feel good about their progress, this led to increased efforts the following day in the corresponding goal behavior. However, this was only true when individuals were far from attaining their goal. If individuals were closer to achieving their goal, positive emotions led to decreases in effort in that goal domain and a shift of effort to other goal domains. Translating these findings to identity theory, the distance from the goal could be thought of as the size of an identity discrepancy. Individuals that are moving towards identity verification at a rate faster than expected and experience positive emotions may put more effort into that identity when they are far away from achieving identity verification and less effort if they are close to verification.

Similarly, Fitzsimons and associates investigated when progress towards a goal leads to increased effort or reduced effort in a series of nine studies (Fitzsimons, Freisen, Orehek, and Kruglanski 2009). Progress towards a goal was the most likely to lead to a reduction in effort when other goals were present. This provides support for the idea that behavior in one goal domain is reduced when progress is made in order to divert efforts to another goal. When another goal is not present, individuals are less likely to reduce their efforts as a result of making progress.

Examining the behavioral changes that result from identity discrepancies and meta-monitoring discrepancies will provide further insight into the ways in which people behave as they strive to verify an identity or achieve a goal. The distance one is from their goal, as is focused on in identity theory, could have a greater influence

on behavior compared to the rate at which they are progressing. Conversely, it could be the rate at which people are progressing compared to their expected rate that leads to larger behavioral changes than the distance they are from their goal. This study not only provides a clearer test of both theories predictions of behavior, but also allows for the examination of the relative strength of the influence of both discrepancies on behavior.

Identity Change

Individuals can change their behavior to counteract an identity discrepancy, as discussed in the prior section, and they can also change their identity standard so that it is in better alignment with the feedback received. Empirical and theoretical work focusing on identity change has focused on the changes in the levels of existing dimensions of meanings held in an identity standard (Burke 2006) as well as changes in the organization of the multiple identities an individual may hold (Serpe 1987). Here, I focus on identity change in terms of shifting levels of existing dimensions of meanings. If people viewed themselves as extremely hard workers in their job, but over time began to view themselves as lazy, this would be a change in the level of a meaning that already existed in their identity standard. This type of identity change has been explored in prior studies focusing on one, two, or three identities (Asencio and Burke 2011; Burke 2006; Burke and Cast 1997; Cast and Cantwell 2007; Cast, Stets, and Burke 1999).

I examine the changes in one's identity standard resulting from an identity discrepancy and predict:

H₈: Individuals will adjust their identity standard in the direction of an identity discrepancy.

Focusing on changes in existing meanings, Burke (2006) outlines three mechanisms of identity change: 1) changes in the situation which prompt changes in the identity meanings, 2) multiple identities that conflict in a situation causing changes in both identities, 3) conflicting identity and behavior meanings causing a change in both meanings. Each of these mechanisms cause an identity discrepancy that leads to identity change.

Changes in the situation can create a discrepancy in identity meanings and reflected appraisals that cannot be reduced by altering the output or behavior. When this happens, the only way to reduce this discrepancy is to alter the meanings in an identity standard. Burke and Cast (1997) illustrated this type of change in their study of changing gender identities of married individuals after having their first child. The birth of their child represented a change in the situation. This change led to the meanings of the gender identities of the men becoming more masculine and the meanings of the gender identities of the women becoming more feminine (Burke and Cast 1997). The change in this situation leads to small shifts in the meanings of the identity standard because it creates a long-term discrepancy that cannot be reduced in other ways.

Multiple identities one individual holds can have different levels of meanings along the same dimension. For example, a woman could feel strong and independent in her gender identity, but weak and dependent in her role as a wife. When these are

activated together, which would be expected to happen often, the conflict is another mechanism for identity change. The conflict creates a re-occurring discrepancy and the meanings of the various identities will shift to align so that behavior can verify both identities when activated simultaneously (Burke and Stets 2009). The amount of change in each identity is expected to correspond with the various levels of commitment. Identities with higher levels of commitment will change less than those with lower levels of commitment.

Conflicts between identity meanings and behavior can also lead to identity change. Some situations call for behavior that does not align with our identity standard. When this occurs an identity standard can shift slowly in the direction of the meanings of the behavior in order to reduce the resulting discrepancy. Over time, these slow changes can build up and represent a large change. Using data from a longitudinal study of newly married couples, Cast (2003b) found that one's behavior in their role as a spouse influenced their spouse identity meanings at a later time point. The more individuals engaged in spousal role behaviors, such as cooking and food preparation, the more their identity implied involvement in these activities. This finding supports the idea that behaviors can influence identity meanings.

The underlying mechanism for each of these three types of change is consistent. Identities change when the identity is not being verified. This particular catalyst for identity change – an identity discrepancy - has not been specifically examined empirically, but there is evidence supporting the important role it plays. For example, in the study examining newly married couples, Burke (2006) found that

individuals slowly changed their identities over the course of two years to align with the feedback they received in the situation in addition to the behavioral changes they made.

This type of identity change highlights the influence of reflected appraisals on one's identity standard, since the discrepancy leads individuals to change their identity in the direction of the reflected appraisals they receive. The role of reflected appraisals in determining one's identity has been examined in labeling theory and identity theory. Labeling theory shares identity theory's roots in symbolic interactionist ideas such as Cooley's (1902) looking glass self and Meads (1934) reflexive self and is intended to help explain deviant behavior. Reflected appraisals were incorporated into labeling theory in order to account for the fact that some who have never been labeled a criminal may engage in criminal behavior and some that have been labeled a criminal will not (Bartush and Matsueda 1996; Matsueda 1992). This work established the importance of reflected appraisals in influencing behavior, but did not assess a mechanism that would lead reflected appraisals to influence one's self views. The perceptual control model in identity theory provides this mechanism.

In a study of incarcerated criminals using a longitudinal survey, researchers examined how reflected appraisals changed the criminal identity over time (Asencio and Burke 2011). They found that reflected appraisals from significant others and peers influenced the self-views of one's criminal identity and drug user identity. Once an identity standard changes, the new standard then guides behavior. This link helps

explain how behavior is influenced by reflected appraisals. Reflected appraisals can influence one's identity standard which then guides behavior.

This relationship between reflected appraisals and identity standards has been found in other areas as well. Khanna (2004) used qualitative and quantitative data to examine the influence of reflected appraisals on racial identity. The racial identities of Asian-white adults were found to be shaped largely by the reflected appraisals of others in terms of their appearance and cultural knowledge.

Cast and her associates have examined factors such as power and status that lead to some reflected appraisals being more influential than others (Cast 2003a; Cast, Stets, and Burke 1999). Using data from the longitudinal study of newly married couples, Cast (2003a) found the spouse with more power was more able to impose identity meanings on their spouse and resist having identity meanings imposed on them by their less powerful spouse. Higher status individuals have also been found to have a greater influence on the self-views of lower status individuals (Cast, Stets, and Burke 1999).

This body of research demonstrates the importance of reflected appraisals and their ability to influence an identity standard. However, these empirical pieces do not address the extent to which these identity changes are due to an identity discrepancy, instead they simply focus on the effect of reflected appraisals on identity change. The main advances in the area of identity change have been theoretical and are in need of further empirical testing (Burke and Stets 2009).

Changing Meta-Monitoring Standard

The meta-monitoring standard, one's expectations for their rate of progress, can also change over time. This change can occur as people gain experience in an area and adjust what they expect of themselves or as a result of a discrepancy (Carver and Scheier 1998). Repeatedly exceeding the meta-monitoring standard will cause it to shift upward, while repeatedly falling short of the standard will cause it to shift downward (Carver and Scheier 2000). Similar to identity theory, the control model of affect points out that shifting the reference value is not the first response. First, an individual will try hard to keep up if they are not progressing fast enough or they will ease off if they are exceeding the pace at which they expected to progress. If these behavioral efforts fail to correct the discrepancy, then individuals will begin to shift their meta-monitoring standard.

Based on these control model of affect predictions of changes in the meta-monitoring standard, I hypothesize:

H₉: Individuals will adjust their meta-monitoring standard in the direction of the meta-monitoring discrepancy.

These changes can indicate a more complex situation than a single feedback loop. Just as multiple identities conflicting with one another can be a source of identity change, the pursuit of multiple goals can cause changes in the meta-monitoring standard. An individual may not be able to work harder when they are failing to meet their expected pace in one area if they are trying to achieve a certain pace in another area. Instead, they may have to lower their expected rate of progress in the first area.

The goal in which they will lower their expectations for their expected pace of progress will be the goal that is less important to them.

Once again, these ideas have been developed theoretically, but the empirical work in this area is sparse. The work of Eidelman and Biernat (2007) indicates that performance can influence one's expectations. In a series of four studies, people raised their standards when they repeatedly succeeded at a task. This study indicates people will adjust their standards based on their experiences, but there is not empirical work that examines changes in the meta-monitoring standard resulting from a discrepancy.

Examining the cognitive changes that result from identity discrepancies and meta-monitoring discrepancies will elaborate on our understanding of the experiences that shape one's identities and expectations. This study builds on prior empirical and theoretical work in order to clearly test both theories predictions. Since it is one's identity standard and expectations that drive the perceptual control process, it is important to understand how these standards shift over time.

The Role of Emotions in Behavioral and Cognitive Changes

Behavioral and cognitive changes resulting from a discrepancy have been referred to as coping responses since both of these outputs are believed to function in a way that reduces a discrepancy, and in turn, the negative emotions associated with it (Burke 1996).

The role of emotions as a link between a discrepancy and behavioral and cognitive output has been well theorized in identity theory, but the extent to which

emotions moderate this relationship between an identity discrepancy and behavioral or identity changes has not been examined empirically. If emotions are the key between a discrepancy and these outputs, we should expect to find that individuals that feel more intense negative emotions would experience greater changes in their behavior and/or identity standard. For example, if two students received feedback that their professor viewed them as less hardworking than they viewed themselves, one might feel bad and the other may feel extremely bad. If changes in behavior and one's identity standard are motivated by the need to reduce a negative feeling, the second student that feels extremely bad after receiving disconfirming feedback would be expected to undergo greater changes.

Based on these identity theory predictions, I therefore hypothesize:

H₁₀: The worse individuals feel, the more they will change their behavior to counter an identity discrepancy.

H₁₁: The worse individuals feel, the more they will change their identity standard to reduce an identity discrepancy.

Behavioral changes and identity changes act to reduce negative emotions resulting from a discrepancy, but there is also a third coping response, cognitive strategies, that can be used to avoid these negative emotion. McCall and Simmons (1978) describe various cognitive strategies, or, "mechanisms of legitimation" that can be used to cope with negative feelings arising from identity processes. These include: short-term credit, selective perception, disavowing a performance, switching identities, withdrawing from the situation and blaming others. The extent to which student's

blamed others for their exam grade was measured in this study, but other cognitive strategies are not examined in this dissertation. Instead, behavioral changes and identity changes are the only two coping responses examined. Testing the extent to which emotions are the motivator for behavioral and cognitive changes resulting from a discrepancy will allow for empirical and theoretical elaboration on this relationship.

Summary of Hypotheses

The first set of hypotheses test the emotions resulting from the identity verification process (the distance individuals are from their goal) and the meta-monitoring process (the pace one is progressing toward their goal compared to their expected pace). Hypotheses one and two test these predictions separately, while hypotheses three and four test for an interaction between the two effects. Hypothesis five tests the extent to which the identity verification process and meta-monitoring process have additive, but independent, effects on emotions.

H₁: Individuals will experience negative emotions when their identity is not verified.

H₂: The meta-monitoring discrepancy will have a linear, positive, relation to emotions such that individuals will experience negative emotions when they fail to meet their meta-monitoring standard and positive emotions when they exceed this standard.

H₃: The direct negative effect of an identity discrepancy on emotions will be moderated by the meta-monitoring discrepancy such that individuals with a negative meta-monitoring discrepancy (progressing slower than expected) will experience more negative emotions as a result of an identity discrepancy and those with a positive meta-monitoring discrepancy (progressing faster than expected) will experience less negative emotions as a result of an identity discrepancy.

H4: The meta-monitoring discrepancy will have a direct positive effect on emotions that is moderated by the identity discrepancy. An identity discrepancy will increase the negative emotions resulting from a negative meta-monitoring discrepancy and increase the positive emotions resulting from a positive meta-monitoring discrepancy.

H5: The meta-monitoring discrepancy will have a positive linear effect on emotions and the squared identity discrepancy will have a negative effect on emotions. These effects will be independent of one another.

Hypotheses six and seven focus on the effects of an identity discrepancy and meta-monitoring discrepancy on behavior. Both theories predict that individuals will use behavioral changes to attempt to eliminate a discrepancy. In other words, if an individual has fallen short of their identity standard, they will increase behaviors that could help them verify this identity. Similarly if individuals are progressing at a slower rate than expected towards verification, they would also increase their behavior in an attempt to reduce the discrepancy in the meta-monitoring loop. This behavioral change would occur in the opposite direction for individuals that exceed their identity standard or progressed at a rate faster than expected towards verification.

H6: Individuals will adjust their behavior to counter an identity discrepancy.

H7: Individuals will adjust their behavior to counter a meta-monitoring discrepancy.

Hypotheses eight and nine examine the effects of a discrepancy on changes in the standard. Both theories predict the standard will shift in the direction of the discrepancy. If individuals think others see them better than they see themselves, their identity standard will shift so they see themselves better. Similarly if individuals receive feedback that they are progressing faster than expected toward verification,

their meta-monitoring standard will increase so that they expect to progress at a faster rate. Their standards would shift in the opposite direction when individuals think others view them worse than they view themselves or when they progress towards verification at a rate slower than expected.

H₈: Individuals will adjust their identity standard in the direction of an identity discrepancy.

H₉: Individuals will adjust their meta-monitoring standard in the direction of the meta-monitoring discrepancy.

Finally, hypotheses ten and eleven examine the effect of emotions on behavioral and identity changes resulting from a discrepancy. Since changes in behavior and one's identity standard are ways to reduce a discrepancy and eliminate the negative emotions associated with it, higher levels of negative emotions are expected to lead to higher levels of behavioral changes and identity change.

H₁₀: The worse individuals feel, the more they will change their behavior to counter an identity discrepancy.

H₁₁: The worse individuals feel, the more they will change their identity standard to counter an identity discrepancy.

