

REINFORCEMENT SENSITIVITY AND REGULATORY FOCUS
PREDICT PERFECTIONISM

A Thesis
by
CHARLES PALMER MAUTZ

Submitted to the Graduate School
at Appalachian State University
in partial fulfillment of the requirements for the degree of
MASTER OF ARTS

August 2013
Department of Psychology

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APPROVED BY:

Robert W. Hill
Chairperson, Thesis Committee

Timothy J. Huelsman
Member, Thesis Committee

Doris G. Bazzini
Member, Thesis Committee

James C. Denniston
Chairperson, Department of Psychology

Edelma D. Huntley
Dean, Cratis Williams Graduate School

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Abstract

REINFORCEMENT SENSITIVITY AND REGULATORY FOCUS PREDICT PERFECTIONISM

Charles Palmer Mautz
B.A. University of North Carolina at Chapel Hill
M.A. Appalachian State University

Chairperson: Robert W. Hill

The current study was an investigation of the predictive ability of the Reinforcement Sensitivity Theory (RST), Behavioral Activation System (BAS), and Behavioral Inhibition System (BIS), as well as the Regulatory Focus Theory (RFT) promotion focus and prevention focus in predicting the two dimensions of perfectionism known as personal standards and self-evaluative perfectionism. Perfectionism is well-defined in the research literature as a two-dimensional construct, one dimension being associated with strivings and goals, the other with concerns and worries, known respectively as personal standards and self-evaluative perfectionism. RST, an attempt to explain behavior at the neuropsychological level, has three dimensions, two of which are assessed in this investigation and are known as BAS and BIS. The BAS and BIS are related to responses to positive stimuli and ambiguously negative stimuli, respectively. Also related, RFT posits that two systems of conscious focus determine behavior from an experiential standpoint: promotion focus and prevention focus, both being state-specific approaches. The promotion focused state is

engaged with attaining reward, while the prevention focused state is concerned with avoiding loss; subsequently, both are goal-oriented mindsets. This study attempted to predict the two dimensions of perfectionism by using each of the RST systems, BAS and BIS, and each of the RFT systems, promotion and prevention as predictors. The results revealed that BAS sensitivity and promotion focus successfully predicted personal standards perfectionism, while BIS sensitivity and prevention focus successfully predicted self-evaluative perfectionism. BAS and BIS were more robust predictors in their respective regression models than were promotion and prevention, suggesting that perfectionism was more successfully predicted by these pre-dispositional personality constructs than by the RFT behavioral states.

Acknowledgements

I would like to thank my thesis mentor Dr. Robert Hill for his dedication to my success throughout the thesis process. His efforts in guiding my progress in many areas were exemplary of the ideal thesis mentor and committee chair, without which I would not have been able to successfully complete this project. I also would like to thank Dr. Timothy Huelsman and Dr. Doris Bazzini for their useful feedback and guidance throughout the thesis process. Their willingness to support this project as committee members was a vital component of its success. Additionally, I like to thank Appalachian State University for providing funding resources, without which my thesis could not have been completed.

Dedication

This thesis is dedicated to my parents, David and Elizabeth Mautz, from whom I learned the value of hard work, dedication, and patience.

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Foreword

This thesis is written in accordance with the style of the *Publication Manual of the American Psychological Association (6th Edition)* as required by the Department of Psychology at Appalachian State University.

Reinforcement Sensitivity and Regulatory Focus Predict Perfectionism

Charles Palmer Mautz

Appalachian State University

Abstract

The current study was an investigation of the predictive ability of the Reinforcement Sensitivity Theory (RST), Behavioral Activation System (BAS), and Behavioral Inhibition System (BIS), as well as the Regulatory Focus Theory (RFT) promotion focus and prevention focus in predicting the two dimensions of perfectionism known as personal standards and self-evaluative perfectionism. Perfectionism is well-defined in the research literature as a two-dimensional construct, one dimension being associated with strivings and goals, the other with concerns and worries, known respectively as personal standards and self-evaluative perfectionism. RST, an attempt to explain behavior at the neuropsychological level, has three dimensions, two of which are assessed in this investigation and are known as BAS and BIS. The BAS and BIS are related to responses to positive stimuli and ambiguously negative stimuli, respectively. Also related, RFT posits that two systems of conscious focus determine behavior from an experiential standpoint: promotion focus and prevention focus, both being state-specific approaches. The promotion focused state is engaged with attaining reward, while the prevention focused state is concerned with avoiding loss; subsequently, both are goal-oriented mindsets. This study attempted to predict the two dimensions of perfectionism by using each of the RST systems, BAS and BIS, and each of the RFT systems, promotion and prevention as predictors. The results revealed that BAS sensitivity and promotion focus successfully predicted personal standards perfectionism, while BIS sensitivity and prevention focus successfully predicted self-evaluative perfectionism. BAS and BIS were more robust predictors in their respective regression models than were promotion and prevention, suggesting that perfectionism was more successfully predicted by these pre-dispositional personality constructs than by the RFT behavioral states.

Reinforcement Sensitivity and Regulatory Focus Predict Perfectionism.

Perfectionism has been described as a multidimensional set of behaviors and beliefs, partially defined as strivings and goals and partially as concerns and worries about achieving perfection (Frost, Heimberg, Holt, Mattia, & Newbauer, 1993; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991; Hill et al., 2004; Stoeber & Otto, 2006).

Reinforcement sensitivity theory (RST) suggests that certain neuropsychological processes partially govern responses to environmental stimuli, forming the basis for individual personality (Corr, 2008; Gray & McNaughton, 2000; Torrubia, Avila, Molto, & Caseras, 2001). Regulatory focus theory (RFT) poses that focus on either promoting accomplishment or preventing loss will partially determine behaviors, beliefs, and emotion (Higgins, 1997).

The current investigation was implemented to assess the relationships between among RST, RFT and perfectionism. I anticipated that sensitivity to BAS and sensitivity to promotion would each positively associate with personal standards perfectionism and each would account for unique variance when entered together in a regression. I also anticipated that sensitivity to BIS and sensitivity to prevention would each be positively associated with self-evaluative perfectionism and each would account for unique variance when entered together in a regression.

Perfectionism

Perfectionism is described as a personality characteristic that involves thoughts and behaviors of achieving high standards of success in various areas, as well as criticism of oneself and one's performance failures. Until recent decades, perfectionism was often believed to be an unhealthy characteristic (Stoeber & Otto, 2006). Active participation in behaviors attempting to attain exceedingly high or unrealistic standards or excessive worrying was often reported to be related not only to unhealthiness, but to psychopathology.

Many studies suggested perfectionism was pathological (Flett, Hewitt, & Dyck, 1989; Ranieri et al., 1987; Rosen, Murkofsky, Steckler, & Skolnick, 1989; Stoeber & Otto, 2006; Thompson, Berg, & Shatford, 1987). As an example of this approach, many linked perfectionism to eating disorders. Rosen et al. (1989) used a measure with a single-dimension subscale assessing perfectionism, the Eating Disorder Inventory (EDI), to relate strong perfectionism tendencies not only to anorexia nervosa, but to both normal weight and underweight bulimia nervosa. Their findings also linked perfectionism to depression. Thompson and colleagues (1987) called perfectionism a “