CHAPTER 3: METHOD

Study Overview

This study focuses on a role identity, specifically the student identity. This identity was chosen because there is a well-established measure of the identity in prior work (Burke and Reitzes 1981, 1991; Reitzes and Burke 1980; Reitzes 1981). The ease of access to the student population as well as the consistent timing of exam feedback also contributed to its selection. A sample of college students was surveyed over a 10-week quarter. The longitudinal design made it possible to investigate not only the effects of the identity verification process (the action loop) but also the rate of progress toward (or away from) identity verification (the meta-monitoring loop).

Surveys were administered at four points throughout the 10-week period in order to measure discrepancies in the action loop and meta-monitoring loop and their corresponding emotional, behavioral, and cognitive outcomes. After the initial survey, each subsequent survey was administered after exam grades were made visible in the course the student was taking. The feedback from exam grades created a naturally occurring situation of identity verification (or non-verification). Collecting data after multiple exams allowed for the discrepancy in the meta-monitoring loop to be examined over time as individuals got closer to verification or moved farther away from verification at varying rates. This also allowed for the examination of the effects of the action loop and meta-monitoring loop at multiple points.

Sample

The survey was administered to undergraduates at a large Southwestern University from 2013 to 2014. Five sociology courses were used for this study. In the first two courses, extra credit was given to those students that participated. In the second three courses, \$40 was given to those students participating in the study.² There was attrition in participation throughout the quarter. A total of 736 individuals participated in the first survey, 657 individuals completed the second survey, 606 individuals completed the third survey, and 546 individuals completed the fourth survey. Out of all these participants completing one or more surveys, 475 individuals completed all four surveys throughout the quarter.

This high attrition rate is likely due to the fact that three of the surveys were only open for a 24 hour period. This short window was intended to capture an immediate emotional reaction, but contributed to an attrition rate because it was easy for students to forget to take the survey in the time frame it was available. The mean values of key variables were examined at T₁ for those individuals that remained in the study and those that dropped out. There was a not a significant difference at T₁ between the two groups for the identity discrepancy ($t = -.41$, $df (603)$, $p = .68$), meta-monitoring discrepancy ($t = .18$, $df (602)$, $p = .86$), or emotions ($t = -1.54$, $df (600)$, $p = .12$).

There was a significant difference in exam grades ($t = -1.99$, $df (594)$, $p = .05$), with those dropping from the study performing slightly better at T₁. This is likely due to the fact that many in the sample were receiving extra credit as the reward for

² The variation of effects based on compensation (extra credit vs. money) was tested for all models and did not differ. Results are available upon request.

participating. The individuals that did better on the first exam may have been more likely to feel they did not need the extra credit and decided to drop from the study. There was also a significant difference in identity standards ($t = -3.97$, $df (604)$, $p < .01$), with those dropping from the study having a slightly lower student identity standard measure at T_1 . The sample therefore consists of students with slightly better student identity standards that did not do as well on the first exam. These processes are not expected to differ depending on the starting point of the standard or performance, so this characteristic of the sample should not effect the results.

The university where the data was collected enrolls approximately 20,000 students with an ethnic breakdown of 40% Asian/Asian American, 29% Latino, 17% non-Latino White, 8% African American, and 6% other ethnicity or race. The racial breakdown of the sample was 23% Asian/Asian American, 47% Latino, 11% non-Latino White, 7% African American, and 13% represented by other ethnicities. The overrepresentation of Latino individuals and underrepresentation of Asian/Asian American individuals may be due to the racial breakdown of undergraduates taking courses in the sociology department. The average age of students on this campus is 21 years. The average age of participants (21) matched the average age of the university population as a whole. The gender breakdown on this campus is 52% female and 48% male. More women (78%) than men (22%) participated in the study. Again, the

overrepresentation of females was likely due to the overrepresentation of females in sociology courses.³

Instruments

Survey data was collected at four different time points over a 10-week period. The timeline in Figure 3 demonstrates the timing of the various surveys in accordance with the exams in a course.

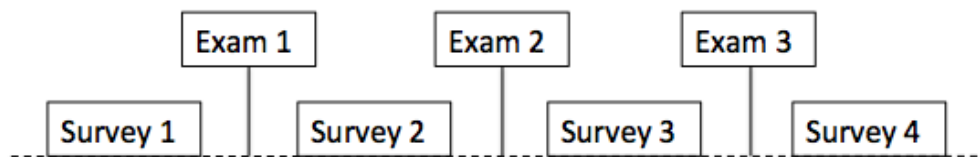


Figure 3. Timeline of Surveys

The first survey was administered during the first week of the 10-week period. I administered the remaining surveys in accordance with the timing of exams in the course. The three exams were spaced evenly throughout the quarter. Each time exam grades were made visible to students, they had 24 hours to complete a survey. This ensured surveys were capturing their emotions given a consistent period of time to process their grades. Each course used in this study had three exams, so three of the surveys were administered at the same time students received their exam grades. Descriptions of each survey are provided, followed by an explanation of key measures. (See Appendix A for examples of all measures.)

³ The variation of effects based on gender was tested for all models and did not differ. These tests are presented in the results.

Initial survey (survey one). The first survey included baseline measures of the individual's student identity standard, meta-monitoring standard, performance (grade) expectations for each exam, and background variables. This survey was open for one week.

Survey two, three, and four. These surveys were administered after the students received grades for their exams. These three surveys included the student identity standard, the meta-monitoring standard, and performance expectations measures used in the first survey in order to track changes in these measures. In addition to these measures, they also included measures of actual performance, reflected appraisals, emotions, and behavior (study methods). The fourth survey was slightly shorter because it was the final survey and did not include measures that asked individuals to indicate future exam expectations or a meta-monitoring standard. As previously mentioned, all of these surveys opened on the date exam grades were made visible to students and were only open for a 24 hour period.⁴

Measures and Coding

Independent Variables

Identity standard. The identity standard is the *meanings* people provide when they think about themselves in a particular identity. Each meaning within the identity standard is measured with a semantic differential scale in which the respondents rate themselves along a continuum anchored by two bipolar adjectives (e.g.,

⁴ While there are four surveys, there are only three waves of data. This is because the initial survey was used to collect demographic information as well as the standard for calculating the meta-monitoring discrepancy in the first wave of data.

lazy/hardworking). These meanings are then summed to provide a numerical value for the identity standard. The set of meanings for the student identity used here are drawn from past research measuring the student identity and include: “studious/not studious,” “ambitious/not ambitious,” “motivated/not motivated,” “dedicated/undedicated,” “hardworking/lazy,” “responsible/irresponsible,” and “interested/apathetic” (Burke and Reitzes 1981, 1991; Reitzes and Burke 1980; Reitzes 1981). This subset was chosen based on the discriminant analysis loadings found in prior research (Reitzes and Burke 1980). The meanings represent the academic side of the student identity. These meanings were measured on a scale ranging from 1 to 7. The omega reliability for this measure was .93 at T₁, .95 at T₂ and .97 at T₃.

The semantic differential scales for each meaning were standardized and summed. A high value represented very “studious” or “ambitious” while a low value represented very “lazy” or “irresponsible,” etc. Prior to being standardized, identity standard scores ranged from 1-43 at T₁, 4-43 at T₂ and 1-43 at T₃. Mean scores increased slightly across time points with a mean of 30.9 at T₁, 31.5 at T₂, and 32.1 at T₃. The standard deviations varied slightly across time points as well with a standard deviation of 8.0 at T₁, 7.8 at T₂ and 8.2 at T₃.

Reflected appraisals. Reflected appraisals were measured based on each exam grade. Respondents were asked to report their exam grade. They were then asked, “Based on your exam grade, how do you *think* others would rate you on each of the following dimensions?” They were presented with the same semantic differential

scale used to measure their student identity meanings. The omega reliability for this measure was .98 at all time points.

Linear identity discrepancy. An identity discrepancy is the difference between the meanings in one's identity standard (i.e. one's self-views) and reflected appraisals (i.e. the way they think other's view them in their role as a student). This measure was created by calculating the difference between the identity standard and the reflected appraisal at the same time point (i.e. $\text{identity discrepancy} = \text{reflected appraisal}_{T1} - \text{identity standard}_{T1}$). For example, if at T_1 one's reflected appraisal was 3 points higher than his or her identity standard, the discrepancy would be +3. This is the linear discrepancy where a positive number represents a discrepancy in the positive direction (i.e. people think others view themselves better than they view themselves) and a negative number represents a discrepancy in the negative direction (i.e. people think others view themselves worse than they view themselves). This measure was standardized to have a mean of 0 and standard deviation of 1.

Squared identity discrepancy. According to identity theory, people should experience negative emotions due to a discrepancy in either a positive or negative direction and these emotions will increase exponentially as the size of the discrepancy increases. For this reason, a squared discrepancy measure was created. This measure represents the size of the discrepancy without taking into account the direction of the discrepancy. This measure was standardized (after calculating the squared discrepancy) to have a mean of 0 and standard deviation of 1.

Meta-monitoring standard. To measure the expected rate of progress toward or away from student identity verification, individuals were asked how they thought others would view them if they received the grade they expected to receive on their next exam. In thinking about how others would view them, they were considering the same set of bipolar items used to measure the student identity standard and placed themselves somewhere between the polar opposites in terms of where they thought others would locate them. By identifying how they thought others would view them if they met their expectations, they indicated how much closer or further from verification they expected to be at the next measurement point.

For example, if they think others will view them in the same way they view themselves based on the grade they expect to receive at the next time point, then they are expecting to achieve identity verification. Conversely they may think the grade they expect to get will lead others to view them in different ways than they view themselves. The size of this difference would represent how close they expect to be to verifying their identity at the following time point.

These items were coded in the same manner as the identity standard and reflected appraisals with high numbers representing very “positive” self-meanings such as “very studious” or “very hardworking.” The omega reliability for this measure was .96 at T₁, .97 at T₂ and .98 at T₃. This scale was standardized to have a mean of 0 and standard deviation of 1.

Meta-monitoring discrepancy: A meta-monitoring discrepancy is the difference between ones meta-monitoring standard (i.e. one’s expected rate of progress/expected

reflected appraisals) and reflected appraisals (i.e. the way they think other's view them in their role as a student at that time point). This measure was created by calculating the difference between the meta-monitoring standard and the reflected appraisal at the following time point (i.e. meta-monitoring discrepancy = reflected appraisal_{T2}-meta-monitoring standard_{T1}). For example, if at T₂ one's reflected appraisal was 3 points higher than their meta-monitoring standard at T₁, the discrepancy would be +3. This is the linear discrepancy where a positive number represents a discrepancy in the positive direction (i.e. people think other's view themselves better than they expected others to view themselves) and a negative number represents a discrepancy in the negative direction (i.e. people think other's view themselves worse than they expected other's to view themselves). The linear discrepancy is used for the meta-monitoring loop because the control model of affect predicts different emotions depending on the direction of the discrepancy. This measure was standardized to have a mean of 0 and standard deviation of 1.

Discrepancy interaction term. In order to test for moderating effects, I created an interaction term by multiplying the squared identity discrepancy measure by the meta-monitoring discrepancy measure. This interaction term is the standardized squared identity discrepancy multiplied by the standardized meta-monitoring discrepancy. Standardizing these scales reduces issues of multicollinearity created by interaction terms.

Dependent Variables

Emotions. Respondents were asked to report how intensely they were feeling each of the following emotions (on a scale of 0 - Not at All to 10 - Very Intense): “angry,” “sad,” “relieved,” “fearful,” “happy,” “anxious,” and “proud.” Discussions of primary emotions (which are emotions considered to be universal) vary, but fear, anger, sadness and happiness are the most commonly agreed upon by emotions scholars (Turner and Stets 2005). These primary emotions are also consistent with those used in prior tests of emotions in past identity theory research (Burke and Stets 2009). Relief, anxiety, and pride are all emotions typically included in studies of the meta-monitoring loop, and have therefore been included here as well (Carver and Scheier 1998). The emotion measures appeared two times on each survey. In order to control for prior emotion, the measure appeared at the beginning of each survey. Emotions were then measured directly following the reflected appraisals, which is standard in identity theory research (Burke and Stets 2009).

An emotions scale was created by aligning the scales so that low scores represented very negative emotions and high scores represented very positive emotions. Each emotion was standardized and then summed across measures. The emotions scale has an omega reliability of .94 at T₁, .95 at T₂ and .96 at T₃ and was standardized to have a mean of 0 and standard deviation of 1.

Identity standard. The identity standard, described at the beginning of this section, was used as the dependent variable when examining identity change. The identity standard represents the meanings individuals attach to themselves in an

identity. Using this variable as the dependent variable in an analysis allows for the examination of how an identity discrepancy influences changes in one's self-meanings from one time point to the next.

Behavior. Respondents were asked to report whether they performed any of the following study behaviors in preparation for their exam: attended professor's office hours, attended TA's office hours, reviewed the study guide, reviewed their notes, reviewed lecture slides, studied with a friend or classmate, reviewed the readings. Behaviors were coded as 1 if selected and 0 if not selected. These scores were then summed to create a measure of the number of study behaviors a participant used in preparation for an exam. This measure was standardized to have a mean of 0 and standard deviation of 1.

Other Variables

The following variables were used to estimate the structural equation models (SEM) based on various groups, such as gender.

Gender. Individuals were asked to report their gender. Female was coded as 1 and male was coded as 0.

Major. Individuals were asked to report their major. Since all of the courses surveyed were sociology courses, it is possible that sociology majors would have been more invested in their performance. Sociology majors were coded as 1 and all other majors were coded as 0.

Attribution of blame. Individuals were asked to report to what extent they thought their professor, TA, individuals in a study group, or themselves were responsible for

the grade received. Those that blamed others for their grade were coded as 1, while those that blamed themselves were coded as 0.

Reward. Participants receiving extra credit for the completion of surveys were coded as 0 and those receiving money for the completion of surveys were coded as 1.

Analyses

I conducted the analyses using structural equation modeling. Structural equation modeling allows for the inclusion of stability coefficients and correlated error terms. These functions are beneficial when comparing data across multiple time points as is done in these analyses. The first analysis focuses on the emotions resulting from the identity control process and control model of affect. The second analysis focuses on the behavioral changes resulting from these processes. The cognitive changes resulting from both the identity verification process and control model of affect are examined in the third analysis. Finally, the fourth analysis accounts for emotions in an examination of the behavioral and cognitive changes people experience as a result of an identity discrepancy.

Cases that were missing more than half of their data were removed from the data set, lowering the sample size from 475 to 463. In order to take advantage of as much data as possible, the maximum likelihood (ML) method was used to deal with missing data in the remaining sample. This method does not impute values for the missing values, instead ML handles missing data by setting the parameter estimates to values that would maximize the probability of all the data that has been observed. Running a SEM without using this method would result in observations being ignored

if they are missing a single value on any of the variables used. The percentage of missing data and number of cases containing missing data for each analysis was very low. The exact percentages are given in the descriptions of the specific analyses.

The fit of the models were assessed using five model fit statistics: chi-square measures, relative chi-square, RMSEA, CFI, and TLI. The chi-square (χ^2) assesses the difference between the theoretical variance-covariance matrix and the observed variance-covariance matrix. A good model fit, or a small difference between the two matrices results in a nonsignificant chi-square. This measure becomes less effective when the sample size exceeds 400, as it does in this study. For samples of this size, the chi-square is almost always statistically significant. For this reason, additional model fit statistics were relied upon.

The relative (or normed) chi-square ($R\chi^2$) can be less sensitive to sample size. This fit statistic is equal to the chi-square divided by the degrees of freedom. Acceptable values vary by researchers, but have been reported as less than two by some (Ullman 2001) and less than five by others (Schumacker and Lomax 2004). The RMSEA measures the square root of the average of the residuals in the covariance matrix relative to the degrees of freedom, thus penalizing a model for complexity that is unnecessary. A value less than .05 indicates a good model fit (MacCallum, Browne, and Sugawara 1996; Steiger 1990). The CFI and TLI are both measures of relative fit comparing the variance-covariance matrix of the observed model to the null model where all the observed variables are assumed to be independent. Similar to the RMSEA, both measures penalize unnecessary complexity. Both statistics range

from zero to one, with any value above .95 indicating a good model fit (Acock 2013; Hu and Bentler 1999).

Analysis One: Emotions

To examine the relationship between emotions, identity discrepancies and meta-monitoring discrepancies, I estimated the models presented in Figures 4, 5, and 6.

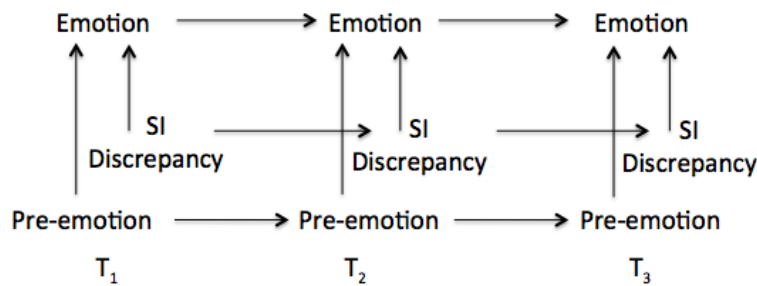


Figure 4. Model of Relationship Between Emotion and Squared Identity Discrepancy

In Figure 4, pre-emotion, squared identity discrepancy, and emotions appear at each time point: T₁, T₂, and T₃. I constructed paths between each of these variables and their equivalent at the prior time point. These simply represent that a squared identity discrepancy in T₂ is influenced by that in T₁, etc. I also included paths from pre-emotion and squared identity discrepancy to emotion at each time point. In other words, emotion at T₁ would be expected to be influenced by pre-emotion at T₁ as well as the squared identity discrepancy at T₁.

I constrained effects where the theory would predict them to be equal. For example, there is no reason to believe the effect of a squared identity discrepancy on emotions would be different in T₁ than it would be in T₂ or T₃. I also set paths leading

from pre-emotion to emotion to be equal at each time point as well as the effects from T₁ to T₂ and T₂ to T₃ on equivalent variables (i.e. emotion to emotion, squared identity discrepancy to squared identity discrepancy and pre-emotion to pre-emotion).⁵ The same model was used to test the meta-monitoring discrepancy.

Figure 5 and 6 show the models examining the effects of the squared identity discrepancy and meta-monitoring discrepancy. Figure 5 includes the interaction term (consisting of both the meta-monitoring and squared identity discrepancies), while Figure 6 does not. The same coefficients were set to be equal in this model as the prior two models. The percentage of missing data for each analysis in this section was very low (0.6-0.7%) as was the number of cases containing any missing data (5%).

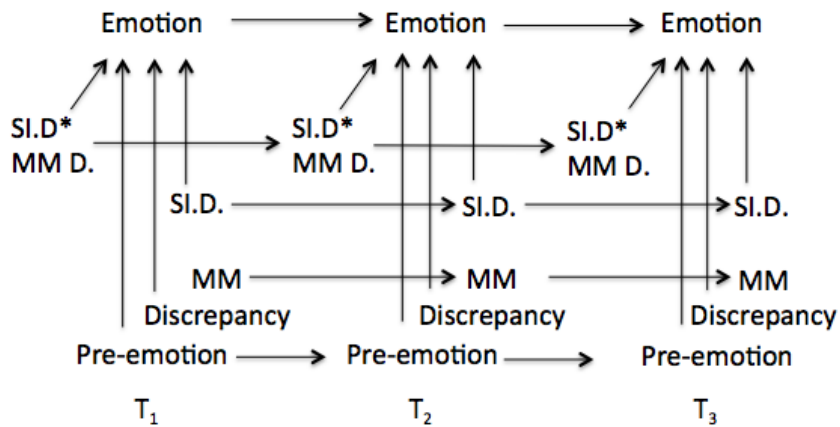


Figure 5. Model of Relationship Between Emotions, Meta-Monitoring Discrepancy, and Identity Discrepancy (Including the Interaction Term)

⁵ A likelihood ratio test was used to test the effects in the constrained and unconstrained models for each analysis in this dissertation and the effects did not differ. Specific tests are presented in the results.

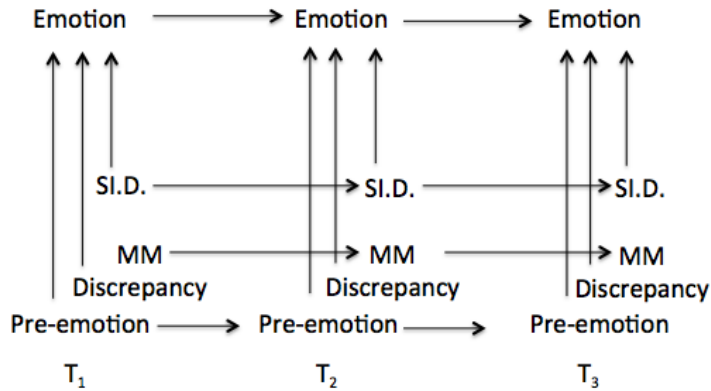


Figure 6. Model of Relationship Between Emotions, Meta-Monitoring Discrepancy, and Identity Discrepancy

Analysis Two: Behavioral Changes

To examine the relationship between behavior, identity discrepancies and meta-monitoring discrepancies, I estimated the structural models presented in Figures 7 and 8.

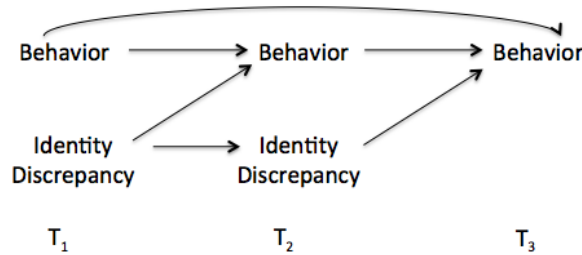


Figure 7. Model of Relationship Between Identity Discrepancy and Behavior

In Figure 7, behavior is influenced by behavior at the prior time point and the identity discrepancy at the prior time point. Behavior is influenced by the identity discrepancy at the prior time point because it is this discrepancy that should influence an individual to increase or decrease their efforts between time points. Again, I constrained effects where the theory would predict them to be equal (e.g. the effect of

an identity discrepancy on behavior in T₂ and T₃ as well as the paths leading from T₁ to T₂ and T₂ to T₃ for behavior). The same model was used to test the effects of the meta-monitoring discrepancy on behavior.

Figure 8 shows the model examining the effects of both the meta-monitoring discrepancy and identity discrepancy on behavior. The same coefficients were set to be equal in this model as the prior two models. The percentage of missing data for each analysis in this section was very low (<1%) as well as the number of cases containing any missing data (1%).

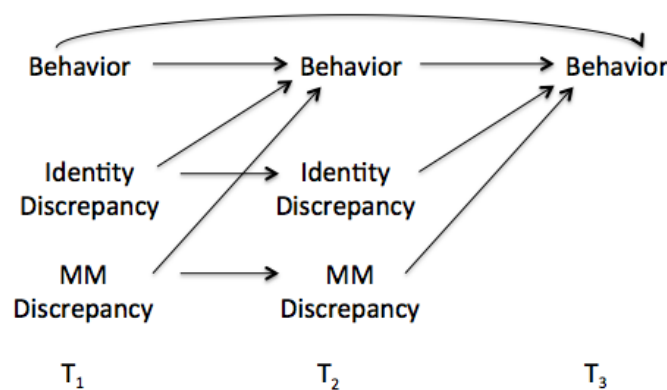


Figure 8. Model of Relationship between Identity Discrepancy, Meta-monitoring Discrepancy and Behavior

Analysis Three: Cognitive Changes

To examine the relationship between identity discrepancies and their changing self-views, I estimated the structural model presented in Figure 9.

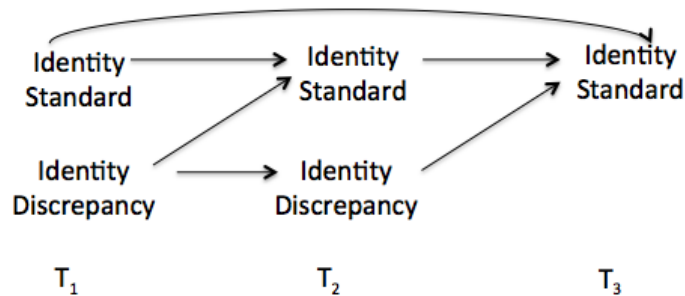


Figure 9. Model of Relationship Between Identity Discrepancy and Identity Standard

In Figure 9, the identity standard is influenced by one's standard at the prior time point and the identity discrepancy at the prior time point. The identity standard is influenced by the identity discrepancy at the prior time point because it is this discrepancy that should influence an individual to adjust their self-view between time points. Again, I constrained effects where the theory would predict them to be equal. For example, there is no reason to believe the effect of an identity discrepancy on the standard would be different in T₂ than it would be in T₃. I also set paths leading from T₁ to T₂ and T₂ to T₃ for the identity standard to be equal at each time point. This same model was used to examine the effects of a meta-monitoring discrepancy on changes in one's meta-monitoring standard, or expectations. The percentage of missing data for each analysis in this section was low (<1%). The number of cases containing any missing data was also low (1%).

Analysis Four: Behavioral and Cognitive Changes Accounting for Emotions

To further examine the relationship between emotions, identity discrepancies and behavioral and cognitive changes, I estimated the structural model presented in Figure 10.

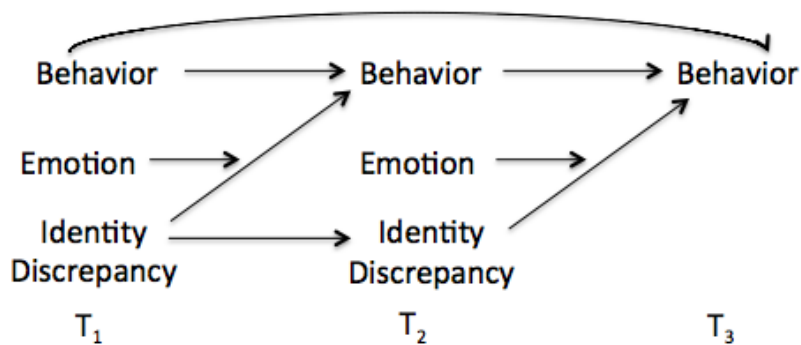


Figure 10. Model of Relationship Between Emotion, Behavior, and Identity Discrepancy

In Figure 10, behavior is influenced by behavior at the prior time point and the identity discrepancy at the prior time point as well as an interaction effect between the linear identity discrepancy and emotions. Behavior is influenced by the identity discrepancy and emotions at the prior time point because it is this discrepancy and emotions that should influence an individual to increase or decrease their efforts between time points. Once again, I constrained effects where the theory would predict them to be equal. This same model was used to examine the effects of a linear identity discrepancy and emotions on changes in the identity standard. The percentage of missing data for each analysis in this section was low (<1%) as well as the number of cases containing any missing data (2%).

CHAPTER 4: RESULTS

Emotions

Descriptive and Bivariate Analyses

Table 2 presents the mean and standard deviations for all variables used in this analysis. All of the variables with the exception of the squared identity discrepancy are distributed normally. The squared identity discrepancy variables are positively skewed with the majority of cases falling at the low end of the discrepancy scale. The sample size varies slightly across variables due to incomplete data points. The maximum likelihood method, described in the previous chapter, was used to deal with missing values in order to take advantage of as much data as possible.

Table 2. Means and Standard Variations of Standardized Variables Used in Analysis One

Variables	Mean	SD	Min	Max	N
Squared Identity Discrepancy T ₁	0	1	-0.64	5.67	462
Squared Identity Discrepancy T ₂	0	1	-0.51	6.14	461
Squared Identity Discrepancy T ₃	0	1	-0.51	6.89	461
Meta-monitoring Discrepancy T ₁	0	1	-2.76	2.52	461
Meta-monitoring Discrepancy T ₂	0	1	-3.12	3.59	457
Meta-monitoring Discrepancy T ₃	0	1	-3.31	4.19	462
Emotion T ₁	0	1	-2.19	1.98	459
Emotion T ₂	0	1	-2.48	1.91	461
Emotion T ₃	0	1	-2.48	1.71	459
Pre-emotion T ₁	0	1	-2.76	2.10	455
Pre-emotion T ₂	0	1	-3.15	2.24	461
Pre-emotion T ₃	0	1	-3.01	1.89	461

There was a significant difference between the identity discrepancy at T₁ and T₂, ($t = 2.9$, $df = 471$, $p < .05$). The discrepancy at T₁ was larger. It is not surprising that the first exam led to higher discrepancies than the following exams since there is typically an adjustment period as students familiarize themselves with a professor's

exam styles and expectations. There was a not a significant difference between identity discrepancy at T₂ and T₃, ($t = 1.1$, $df = 470$, $p = .27$). The meta-monitoring discrepancies did not vary across T₁ and T₂, ($t = 0.81$, $df = 466$, $p = .42$) or T₂ and T₃, ($t = 0.16$, $df = 467$, $p = .88$). Unlike the identity discrepancy, the meta-monitoring discrepancy did not get smaller as the quarter progressed. One explanation for this could be that people are quicker to adjust their expected rate of progress, so instead of making more accurate predictions, they continued to be consistently inaccurate.

Table 3 displays the correlation matrix of all variables used in this analysis. We can see that pre-emotions (emotions felt prior to the survey) are a strong predictor of emotions (T₁: $r = .81$, $p < .05$; T₂: $r = .79$, $p < .05$; T₃: $r = .84$, $p < .05$). Squared identity discrepancies are correlated with emotions indicating that greater negative emotions result from larger identity discrepancy (T₁: $r = -.37$, $p < .05$; T₂: $r = -.45$, $p < .05$; T₃: $r = -.36$, $p < .05$). This is consistent with past findings in identity theory (Burke and Stets 2009). The meta-monitoring discrepancy is also significantly correlated with emotions at all time points (T₁: $r = .39$, $p < .05$; T₂: $r = .51$, $p < .05$; T₃: $r = .54$, $p < .05$). This suggests that individuals experience more positive emotions when moving towards verification at a rate that is faster than expected and more negative emotions when moving towards verification at a rate that is slower than expected. This is consistent with findings in the control model of affect (Carver and Scheier 1998). Structural equation models are used to further investigate the relationships among the variables in a more systematic fashion.

Table 3. Correlations among Variables Used in Analysis One (N=463)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) SI D T ₁	1.00														
(2) SI D T ₂	.31*	1.00													
(3) SI D T ₃	.16*	.16*	1.00												
(4) MM D T ₁	-.54*	-.18*	-.12*	1.00											
(5) MM D T ₂	-.05	-.50*	.07	.13*	1.00										
(6) MM D T ₃	-.09*	.02	-.46*	.10*	-.01	1.00									
(7) Emotion T ₁	-.37*	-.18*	-.13*	.39*	-.03	.03	1.00								
(8) Emotion T ₂	-.02	-.45*	-.05	-.01	.51*	-.09	.22*	1.00							
(9) Emotion T ₃	-.09	-.11*	-.36*	.02	.03	.54*	.14*	.23*	1.00						
(10) Pre-emotion T ₁	-.27*	-.16*	-.10*	.30*	-.03	.00	.81*	.25*	.09	1.00					
(11) Pre-emotion T ₂	-.01	-.26*	-.07	.00	.33*	.10	.26*	.79*	.21*	.27*	1.00				
(12) Pre-emotion T ₃	-.07	-.10*	-.20*	.04	.05	.38*	.19*	.26*	.84*	.17*	.26*	1.00			
(13) SI D*MM D T ₁	-.70*	-.25*	-.11*	.45*	.06	.07	.23*	-.01	.05	.15*	-.03	.03	1.00		
(14) SI D*MM D T ₂	-.18*	-.77*	-.04	.11*	.44*	-.04	.10*	.32*	-.02	.07	.01	.01	.17*	1.00	
(15) SI D*MM D T ₃	-.10*	-.11*	-.77*	.10*	.06	.41*	.11*	.03	.29*	.10	.14*	.14*	.04	.03	1.00

* $p < .05$

SI D= Squared Identity Discrepancy

MM D=Meta Monitoring Discrepancy

Multivariate Findings

Table 4 displays the results of an SEM designed to test Hypothesis 1, which states that a larger squared identity discrepancy will lead to greater feelings of negative emotions.⁶ The model fits the data well ($\chi^2 = 51.38$, $df = 26$, $p = 0.00$, TLI = .98, CFI = .99, RMSEA = .05, $R\chi^2 = 1.98$), with fit measures falling within acceptable ranges. A likelihood ratio test demonstrated that effects did not differ for the constrained and unconstrained models ($\chi^2 = 11.95$, $df = 7$, ns). Squared identity discrepancies are inversely related to emotions at each time point ($\beta = -.21$, $p < .05$). This finding supports Hypothesis 1. Larger squared identity discrepancies lead to more intense negative emotions. This finding is consistent with prior work on identity discrepancies and emotion (Burke and Harrod 2004; Burke and Stets 1999; Burke and Stets 2009). The effects of a squared identity discrepancy on emotions did not differ based on gender (T₁: $\chi^2 = 8.90$, $df = 5$, ns; T₂: $\chi^2 = 4.92$, $df = 2$, ns; T₃: $\chi^2 = 0.65$, $df = 2$, ns) or major (T₁: $\chi^2 = 9.76$, $df = 5$, ns; T₂: $\chi^2 = 5.37$, $df = 2$, ns; T₃: $\chi^2 = 0.624$, $df = 2$, ns).

⁶ In order to test for enhancement effects, I also ran all models including the squared identity discrepancy term in two additional ways. First, I included the linear identity discrepancy as well as the squared identity discrepancy. Second, I included the linear discrepancy instead of the squared discrepancy. In each case, the model did not fit, supporting a consistency effect instead of an enhancement effect.

Table 4. Standardized Coefficients for Effects of Identity Discrepancy on Emotion (N=463)

	Emotion T _x	Squared Identity Discrepancy T _{x+1}	Pre-emotion T _{x+1}
Squared Identity Discrepancy T _x	-.21*	.34*	
Pre-emotion T _x	.77*		.26
Emotion T _{x-1}	.00		

$\chi^2 = 51.38, df = 26, p = 0.00, TLI = .98, CFI = .99, RMSEA = .05, R\chi^2 = 1.98$
 * $p < .05$

Table 5 displays the results of an SEM set up to test Hypothesis 2, which states that the linear meta-monitoring discrepancy will be positively related to emotions. Individuals moving faster than expected towards identity verification will experience positive emotions. Those moving slower than expected towards identity verification will experience negative emotions. The model fits the data well ($\chi^2 = 46.38, df = 22, p = 0.00, TLI = .98, CFI = .99, RMSEA = .03, R\chi^2 = 2.1$), with fit measures falling within acceptable ranges. A likelihood ratio test demonstrated that effects did not differ for the constrained and unconstrained models ($\chi^2 = 13.47, df = 7, ns$).

Table 5. Standardized Coefficients for Effects of Meta-Monitoring Discrepancy on Emotion (N=463)

	Emotion T _x	Meta-monitoring Discrepancy T _{x+1}	Pre-emotion T _{x+1}
Meta-monitoring Discrepancy T _x	.16*	.15*	
Pre-emotion T _x	.78*		.31*
Emotion T _{x-1}	.04*		

$\chi^2 = 46.38, df = 22, p = 0.00, TLI = .98, CFI = .99, RMSEA = .03, R\chi^2 = 2.1$
 * $p < .05$

As can be seen in Table 5, meta-monitoring discrepancies are positively related to emotions at each time point ($\beta = .16, p < .05$). This finding supports Hypothesis 2. Individuals feel better as they move towards verification at a rate that is faster than expected. Conversely, they feel worse when they move towards verification at a rate slower than expected. This finding is consistent with prior work on meta-monitoring discrepancies and emotion (Affleck et. al. 1998; Brunstein 1993; Carver and Scheier 1998; Lawrence, Carver, and Scheier 2002). The effects of a meta-monitoring discrepancy on emotions did not differ based on gender ($T_1: \chi^2 = 3.36, df = 5, ns$; $T_2: \chi^2 = 1.78, df = 4, ns$; $T_3: \chi^2 = 1.14, df = 2, ns$). This effect did not differ by major at T_1 ($\chi^2 = 8.07, df = 5, ns$) or T_3 ($\chi^2 = 0.18, df = 2, ns$) but did differ at T_2 ($\chi^2 = 7.68, df = 2, p < .05$).

When both discrepancies (the squared identity discrepancy and meta-monitoring discrepancy) as well as an interaction term were included in the model, the interaction effect was not significant ($\beta = .01, ns$). This result does not support Hypothesis 3 and 4. Instead, it indicates the discrepancies are operating independently on emotions. That is, one effect is not moderated by the other effect. The interaction effect was dropped from the model.

Table 6 display the results for a model including both the squared identity discrepancy and the meta-monitoring discrepancy without the interaction term. This model can be used to test Hypothesis 5. These results allow us to see the effect of each discrepancy on emotions when controlling for the other discrepancy. The model fits the data well ($\chi^2 = 102.23, df = 47, p = 0.01, TLI = .97, CFI = .98, RMSEA = .05$,

$R\chi^2 = 2.2$). These results show significant effects for both the squared identity discrepancy ($\beta = -.13, p < .05$) on emotions and the meta-monitoring discrepancy ($\beta = .18, p < .05$). This indicates both discrepancies influence emotions, in different ways. The squared identity discrepancy has a negative effect on emotions and the meta-monitoring discrepancy has a positive linear effect on emotions.

Table 6. Standardized Coefficients for Effects of Meta-Monitoring Discrepancy and Identity Discrepancy on Emotion (N=463)

	Emotion T_x	Squared Identity Discrepancy T_{x+1}	Meta-monitoring Discrepancy T_{x+1}	Pre-emotion T_{x+1}
Squared Identity Discrepancy T_x	-.13*	.31*		
Meta-monitoring Discrepancy T_x	.18*		.10*	
Pre-emotion T_x	.72*			.30*
Emotion T_{x-1}	.04*			

$\chi^2=102.23, df = 47, p=0.01, TLI=.97, CFI= .98, RMSEA= .05, R\chi^2 = 2.2$

* $p < .05$

Overall, these three models demonstrate that both processes are operating to influence the emotions that respondents feel. They also demonstrate the equality in the strength of effects of both processes. A likelihood ratio test did not reject the assumption that these paths are equal and opposite ($\chi^2 = 2.69, df = 1, ns$).

Discussion

Prior research in identity theory has found that the intensity of an emotional response is linked to the size of the discrepancy, with larger discrepancies leading to more intense emotional experiences (Burke and Harrod 2005; Burke and Stets 1999; Burke and Stets 2009). These findings were replicated in this study, providing additional

support for the relationship between identity discrepancies and emotion. As the size of the discrepancy for the student identity grew, more intense negative emotions were reported.

The findings also provide additional support for the relationship between emotions and the meta-monitoring discrepancy discussed in the control model of affect (Carver and Scheier 1998). Individuals who moved faster than expected towards identity verification experienced more positive emotions, while those that progressed slower than expected experienced more negative emotions. Prior research in this area did not measure the expected rate, and instead simply measured how progressing at a fast or slow rate (irrespective of a standard) influenced emotions. This study not only provides additional support for this idea, but also provides a more direct test of the theory.

Identity theory predicts that emotions emerge from an identity discrepancy while the control model of affect predicts that emotions emerge from a meta-monitoring discrepancy. The findings in this study go beyond these two predictions to show how both discrepancies influence emotions. The results show that both discrepancies have an effect on emotions and these effects are relatively equal in strength. This is important for understanding when people may be the most vulnerable to experience extremely negative emotions that could cause them to exit a role or give up on a goal. For example, when failing to verify one's identity *and* failing to progress at the expected rate, individuals would feel greater negative

emotions than if they failed to verify their identity but were progressing at their expected rate.

This additive effect is demonstrated in Figure 11, which graphs the amount of negative emotions experienced depending on the level of identity and meta-monitoring discrepancies. The solid line represents the level of negative emotions resulting from an identity discrepancy when the meta-monitoring discrepancy is zero. In other words, when an individual is progressing towards verification at the rate they expect, this line shows the negative emotion experienced as a result of an identity discrepancy. The equation for this line is based on the coefficient for the effect of a squared identity discrepancy on emotions and is $0.13*x^2$. The dashed line above this represents a negative meta-monitoring discrepancy (set at the level of one standard deviation below the mean). The equation for this line is $0.18+0.13*x^2$. Here, we can see that individuals moving slower than expected toward verification feel worse if they fail to verify their identity than individuals moving toward verification at their expected rate.

Conversely, the dashed line below the solid line shows the relationship between an identity discrepancy and negative emotions for those individuals moving faster than expected towards verification. The equation for this line is $-0.18+0.13*x^2$. The meta-monitoring discrepancy is set to be one standard deviation above the mean. Here, individuals moving faster than expected toward verification will feel lower levels of negative emotions resulting from an identity discrepancy. The relationship between an identity discrepancy and emotions is still the same, as can be seen by the

same curve of the lines, but the level of negative emotions will be more or less depending on the rate of progress compared to the expected rate of progress.

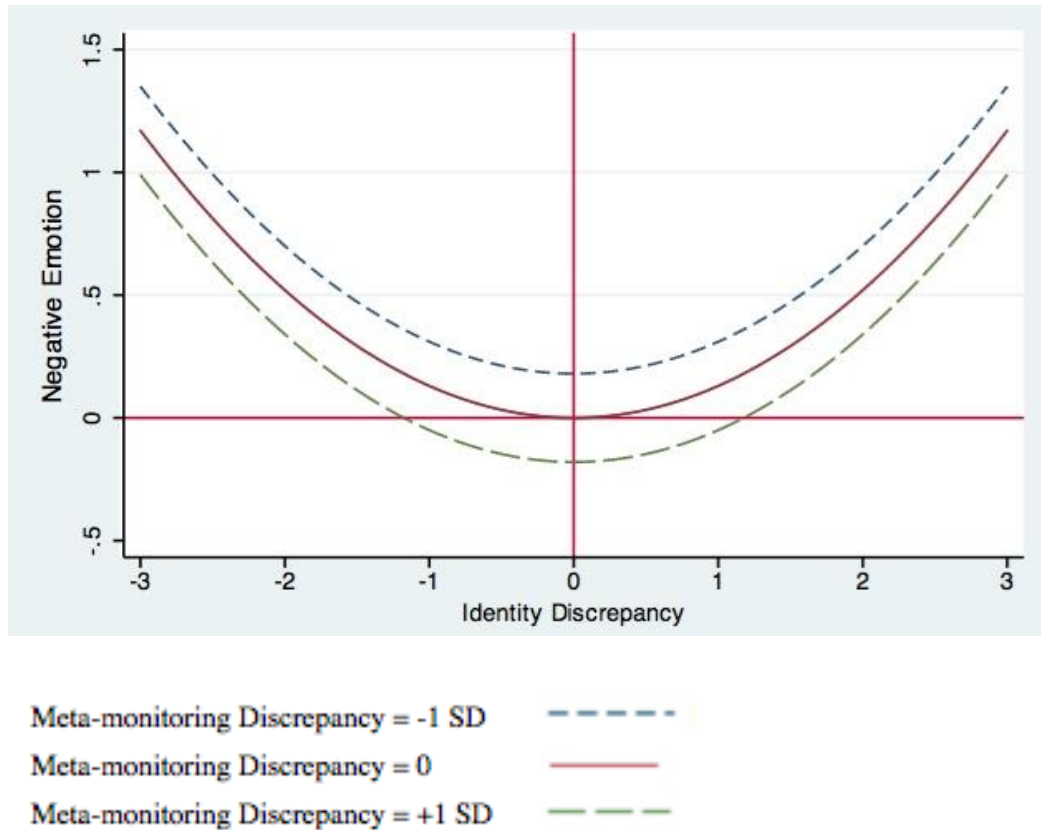


Figure 11. Graph of Negative Emotions Depending on an Identity Discrepancy and Meta-monitoring Discrepancy

This graph also demonstrates the way in which the meta-monitoring discrepancy can work to temper the emotions resulting from an identity discrepancy and allow an individual to more efficiently move back and forth between automatic and deliberative processing. For example, as the solid line shows, if an individual experienced an identity discrepancy equal to “1” this would produce negative

emotions, also triggering a shift in processing to the deliberative level. However, as can be seen by the lower dashed line, if the individual was moving towards verification faster than expected, they would not experience negative emotions in this scenario. This would prevent them from focusing on an identity that does not need increased effort in order to return to verification (since they are already progressing towards verification at their expected rate).

For identity discrepancies larger than “1,” progressing towards verification faster than expected would only temper the negative emotions produced by an identity discrepancy. The negative emotions would then shift the focus to this identity despite the faster rate of progress. On the other hand, if they were progressing slower than expected they would feel even more negative emotion due to an identity discrepancy of “1” and would devote more focus to this identity in a deliberative manner. Since they are failing to verify this identity and not making progress, it would be the better place to focus their efforts than the identity where they are making progress but have not achieved verification yet.

Behavioral Changes

In this analysis, the effects of an identity discrepancy and meta-monitoring discrepancy on behavior are examined.

Descriptive and Bivariate Analyses

Table 7 presents the mean and standard deviations for all variables used in the analysis. All of the variables are distributed normally. The sample size varies slightly across variables due to incomplete data points.

Table 7. Means and Standard Deviations of Standardized Variables Used in Analysis Two

Variables	Mean	SD	Min	Max	N
Linear Identity Discrepancy T ₁	0	1	-3.00	3.12	462
Linear Identity Discrepancy T ₂	0	1	-3.47	2.90	461
Linear Identity Discrepancy T ₃	0	1	-3.70	2.63	461
Meta-monitoring Discrepancy T ₁	0	1	-2.76	2.52	461
Meta-monitoring Discrepancy T ₂	0	1	-3.12	3.60	457
Meta-monitoring Discrepancy T ₃	0	1	-3.31	4.19	462
Behavior T ₁	0	1	-3.58	2.11	463
Behavior T ₂	0	1	-3.26	2.67	463
Behavior T ₃	0	1	-3.34	2.33	463

Table 8 displays the correlation matrix of all variables used in the analysis.

Linear identity discrepancies are correlated with behavior at the expected time points (with a lag between the discrepancy and behavior) indicating that people change their behaviors in order to counter a discrepancy (T₂: $r = -.10, p < .05$; T₃: $r = -.10, p < .05$). This is consistent with past findings in identity theory (Burke 2006). The meta-monitoring discrepancy does not demonstrate this consistent pattern. The only significant correlation between the meta-monitoring discrepancy and behavior is between both variables at T₁ (T₁: $r = .11, p < .05$). This suggests that the coasting effect discussed by Carver and Scheier (1998) may not be supported by these findings. Each of the discrepancies and behavior measures are correlated with their equivalent measures at other time points. The linear identity discrepancy and meta-monitoring discrepancy are also correlated at each time point (T₁: $r = .74, p < .05$, T₂:

$r = -.64, p < .05$; T₃: $r = -.63, p < .05$). Structural equation models are used to further investigate the relationships among these variables.

Table 8. Correlations among Variables Used in Analysis Two (N=463)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Linear Identity Discrepancy T ₁	1.00								
(2) Linear Identity Discrepancy T ₂	.27*	1.00							
(3) Linear Identity Discrepancy T ₃	.18*	.24*	1.00						
(4) Meta-monitoring Discrepancy T ₁	.74*	.16*	.12*	1.00					
(5) Meta-monitoring Discrepancy T ₂	.04	.64*	.09*	.13*	1.00				
(6) Meta-monitoring Discrepancy T ₃	.06	-.08	.63*	.10*	-.01	1.00			
(7) Behavior T ₁	.02	.01	.00	.11*	.02	.03	1.00		
(8) Behavior T ₂	-.10*	-.01	-.04	-.04	.05	-.02	.56*	1.00	
(9) Behavior T ₃	-.14*	-.10*	-.02	-.05	-.01	.02	.44*	.59*	1.00

* $p < .05$

Multivariate Findings

Table 9 displays the results of an SEM designed to test Hypothesis 6, which states that individuals will change their behavior to counter an identity discrepancy. If this hypothesis is supported, the linear identity discrepancy will be inversely related to behavior. The model fits the data well ($\chi^2 = 3.97, df = 4, p = 0.41, TLI = 1.00, CFI = 1.00, RMSEA = .00, R\chi^2 = 0.99$), with fit measures falling within acceptable ranges. A likelihood ratio test demonstrated that effects did not differ for the constrained and unconstrained models ($\chi^2 = 3.83, df = 2, ns$).

Table 9. Standardized Coefficients for Effects of Identity Discrepancy on Behavior (N=463)

	Behavior T _x	Linear Identity Discrepancy T _x
Linear Identity Discrepancy T _{x-1}	-.11*	.27*
Behavior T _{x-1}	.57*/.12* ^a	

$\chi^2 = 3.97, df = 4, p = 0.41, TLI = 1.00, CFI = 1.00, RMSEA = .00, R\chi^2 = 0.99$

* $p < .05$

^a Effects from T₁ to T₃

Linear identity discrepancies are inversely related to behavior at each time point ($\beta = -.11, p < .05$). This finding supports Hypothesis 6. Individuals adjust their behavior in a manner that counters an identity discrepancy. These results also indicate the amount of behavioral adjustments are in accordance with the size of the discrepancy. For example, if students fell far short of verifying their identity, they would make a larger adjustment to their number of behaviors than those that were close to verifying their identity. This finding is consistent with prior work on identity discrepancies and behavior (Burke 1999, Swann and Hill 1982). The effects of a linear identity discrepancy on behavior did not differ based on gender (T₁₋₂: $\chi^2 = 2.37, df = 3, ns$; T₂₋₃: $\chi^2 = 1.14, df = 2, ns$) or major (T₁₋₂: $\chi^2 = 4.28, df = 3, ns$; T₂₋₃: $\chi^2 = 1.86, df = 2, ns$).

Table 10 displays the results of an SEM designed to test Hypothesis 7, which states that individuals will adjust their behavior to counter a meta-monitoring discrepancy. Individuals moving faster than expected towards identity verification will reduce their efforts while those moving slower than expected towards identity verification will increase their efforts. The model fits the data well ($\chi^2 = 4.44, df = 4,$

$p = 0.35$, TLI = 1.00, CFI = 1.00, RMSEA = .02, $R\chi^2 = 1.11$). A likelihood ratio test demonstrated that effects did not differ for the constrained and unconstrained models ($\chi^2 = 2.27$, $df = 2$, ns).

Table 10. Standardized Coefficients for Effects of Meta-monitoring Discrepancy on Behavior (N=463)

	Behavior T_x	Meta-monitoring Discrepancy T_x
Meta-monitoring Discrepancy T_{x-1}	-.07*	.13*
Behavior T_{x-1}	.57*/.12* ^a	

$\chi^2 = 4.44$, $df = 4$ $p = 0.35$, TLI = 1.00, CFI = 1.00, RMSEA = .02, $R\chi^2 = 1.11$

* $p < .05$

^a Effects from T_1 to T_3

As can be seen in Table 10, meta-monitoring discrepancies are negatively related to behavior at each time point ($\beta = -.07$, $p < .05$). Individuals reduce their efforts as they move towards verification at a rate that is faster than expected. Conversely, they increase their efforts when they move towards verification at a rate slower than expected. The effects of a meta-monitoring discrepancy on behavior did not differ based on gender (T_{1-2} : $\chi^2 = 4.62$, $df = 3$, ns; T_{2-3} : $\chi^2 = 4.46$, $df = 2$, ns) or major (T_{1-2} : $\chi^2 = 2.74$, $df = 3$, ns; T_{2-3} : $\chi^2 = 2.46$, $df = 2$, ns). This finding is consistent with prior work on meta-monitoring discrepancies and behavior and supports Hypothesis 7 (Carver and Scheier 1998, Cervone et al. 1994). However, additional support for Hypothesis 7 was not found when modeling the effects of both discrepancies on behavior.

Table 11 displays the results for a model including both the linear identity discrepancy and the meta-monitoring discrepancy. These results allow us to see the

effect of each discrepancy on behavior when controlling for the other discrepancy. The model in Table 11 fits the data well ($\chi^2 = 20.63$, $df = 10$, $p = 0.02$, TLI = .97, CFI = .99, RMSEA = .05, $R\chi^2 = 2.10$). These results show a significant effect for the linear identity discrepancy ($\beta = -.11$, $p < .05$) on behavior and a non-significant effect of the meta-monitoring discrepancy on behavior. When the identity discrepancy is controlled for, the effect of the meta-monitoring discrepancy on behavior disappears. When modeled together that the meta-monitoring discrepancy does not have a significant effect on behavior, and it is only the identity discrepancy that has a significant effect.

Table 11. Standardized Coefficients for Effects of Meta-monitoring Discrepancy and Identity Discrepancy on Behavior (N=463)

	Behavior T _x	Linear Identity Discrepancy T _x	Meta-monitoring Discrepancy T _x
Linear Identity Discrepancy T _{x-1}	-.11*	.35*	
Meta-monitoring Discrepancy T _{x-1}	.00		.21*
Behavior T _{x-1}	.57*/.12* ^a		

$\chi^2 = 20.63$, $df = 10$ $p = 0.02$, TLI = .97, CFI = .99, RMSEA = .05, $R\chi^2 = 2.10$

* $p < .05$

^a Effects from T₁ to T₃

Overall, these models demonstrate the effect of the linear discrepancy on behaviors and provide support for Hypothesis 6. Hypothesis 7 stating that the meta-monitoring discrepancy would also have an effect on behavior was not supported when controlling for the linear identity discrepancy.

Discussion

Prior work has found that individuals adjust their behavior in response to an identity discrepancy (Burke 2006, Swann and Hill 1982). However, this effect on behavior has not been extensively examined empirically. The findings in this study provide additional empirical support for the theorized relationship between an identity discrepancy and behavior. As the size of the discrepancy in the student identity grew, increased changes in behavior were reported. These changes in behavior were in the expected direction. Those students that thought people viewed them as better students than they saw themselves reduced their efforts. Those students that thought people viewed them as worse students increased their efforts.

The meta-monitoring discrepancy has the predicted effect on behavior as well. Individuals reduced their efforts when exceeding their standard and increased them when falling short of their standard. However, the meta-monitoring discrepancy did not have a significant effect on behavior when controlling for the identity discrepancy. This indicates that behavior may be influenced more by how far we are from verification, or a goal, than by the pace at which we are approaching verification. This finding shows that the control model of affect could make more precise predictions regarding behavior if it examined the influence of a discrepancy in the action loop on behavior instead of focusing on the link between the meta-monitoring discrepancy and behavior. However, it is important to note that Carver and Scheier (1998) discuss the types of behavioral changes following a meta-monitoring discrepancy to be in terms of the *intensity* of behavior. The measure used

here captured the addition and subtraction of multiple types of behaviors, but did not capture the increase or decrease of intensity for any behaviors. This limitation will be discussed in more detail in the general discussion.

In identity theory, behavior is adjusted in order to reduce the negative emotions experienced as a result of an identity discrepancy in either direction. In order to further understand the influences of these discrepancies on behavior, the role of emotion in this relationship is further explored in the fourth analysis after exploring the effects of discrepancies on changes in the identity standard and meta-monitoring standard.

Cognitive Changes

In this analysis, the effects of an identity discrepancy on changes in one's identity standard as well as the effects of a meta-monitoring discrepancy on one's meta-monitoring standard are examined.

Descriptive and Bivariate Analyses

Table 12 presents the mean and standard deviations for all variables used in the analysis. All of the variables are distributed normally. The sample size varies slightly across variables due to incomplete data points.

Table 12. Means and Standard Deviations of Standardized Variables Used in Analysis Three

Variables	Mean	SD	Min	Max	N
Linear Identity Discrepancy T ₁	0	1	-3.00	3.12	462
Linear Identity Discrepancy T ₂	0	1	-3.47	2.90	461
Linear Identity Discrepancy T ₃	0	1	-3.70	2.63	461
Identity Standard T ₁	0	1	-3.73	1.53	463
Identity Standard T ₂	0	1	-3.50	1.48	463
Identity Standard T ₃	0	1	-3.77	1.34	462
Meta-monitoring Discrepancy T ₁	0	1	-2.76	2.52	461
Meta-monitoring Discrepancy T ₂	0	1	-3.12	3.60	457
Meta-monitoring Discrepancy T ₃	0	1	-3.31	4.19	462
Meta-monitoring Standard T ₁	0	1	-3.23	1.44	462
Meta-monitoring Standard T ₂	0	1	-3.49	1.26	459
Meta-monitoring Standard T ₃	0	1	-3.52	1.07	463

Table 13 displays the correlation matrix of all variables used in the analysis.

Linear identity discrepancies are correlated with identity standards in the same time point (T₁: $r = -.34, p < .05$, T₂: $r = -.31, p < .05$; T₃: $r = -.32, p < .05$). However, the relationship between a prior discrepancy on changes in one's identity standard is the focus of these analyses in order to see how people change their identity in a response to a prior discrepancy. Examining the correlations between one's identity standard and the identity discrepancy at the prior time point, only the standard at T₂ is correlated with the discrepancy at a prior time point (T₂: $r = .15, p < .05$).

Table 13. Correlations among Variables Used in Analysis Three (N=463)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Linear Identity Discrepancy T ₁	1.00											
(2) Linear Identity Discrepancy T ₂	.27*	1.00										
(3) Linear Identity Discrepancy T ₃	.18*	.24*	1.00									
(4) Identity Standard T ₁	-.34*	-.15*	-.17*	1.00								
(5) Identity Standard T ₂	-.15*	-.31*	-.15*	.65*	1.00							
(6) Identity Standard T ₃	-.08	-.08	-.32*	.56*	.62*	1.00						
(7) Meta-monitoring Discrepancy T ₁	.74*	.16*	.12*	.01	.01	.00	1.00					
(8) Meta-monitoring Discrepancy T ₂	.04	.64*	.09*	.05	.13*	.10*	.13*	1.00				
(9) Meta-monitoring Discrepancy T ₃	.06	-.08	.63*	.02	.02	.12*	.10*	-.01	1.00			
(10) Meta-monitoring Standard T ₁	-.04	.02	-.10*	.42*	.36*	.39*	-.46*	-.09*	-.03	1.00		
(11) Meta-monitoring Standard T ₂	.15*	.12*	.04	.33*	.33*	.33*	.03	-.41*	-.07	.46*	1.00	
(12) Meta-monitoring Standard T ₃	.03	.28*	-.02	.30*	.39*	.43*	.01	.21	-.48*	.30*	.44*	1.00

* $p < .05$

The meta-monitoring discrepancy also does not demonstrate a consistent pattern when examining these relationships. Again, the meta-monitoring discrepancies are only correlated with the meta-monitoring standards at the same time points (T₁: $r = -.46, p < .05$, T₂: $r = -.41, p < .05$; T₃: $r = -.48, p < .05$). Each of the discrepancies and standard measures are correlated with their equivalent measures at other time points. The linear identity discrepancy and meta-monitoring discrepancy are also highly correlated at each time point (T₁: $r = .74, p < .05$, T₂: $r = -.63, p < .05$; T₃: $r = -.60, p < .05$) as well as the identity standard and meta-monitoring standard at each time point (T₁: $r = .42, p < .05$, T₂: $r = .33, p < .05$; T₃: $r = .43, p < .05$). Structural equation models are used to further investigate the relationships among these variables.

Multivariate Findings

Table 14 displays the results of a SEM designed to test Hypothesis 8, which states that a linear identity discrepancy will be inversely related to the identity standard. The model fits the data well ($\chi^2 = 4.49, df = 3, p = 0.21$, TLI = .99, CFI = 1.00, RMSEA = .03, $R\chi^2 = 1.50$) with fit measures falling within acceptable ranges. A likelihood ratio test demonstrated that effects did not differ for the constrained and unconstrained models ($\chi^2 = 2.77, df = 2, ns$).

Table 14. Standardized Coefficients for Effects of Identity Discrepancy on Identity Standard (N=463)

	Identity Standard T _x	Linear Identity Discrepancy T _x
Linear Identity Discrepancy T _{x-1}	.11*	.26*
Identity Standard T _{x-1}	.67*/.13* ^a	

$\chi^2 = 4.49, df = 3, p = 0.21, TLI = .99, CFI = 1.00, RMSEA = .03, R\chi^2 = 1.50$

* $p < .05$

^a Effects from T₁ to T₃

Linear identity discrepancies are positively related to one's standard at each time point ($\beta = .11, p < .05$). This finding supports Hypothesis 8. Individuals adjust their standards in a manner that reduces an identity discrepancy. These results also indicate the size of adjustments in the identity standard are in accordance with the size of the discrepancy. For example, if students fell far short of verifying their identity, they might make large adjustments in their standard, but would only make minor cognitive adjustments if they were close to verifying their identity. This finding is consistent with prior work on identity discrepancies and identity change (Burke 2006). The effects of a linear identity discrepancy on identity change did not differ based on gender (T₁₋₂: $\chi^2 = 3.67, df = 3, ns$; T₂₋₃: $\chi^2 = 3.17, df = 2, ns$) or major (T₁₋₂: $\chi^2 = 3.64, df = 3, ns$; T₂₋₃: $\chi^2 = 1.89, df = 2, ns$).

Table 15 displays the results of a SEM set up to test Hypothesis 9, which states that individuals will adjust their meta-monitoring standard in the direction of a meta-monitoring discrepancy. Individuals moving faster than expected towards identity verification will increase their expected rate of progress, while those moving slower than expected towards identity verification will decrease their expected rate of progress. The model fits the data well ($\chi^2 = 2.30, df = 4, p = 0.51, TLI = 1.00, CFI =$

1.00, RMSEA = .00, $R\chi^2 = 0.58$), with fit measures falling within acceptable ranges.

A likelihood ratio test demonstrated that effects did not differ for the constrained and unconstrained models ($\chi^2 = 1.53$, $df = 2$, ns).

Table 15. Standardized Coefficients for Effects of Meta-monitoring Discrepancy on Meta-monitoring Standard (N=463)

	Meta-monitoring Standard T_x	Meta-monitoring Discrepancy T_x
Meta-monitoring Discrepancy T_{x-1}	.30*	.13*
Meta-monitoring Standard T_{x-1}	.55*/.08* ^a	

$\chi^2 = 2.30$, $df = 4$ $p = 0.51$ TLI = 1.00, CFI = 1.00, RMSEA = .00, $R\chi^2 = 0.58$

* $p < .05$

^a Effects from T_1 to T_3

As can be seen in Table 15, meta-monitoring discrepancies are positively related to the meta-monitoring standard at each time point ($\beta = .30$, $p < .05$). This finding supports Hypothesis 9. Individuals increase their expected rate of progress as they move towards verification at a rate that is faster than expected and conversely, decrease this expectation when they move towards verification at a rate slower than expected. This finding provides empirical support for the theoretical statement in the control model of affect that meta-monitoring discrepancies will cause small shifts in the meta-monitoring standard (Carver and Scheier 1998). The effects of a meta-monitoring discrepancy on changing expectations did not differ based on gender (T_{1-2} : $\chi^2 = 3.42$, $df = 3$, ns; T_{2-3} : $\chi^2 = 2.28$, $df = 2$, ns) or major (T_{1-2} : $\chi^2 = 4.77$, $df = 3$, ns T_{2-3} : $\chi^2 = 4.61$, $df = 2$, ns).

Discussion

These findings are consistent with Burke's (2006) results, showing that an identity discrepancy leads to changes in the identity standard. However, these changes in the identity standard emerged in a matter of weeks as opposed to over the course of years. Status differences and the nature of the feedback could account for the changes in the student identity occurring so quickly.

Students in this study received feedback from higher status professors. Higher status individuals have been found to have a greater influence on the self-views of lower status individuals (Cast, Stets, and Burke 1999). Not only may higher status actors' influence be greater, but the responsiveness by lower status actors to take corrective action given an identity discrepancy might be quicker. In Burke's (2006) study, the individuals were more likely to have equal status (spouses) thus the impact of an identity discrepancy may have influenced a slower corrective response.

The nature of the feedback examined in this study also could have contributed to the quicker response of identity change. The feedback one receives from their spouse is often informal, but the feedback students receive from their professors in the form of grades is formal. Formal feedback could be more influential because it may be more likely to be perceived as accurate or honest as opposed to the feedback we often receive from family and friends.

These findings do not challenge the view of an identity as relatively stable. However, when individuals receive information that they think is discrepant with how

they see themselves, they may adjust their self-view quicker than previously expected. This could be true particularly when the other is of higher status and the feedback is through formal mechanisms.

The control model of affect views changes in the meta-monitoring standard in a similar manner, in that they are expected to occur very slowly over time in response to a discrepancy in the meta-monitoring loop (Carver and Scheier 1998). This idea has never been empirically tested. These findings support the hypothesis that the meta-monitoring standard shifts based on a meta-monitoring discrepancy, but again, this shift occurs fairly quickly. This finding indicates that people shift the rate at which they expect to achieve a goal based on how quickly or slowly they are progressing relative to their original expected pace.

Similar to the relationship between identity discrepancies and behavior, the relationship between identity discrepancies and identity standards is also expected to be influenced by emotions. According to identity theory, individuals change their identities in response to a discrepancy in order to reduce the negative emotions associated with the discrepancy. This means we would expect to see greater changes in an identity standard for those individuals experiencing greater levels of negative emotions as a result of an identity discrepancy. These issues are explored in the following analysis.

Behavioral and Cognitive Changes Accounting for Emotions

In this analysis, the effects of an identity discrepancy on behavioral and cognitive changes are examined while also accounting for the emotions resulting from this discrepancy.

Descriptive and Bivariate Analyses

Table 16 presents the mean and standard deviations for all variables used in the analysis. All of the variables are distributed normally. The sample size varies slightly across variables due to incomplete data points.

Table 16. Means and Standard Deviations of Standardized Variables Used in Analysis Four

Variables	Mean	SD	Min	Max	N
Linear Identity Discrepancy T ₁	0	1	-3.00	3.12	462
Linear Identity Discrepancy T ₂	0	1	-3.47	2.90	461
Linear Identity Discrepancy T ₃	0	1	-3.70	2.63	461
Behavior T ₁	0	1	-3.58	2.11	463
Behavior T ₂	0	1	-3.26	2.67	463
Behavior T ₃	0	1	-3.34	2.33	463
Identity Standard T ₁	0	1	-3.73	1.53	463
Identity Standard T ₂	0	1	-3.50	1.48	463
Identity Standard T ₃	0	1	-3.77	1.34	462
Emotion T ₁	0	1	-2.19	1.98	459
Emotion T ₂	0	1	-2.48	1.91	461
Emotion T ₃	0	1	-2.48	1.71	459
Linear Identity Disc*Emotion T ₁	0	1	-4.30	4.55	458
Linear Identity Disc*Emotion T ₂	0	1	-3.28	4.28	459
Linear Identity Disc*Emotion T ₃	0	1	-4.72	3.92	457

Table 17 displays the correlation matrix of all variables used in the analysis. As discussed in the results for analysis two, linear identity discrepancies are correlated with behavior at the next time point, indicating that people change their behaviors in order to counter a discrepancy ($T_2: r = -.10, p < .05$; $T_3: r = -.10, p < .05$). However, there is not a significant correlation between the interaction effect and behaviors. As discussed in analysis three, the relationship between a prior identity discrepancy on identity change does not display a clear pattern. Only the standard at T_2 is correlated with the discrepancy at a prior time point ($T_2: r = .15, p < .05$). The interaction effect including both the discrepancy and emotions is significantly correlated with the identity standard at a later time point ($T_2: r = -.13, p < .05$; $T_3: r = -.13, p < .05$) indicating possible support for Hypothesis 11. Structural equation models are used to further investigate the relationships among the variables in a more systematic fashion.

Table 17. Correlations among Variables Used in Analysis Four (N=463)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) LI D T ₁	1.00														
(2) LI D T ₂	.27*	1.00													
(3) LI D T ₃	.18*	.24*	1.00												
(4) Behavior T ₁	.02	.01	.00	1.00											
(5) Behavior T ₂	-.10*	-.01	-.04	.56*	1.00										
(6) Behavior T ₃	-.15*	-.10*	-.02	.44*	.59*	1.00									
(7) Identity Standard T ₁	-.34*	-.15*	-.17*	.20*	.18*	.16*	1.00								
(8) Identity Standard T ₂	-.15*	-.31*	-.15*	.14*	.23*	.18*	.65*	1.00							
(9) Identity Standard T ₃	-.08	-.08	-.32*	.13*	.20*	.11*	.56*	.62*	1.00						
(10) Emotion T ₁	.42*	-.16*	.07	.04	-.17*	-.16*	.10*	.04	.07	1.00					
(11) Emotion T ₂	-.04	.50*	.04	.02	.04	-.06	.16*	.17*	-.21*	.22*	1.00				
(12) Emotion T ₃	.04	.06	.46*	-.04	.00	-.10*	.10*	-.10*	-.22*	.14*	.22*	1.00			
(13) LI D *Emotion T ₁	.87*	.23*	.15*	-.01	-.08	-.11*	-.36*	-.13*	-.11*	.20*	-.07	-.02	1.00		
(14) LI D *Emotion T ₂	.24*	.84*	.22*	.00	-.01	-.05	-.19*	-.33*	-.13*	.08	.26*	.00	.27*	1.00	
(15) LI D *Emotion T ₃	.16*	.21*	.87*	.02	-.02	.04	-.20*	-.18	-.34*	.02	.01	.25*	.17*	.21*	1.00

LI D = Linear Identity Discrepancy

* $p < .05$

Multivariate Findings

Table 18 displays the results of a SEM designed to test Hypothesis 10, which states that emotions will increase the effect of an identity discrepancy on behavior. The model fits the data well ($\chi^2 = 32.36$, $df = 19$, $p = 0.03$, TLI = .98, CFI = .99, RMSEA = .05), with fit measures falling within acceptable ranges. The interaction effect is not significant, but the effect of the linear identity discrepancies on behavior remains significant ($\beta = -.12$, $p < .05$). Emotions also have a significant effect on behavior and are inversely related to behaviors at each time point ($\beta = -.10$, $p < .05$). This finding does not support Hypothesis 10. As individuals experience more negative emotions, they did not change their behavior more in order to counter an identity discrepancy. Instead, individuals experiencing greater levels of positive emotions were more likely to decrease their behavior, while those experiencing greater levels of negative emotion were more likely to increase their behavior. Possible explanations for this finding are outlined in the discussion.

Table 18. Standardized Coefficients for Effects of Identity Discrepancy and Emotion on Behavior (N=463)

	Behavior T _x	Linear Identity Discrepancy T _x	Emotion T _x	Linear Identity Disc. *Emotion T _x
Linear Identity Discrepancy T _{x-1}	-.12*	.33*		
Behavior T _{x-1}	.63*			
Emotion T _{x-1}	-.10*		.21*	
Linear Identity Disc. *Emotion T _{x-1}	.07			.29*

$\chi^2 = 32.36$, $df = 19$, $p = 0.03$, TLI = .98, CFI = .99, RMSEA = .05

* $p < .05$

Table 19 displays the results of a SEM designed to test Hypothesis 11, which states that emotions will increase the effect of an identity discrepancy on one's identity standard. The model fits the data well according to all model fit statistics except for the RMSEA which is just above .05 ($\chi^2 = 39.70$, $df = 16$, $p = 0.07$, TLI = .96, CFI = .98, RMSEA = .06).⁷ As can be seen in Table 19, the identity discrepancy and emotions do not have significant direct effects on identity standard. However, the interaction effect does have a significant effect on the identity standard ($\beta = .15$, $p < .05$). Since this relationship is positive, this finding does not support Hypothesis 11. Instead it shows that the more positive people feel as a result of an identity discrepancy, the more they will shift their identity standard in the direction of that standard. In other words, when people experience a discrepancy and feel good about it, they were more likely to shift their identity standard in the direction of the discrepancy. This finding is inconsistent with the identity theory prediction that identity change resulting from a discrepancy would occur in an effort to reduce negative emotions. If replicated in future studies, this may provide insight for theory refinement in terms of the emotional motivation for identity change resulting from identity discrepancies.

⁷ An RMSEA value below .08 is said to indicate adequate fit (Browne and Cudeck 1993; MacCallum et al. 1996).

Table 19. Standardized Coefficients for Effects of Identity Discrepancy and Emotion on the Identity Standard (N=463)

	Identity Standard T_x	Linear Identity Discrepancy T_x	Emotion T_x	Linear Identity Disc.*Emotion T_x
Linear Identity Discrepancy T_{x-1}	-.01	.31*		
Identity Standard T_{x-1}	.65*			
Emotion T_{x-1}	-.01		.21*	
Linear Identity Disc.*Emotion T_{x-1}	.15*			.28*

$\chi^2 = 39.70, df = 16, p = 0.07, TLI = .96, CFI = .98, RMSEA = .06$

* $p < .05$

Discussion

These findings shed more light on the role of emotions in motivating responses to a discrepancy. Identity theory assumes that individuals change their behavior in a manner that counters a discrepancy in order to reduce the negative emotions associated with that discrepancy. This theoretical link had not been empirically tested. While this interaction effect was not found, both the linear identity discrepancy and emotions had a significant effect on changes in behavior. Those that believed others viewed them better than they viewed themselves reduced their behavioral efforts while those that believed others viewed them worse than they viewed themselves increased their behaviors. Negative emotions were found to lead to increases in behavior, while positive emotions were found to lead to decreases in behavior. This could be indicative of a “coasting” effect discussed by Carver and Scheier (1998) where positive emotions indicate individuals are doing well in one identity or area of life and can shift their focus to another, thereby decreases their efforts in the area they are doing well.

This finding could also be due to the limitations of the behavioral measure. Since it simply captures additions or subtractions of behaviors, and not levels of investment in any one study strategy, changes in behavior could be occurring that are not captured by the data. For example, imagine a student whose method of studying for the first exam was to review the readings and their notes. If this student studied for the second exam by spending twice as much time reviewing the readings and their notes, their behavior would have changed, but the measure asking them to select the methods they used to study would not have captured this change. Future studies should explore this link using a measure of behavior that can capture changes in intensity of an activity (such as time spent) as well as changes in type of activities (such as reviewing notes or visiting a professor's office hours).

The link between identity discrepancies, emotions, and identity change has also been theorized but not tested. It is assumed that identity change also occurs as a result of individuals trying to decrease the negative emotions associated with an identity discrepancy. However, this data suggests a different process is at play. The identity discrepancy did not have a direct effect on one's identity standard. Only the interaction effect was significant. When people experienced an identity discrepancy *and* experienced positive emotions associated with this discrepancy, they shifted their identity standard in the direction of the discrepancy.

The motivation in this case may not be to reduce negative emotions, but is instead connected to feeling good as a result of a discrepancy. This may occur when people experience a discrepancy in the positive direction and believe they can live up

to a standard at that level. In that case, they may not experience negative emotions (such as fear) from the discrepancy and would instead feel good and shift their standard in the direction of that feedback. Similarly, an individual could experience a discrepancy in the negative direction and think they are not capable of doing better. In this case, they may not experience negative emotions and instead feel positive emotions (possibly centered around relief) and shift their standard toward this feedback. Self-esteem, particularly self-efficacy, could play a role in how people shift their self-view based on discrepant feedback. This possible explanation for this unexpected finding will be discussed in more detail in the next chapter.

CHAPTER 5: DISCUSSION

The goal of this dissertation is to extend identity theory and the control model of affect by jointly testing the impact of two discrepancies on emotions, behavior, and cognitive changes. Identity theory emphasizes the discrepancy between one's self-view and the way others see one's self. In identity theory, it is this discrepancy that is expected to produce emotions, changes in behavior, and changes in one's self-view. Conversely, the control model of affect emphasizes the difference between how one is progressing towards identity verification (or another goal) and their expected rate of progress. In the control model of affect, it is this discrepancy that results in emotions, changes in behavior, and changes in one's expected progress.

As can be seen in the summary of hypotheses and results in Table 20, the findings in this dissertation begin to clarify how both processes are at play. The basic identity theory prediction that squared identity discrepancies lead to negative emotions was supported. The larger the difference between students' views of themselves and how they thought others viewed them, the more negative emotions they reported. This is consistent with prior work and adds to the existing body of empirical work that demonstrates this process. This finding also provides further evidence against the stance Carver and Scheier (1998) take that emotions do not result from the action loop.

Table 20. Summary of Hypotheses and Results

Emotions Hypotheses	Supported?
H ₁ : Individuals will experience negative emotions when their identity is not verified.	Yes
H ₂ : The meta-monitoring discrepancy will have a linear, positive effect on emotions such that individuals will experience negative emotions when they fail to meet their meta-monitoring standard and positive emotions when they exceed this standard.	Yes
H ₃ : The direct negative effect of an identity discrepancy on emotions will be moderated by the meta-monitoring discrepancy such that individuals with a negative meta-monitoring discrepancy (progressing slower than expected) will experience more negative emotions as a result of an identity discrepancy and those with a positive meta-monitoring discrepancy (progressing faster than expected) will experience less negative emotions as a result of an identity discrepancy.	No
H ₄ : The meta-monitoring discrepancy will have a direct positive effect on emotions that is moderated by the identity discrepancy. An identity discrepancy will increase the negative emotions resulting from a negative meta-monitoring discrepancy and increase the positive emotions resulting from a positive meta-monitoring discrepancy.	No
H ₅ : The meta-monitoring discrepancy will have a positive effect on emotions and the identity discrepancy will have a negative effect on emotions. These effects will be independent of one another.	Yes
Behavior Hypotheses	
H ₆ : Individuals will adjust their behavior to counter an identity discrepancy.	Yes
H ₇ : Individuals will adjust their behavior to counter a meta-monitoring discrepancy.	Yes*
Cognitive Hypotheses	
H ₈ : Individuals will adjust their identity standard in the direction of an identity discrepancy.	Yes
H ₉ : Individuals will adjust their meta-monitoring standard in the direction of the meta-monitoring discrepancy.	Yes
Emotions, Behavior, and Cognitive Hypotheses	
H ₁₀ : The worse individuals feel, the more they will change their behavior to counter an identity discrepancy.	No
H ₁₁ : The worse individuals feel, the more they will change their identity standard to reduce an identity discrepancy.	No

*When including both discrepancies in the model, the meta-monitoring discrepancy did not have a significant effect on behavior.

The basic control model of affect prediction that individuals will experience negative emotions when they fail to meet their meta-monitoring standard and positive emotions when they exceed this standard was also supported. Students progressing slower than expected towards the verification of their student identity reported negative emotions while those progressing faster than expected reported positive emotions. This finding makes an important contribution to the existing empirical work examining the control model of affect prediction because it provides a clearer test of the theoretical predictions than prior work has provided. Prior work has failed to clearly measure the meta-monitoring standard. Subsequently, this analysis of the effects of the meta-monitoring discrepancy on emotions is a better assessment of the theoretical predictions.

An additive effect of the two discrepancies was also found. This novel finding demonstrates how both discrepancies can operate to influence the emotions individuals experience in a situation. For example, individuals will experience more negative emotions when experiencing an identity discrepancy if they are progressing toward verification at a rate slower than expected. Conversely, they will experience less negative emotions when experiencing the same identity discrepancy if they are progressing toward verification faster than expected. This finding indicates that both theories could make more accurate predictions of emotions if they accounted for the emotions resulting from both discrepancies. Doing this would allow for the theories to broaden their focus to include both the effect of where the individual is currently at compared to their standard as well as their rate of progress compared to their expected

rate of progress. This allows for emotions to be examined that result from a series of events while still giving proper weight to emotions resulting from the current situation.

In addition to examining emotions, this dissertation also examined the behavioral changes resulting from both discrepancies. The identity theory predictions regarding changes in behavior resulting from an identity discrepancy were also supported. Students adjusted their behavior in a manner that countered an identity discrepancy. If they failed to meet their identity standard, they increased the ways in which they studied for the next exam. If they exceeded their identity standard they reduced the ways in which they studied for the next exam. The extent to which individuals changed their behavior was proportional to the size of their discrepancy. Those that reported a large difference between how they viewed themselves and how they thought others viewed themselves made more changes in their behavior than those that reported a small discrepancy. This finding adds to prior empirical work examining behavioral changes resulting from identity discrepancies (Asencio and Burke 2011; Burke and Reitzes 1981; Cast 2003b).

The control model of affect prediction of behavioral changes resulting from a meta-monitoring discrepancy, which had not been tested before, was supported, but only before accounting for the identity discrepancy. When only examining the meta-monitoring discrepancy, individuals reduced their efforts on an exam if they had moved faster than expected towards verification. Conversely, they increased their efforts on an exam if they had been moving slower than expected towards identity

verification. However, when accounting for both the meta-monitoring discrepancy and identity discrepancy at once, the effect of the identity discrepancy on behavior was the only effect that remained significant. This indicates that the control model of affect prediction that behavioral changes result from the meta-monitoring loop may be incorrect. Instead the findings indicate that behavioral changes may be influenced more by what is occurring in the “action loop,” or the distance one is from their goals. This finding could also be due to the incomplete nature of the behavioral measure, which will be discussed in more detail later in this chapter.

Findings also provide support for the identity theory prediction regarding identity change. Individuals adjusted their identity standard in the direction of their identity discrepancy. This adjustments serves to reduce an identity discrepancy. For example, if a student felt others viewed them worse than they viewed themselves, they shifted their self-view to be more negative than it was. Similarly, if students felt others viewed them better than they viewed themselves as a student, they shifted their self-view to be more positive than it was. This finding provides additional empirical support for identity change and also has implications for the pace at which identity change can occur. Identity change has been theorized to occur slowly over time, barring some extreme event, but the identity change in this study was present over a much shorter period of time than has been demonstrated in prior studies.

The control model of affect prediction that individuals will adjust their expectations as a result of a meta-monitoring discrepancy had not been empirically tested. The findings support this prediction. Students who were progressing faster

than expected towards verification shifted their expectations to be faster while those progressing slower than expected shifted their expectations to be slower.

Two novel tests of identity theory predictions were not supported. The first was that the effect of an identity discrepancy on behavior would be greater when a discrepancy was accompanied by higher levels of negative emotions. Emotions and the identity discrepancy had a direct effect on changes in behavior, but the interaction effect between the identity discrepancy and emotions did not. This finding supports the idea that a discrepancy leads to changes in behavior, but future research will need to continue to examine how emotions motivate individuals to change their behavior following an identity discrepancy. This finding suggests a “coasting effect” where positive emotions lead to a decrease in behavior, as discussed in the control model of affect, that would need to be tested in future research (Carver and Sheier 1998).

The role of emotions on the effect of an identity discrepancy on identity change had also not been tested empirically prior to this study. Again, the findings did not support the theoretical prediction that individuals would be more likely to change their identity as a result of a discrepancy if that discrepancy was accompanied by negative emotions. In fact, just the opposite was found. Individuals that had more positive feelings associated with a discrepancy were more likely to shift their identity standard in the direction of the discrepancy.

One possible explanation for this could revolve around self-efficacy. It is possible that individuals with higher levels of self-efficacy would be more likely to feel good about positive feedback and shift their identity in the direction of that

feedback. One's high levels of self-efficacy could reduce or eliminate the fear often felt when individuals think others view them more positively than they view themselves. Their high levels of self-efficacy would make them more likely to believe they could become that more positive version of themselves and shift their standard. Conversely, those with lower levels of self-efficacy may not feel as bad about disconfirming feedback in the negative direction. This would be a lowering of the bar they have to live up to. For someone that does not view the self as very capable, this lowering of the bar could be a relief and they may be prone to adjust their standard downward to match the feedback they received.

As this summary demonstrates, these findings provide additional support for theoretical predictions, some of which have been examined before and others that have not. They also provide novel findings that, if replicated, can be used to inform theoretical refinement in both identity theory and the control model of affect. These findings contribute to the theoretical understanding of where emotions come from in the identity verification process. They show how the distance one is from their goal (represented by the identity discrepancy) and the difference between the rate they are progressing and the rate they are expecting to progress (represented by the meta-monitoring discrepancy) influence emotions, behavior, and one's self-view. They also shed light on the conditions under which processing moves from the automatic to the deliberative level and how emotions resulting from the meta-monitoring loop can focus that deliberative processing in the areas most in need of attention.

These findings regarding the incorporation of the meta-monitoring discrepancy could also have implications for other theories. Incorporating this dynamic concerning the rate of achieving consistency could lead to more precise predictions of emotions across multiple sociological theories that are based on the cognitive consistency principle including identity theory, affect control theory, expectations states theory, exchange theory, and justice theory. In general, these findings suggest that emotions are not only a result of comparing what individuals expect to get in a situation with what they actually receive, but also the *rate* at which they expect to obtain these outcomes and when they actually receive them. In other words, individuals have a sense as to how they will progress toward reaching their goals, and they track their actual progress relative to this expected progress along the way.

It is important to understand the emotions experienced in these situations because of the implications they have for behavior as well as one's self-views. When individuals confront difficulties in trying to reach their goals, if their rate of progress is far slower than what they expect, their negative feelings could instill self-doubt. In turn, individuals could, over time, become unwilling to persist in the face of these difficulties. Alternatively, if progress toward reaching their goals is faster than they expect, it could foster self-confidence and facilitate setting higher goals in comparison to those currently held. In this way, the emotions that result from the meta-monitoring process may have consequences far beyond the immediate situation. To advance the sociology of emotions, future research should continue to examine

how emotions might emerge from the meta-monitoring process since it may have implications for persistence and abandonment of efforts.

This study also contributes to the sociology of emotions by using longitudinal survey data to study emotions, behavior, and identity change, and thus examining contexts in which these processes naturally occur as well as the influence of emotion states on subsequent emotion states. Much research in the sociology of emotions captures mild emotional reactions that may be elicited in situations that are carefully controlled, namely laboratory settings (Turner and Stets 2005). When emotions are studied in controlled conditions such as the laboratory, individuals are removed from their natural social contexts. Emotions emerge out of social situations, and more sociological theory is needed that is based on studies in which individuals' emotional reactions emerge in their natural surroundings (Turner and Stets 2005). This study captures emotions as they are experienced by students in response to events in their natural environment, during their college years. It also captures naturally occurring behavior and changes in one's identity standard.

Second, there is limited research that examines identity process over time (Burke and Stets 2009; Stets 2010). People enter situations with particular feelings and expectations that they seek to confirm. Feedback in the situation can modify feelings and identities, and these feelings and identities can influence future feelings, behavior, and self-views. There is not enough theory in the sociology of emotions or in identity theory that identifies and explains this process. This study begins to address this shortcoming by following students' identities and feelings over a 10-

week period. The longitudinal nature of this study was an important extension of past research focusing on one instance of verification and allowed “emotion flows” to be examined across situations.

Limitations and Future Research

These findings provide support for the idea that the distance one is from verifying an identity as well as the rate they are progressing influence emotions in different ways. These discrepancies can also impact behavior as well as the expectations people have for themselves. However, there are limitations to the research design and the specific identity examined. These limitations demonstrate the need for future research to better understand how these two discrepancies operate simultaneously.

The first limitation is the time in which students were tracked. A strength of the study was that it tracked these processes over time, but ten weeks is a relatively short period when it comes to processes related to the self. Tracking individuals over a longer period of time could provide a more complete view in terms of both the short term and long-term effects of how their emotions, behavior, and thoughts are connected to their progress.

The design was also limited in that students were only tracked in one of their courses due to the difficulty of coordinating multiple courses and exam dates with surveys. Most of the students were probably enrolled in two or three other courses during the quarter and their progress in those classes could have influenced how they felt about their progress in the course in which they took the surveys. Future research

should attempt to measure a higher percentage of the feedback individuals may be receiving in that identity in order to gain a more comprehensive view of their overall performance in that identity.

Another limitation that can be addressed in future research is the type of identity examined. The student identity used in this research is, by nature, goal and achievement focused. Future research should examine these processes in a wider range of identities to see if the effect of the discrepancy between the rate of progress and expected progress on emotions is as strong when “progress” is less concrete. For example, would these same processes be at play for one’s gender or moral identity? On a similar note, examining various role, group, and person identities could provide a better understanding of how these processes are at play for different types of identities. Future research should also look at multiple identities that an individual has to get a more complete view of how these may be interacting. Verifying one identity could provide a buffer of positive emotions and self-esteem that influence the outputs of non-verification in another identity. Without examining more than one identity, these effects cannot be determined.

Another difference that may exist between types of identities is between those that people have just taken on and those that they have had for a long time. It is possible that people are more concerned about progress in an identity that is newer where they are still navigating how to go about verifying the new meanings they have taken on in their standard. The meta-monitoring discrepancy could have stronger

effects in this situation than in one where the individual is well established in their identity.

The behavioral measure could also be improved in future research. It captured when people increased or decreased the number of study habits they used to prepare for an exam, but did not capture the intensity of these behaviors. For example, if a student prepared for the first exam by reviewing their notes for half an hour and then prepared for the second exam by reviewing their notes for eight hours, this change in behavior would not show up in the data. Using a behavioral measure that accounts for changes in both the nature and intensity of the behavior would provide a more accurate way of analyzing behavioral changes. This is particularly important when examining the influence of the meta-monitoring discrepancy on behavior. According to the control model of affect, the meta-monitoring discrepancies influence on behavior is specific to the intensity of behavior (Carver and Scheier 1998). Future research using a measure that captures this element of changes in behavior could provide a better test for the predictions of behavioral changes resulting from a meta-monitoring discrepancy.

Cognitive changes could also be examined in more depth in future studies. This dissertation focused on cognitive changes on the output side of the control model, the changing identity standard and changing meta-monitoring standard. However, cognitive strategies can be used on the input side as well. These include McCall and Simmons (1978) mechanisms of legitimation such as blaming the other, selectively choosing the feedback to pay attention to, etc. Using these strategies

would change the experience an individual has when they encounter disconfirming feedback. The extent to which an individual blamed anyone besides the self for their exam grade was measured and did not influence the results, but this is only one of many cognitive strategies that could be accounted for in future research.

Considering the lack of direct empirical tests of the control model of affect, this was an improvement on past research, but there is still much more to sort out. For example, Carver and Scheier (1998) point to many interesting possibilities regarding the differences in the functioning of the meta-monitoring loop between individuals that are in need of testing. These include differences in the size of the window used to assess velocity and variations in “damping.”

The window used to assess the rate at which an individual is progressing can vary from one individual to the next. Two students may have performed in the same manner over the past month and the past year. One student might assess their progress based on the last month, while another might view their progress over the past year. This could have very different implications for the direction and rate at which they think they are progressing. The different window used to assess rate would lead to a different meta-monitoring discrepancy and, in turn, different emotions.

Similarly, the meta-monitoring loop can have varying consequences for the action loop. “Damping” refers to the sensitivity of the meta-monitoring loop. An overdamped system responds slowly to a discrepancy, thus slowing the progress towards a goal. An underdamped system responds quickly but can overcompensate leading the individual to exceed a goal and oscillate back and forth until finally

settling on their goal state. Critically damped systems are ideal. In these cases the meta-monitoring discrepancy would lead to a relatively rapid response that does not overshoot the goal. It is easy to think of various types of people these levels of damping would correspond to. The overdamped system would be a person that is emotionally unreactive and slow to change their behavior. Conversely, the underdamped system would be a person that is emotionally over-reactive and quick to change their behavior, usually overcompensating.

Future research on damping and the windows used to assess rates of progress would contribute to an understanding of how the meta-monitoring process works in more efficient ways for some than others, allowing some to more easily accomplish goals and verify their identities.

Practical Applications

As this dissertation demonstrates, people not only have an emotional response to goal achievement, but they also have an emotional response to how they are doing on their way to goal achievement. In turn, their feelings may paralyze them for future action or facilitate future success. This experience occurs in all walks of life. It occurs at school, at work, at home, in relationships, and with respect to one's physical and mental health. Having a better understanding of how goal accomplishment and progress toward goal accomplishment influences emotions, behavior, self-views, and expectations over time provides insights into how we might help individuals who fail at achieving their goals.

At issue are the conditions under which individuals may need to change their goals or, alternatively, modify the pace at which they expect to attain their goals. Individuals sometimes fail to disengage from identities that do not reflect who they are, and they may set up expectations at a pace that they cannot achieve. For example, students who view themselves as “studious,” “motivated,” and “responsible” in the student identity and who expect an “A” in all of their classes may not be engaging in behavior reflective of their identity such as attending class, doing homework assignments, and studying for exams. In order to reach their goals or verify their identity, they would need to change their behavior. Furthermore, their expected rate of obtaining an “A” may be unrealistic. They may instead need intermediate goals or a slower expectation of the time it will take them to become a student who is seen as “studious,” “motivated,” and “responsible” by others. These findings could contribute to educators and counselors gaining a better understanding as to how to best help students so that they can be successful in the education system.

We can extrapolate the above process to other arenas in which individuals may not be accomplishing all that they hoped for. Workers may not obtain the salary increase they think they deserve, parents may find that their children have not accomplished all that they hoped for them, individuals may see their marriage failing, and diet programs may not reduce one’s weight. People’s emotional responses provide a window into how they may perceive themselves, the goals they expect to achieve, and when they anticipate achieving those goals. Employers, coaches, and mentors may be more effective if they had more insight into how to best guide others

when they face difficulties. In this endeavor, this dissertation attempts to make a contribution.

Conclusion

The main conclusion of this study is that both the distance one is from verifying an identity as well as the rate at which they are progressing compared to their expected rate will influence how disconfirming behavior makes them feel, behave, and think about the self. Future research should explore how both discrepancies influence emotions, behavior, and expectations over a longer period of time and with a more complete view of the identities an individual possesses. Future research should also use a better behavioral measure that accounts for intensity as well as measurements for the various cognitive strategies an individual can use on the input side of the control model. There are still many questions regarding how these two control models are operating together, but we have learned that examining both discrepancies can provide further insight into the driving force behind an individual's emotions, behavior, and expectations as they work to verify an identity.

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APPENDIX A: SURVEY INSTRUMENTS

Survey 1. The first survey was made available to participants during the first week of their course and was open for 7 days. This survey measured the identity standard, meta-monitoring standard, expected exam grade, and background variables.

Self Views

Think of yourself as a college student. Identify where you would place yourself between each of the following statements: Please choose a number which best describes where you fall on the scale between the two contradictory characteristics. (For example, a 1 on the scale below represents very studious and a 7 represents not very studious.)

As a college student, I am...

Studious () 1 () 2 () 3 () 4 () 5 () 6 () 7 Not Studious
Ambitious () 1 () 2 () 3 () 4 () 5 () 6 () 7 Not Ambitious
Not Motivated () 1 () 2 () 3 () 4 () 5 () 6 () 7 Motivated
Dedicated () 1 () 2 () 3 () 4 () 5 () 6 () 7 Not Dedicated
Interested () 1 () 2 () 3 () 4 () 5 () 6 () 7 Apathetic
Hard-Working () 1 () 2 () 3 () 4 () 5 () 6 () 7 Lazy
Irresponsible () 1 () 2 () 3 () 4 () 5 () 6 () 7 Responsible

Expected Grades

Please report the grade you *think* you will earn and not the grade you *hope* to earn.

What grade do you realistically expect to receive on Exam 1?

() A+ () A () A- () B+ () B () B- () C+ () C () C- () D+ () D () D- () F

Meta-monitoring Standard

Look above at the grade you expect on Exam 1. If you receive this grade on Exam 1, how do you think others would rate you as a college student on the following characteristics? (Please choose a number which best describes where others would rate you on the scale between the two contradictory characteristics.)

Studious () 1 () 2 () 3 () 4 () 5 () 6 () 7 Not Studious
Ambitious () 1 () 2 () 3 () 4 () 5 () 6 () 7 Not Ambitious
Not Motivated () 1 () 2 () 3 () 4 () 5 () 6 () 7 Motivated
Dedicated () 1 () 2 () 3 () 4 () 5 () 6 () 7 Not Dedicated
Interested () 1 () 2 () 3 () 4 () 5 () 6 () 7 Apathetic

Hard-Working () 1 () 2 () 3 () 4 () 5 () 6 () 7 Lazy
Irresponsible () 1 () 2 () 3 () 4 () 5 () 6 () 7 Responsible

Background Characteristics

1) How old are you?

2) What is your gender?

() Male () Female

3) What is your current class standing?

() Freshman () Sophomore () Junior () Senior () 5th Year Senior () Graduate Student

() Other

4) What is (or what do you expect to be) your major field of study in college?

If you do not see your specific major, please select the major that is the closest fit with your major.

() English Literature () Foreign Language () Fine Arts () Economics () Psychology

() Sociology () Biology () Mathematics () Business () Engineering () Education

() Other

5) What is your employment status?

() Full-time () Part-time () Retired () Unemployed

6) How many hours per week do you work on average?

() 0 () 5 and under () 6-10 () 11-20 () 21-40 () over 40

7) What is the highest level of education your mother has completed?

8) What is the highest level of education your father has completed?

() No Formal Education

() Some Grade School

() Completed Grade School

() Some Junior High/Middle School

() Completed Junior High/Middle School

() Some High School

() Completed High School/GED

() Some College

() Completed 2-year college degree

() Completed 4-year college degree

() Some Graduate Work

() Completed Graduate Degree

9) What category best describes your parent's income last year?

- Less than \$10,000
- \$10,000 - \$14,9999
- \$15,000 - \$24,999
- \$25,000 - \$34,999
- \$35,000 - \$49,000
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 or more

10) With which racial/ethnic group do you identify with?

- White Non-Hispanic/Caucasian African American or Black Hispanic Asian
- American Indian or Native American Pacific Islander or Alaskan Native
- Multi-Racial Other

Survey 2, 3, and 4. The second, third, and fourth surveys were made available to participants at the same time exam grades were posted online. These surveys measured the student identity standard, expected exam grades, and meta-monitoring standard using the same measures shown above for Survey 1. These surveys also include a measure of pre-emotions, actual exam grades, reflected appraisals, behavior, and emotions. This survey was only open for 24 hours to ensure that the emotions captured were within a short and consistent time period after students learned their exam grade.

Pre- Emotions

How do you currently feel? (Please select how intense each of the following emotions are for you.)

	0 (Not at All)	1	2	3	4	5	6	7	8	9	10 (Very Intense)
Angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relieved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fearful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Exam 1 Grade

What grade did you receive on Exam 1?

A+ A A- B+ B B- C+ C C- D+ D D- F

Reflected Appraisals

Based on your Exam 1 grade, how do you think others would rate you on each of the following dimensions? Identify where others would place you between each of the following statements. (For example, a 1 on the scale below represents very studious and a 7 represents not very studious.)

- Studious 1 2 3 4 5 6 7 Not Studious
- Ambitious 1 2 3 4 5 6 7 Not Ambitious
- Not Motivated 1 2 3 4 5 6 7 Motivated
- Dedicated 1 2 3 4 5 6 7 Not Dedicated
- Interested 1 2 3 4 5 6 7 Apathetic
- Hard-Working 1 2 3 4 5 6 7 Lazy
- Irresponsible 1 2 3 4 5 6 7 Responsible

Emotions

How do you feel right now? (Please select how intense each of the following emotions are for you.)

	0 (Not at All)	1	2	3	4	5	6	7	8	9	10 (Very Intense)
Angry	()	()	()	()	()	()	()	()	()	()	()
Sad	()	()	()	()	()	()	()	()	()	()	()
Relieved	()	()	()	()	()	()	()	()	()	()	()
Fearful	()	()	()	()	()	()	()	()	()	()	()
Happy	()	()	()	()	()	()	()	()	()	()	()
Anxious	()	()	()	()	()	()	()	()	()	()	()
Proud	()	()	()	()	()	()	()	()	()	()	()

Behavior

What steps did you take to prepare for Exam 1 in this course?
(Please check all that apply.)

- I attended my TA's office hours
- I attended my professor's office hours
- I reviewed the study guide
- I reviewed my notes
- I reviewed the lecture slides
- I studied with a friend(s) or classmate(s)
- I reviewed the readings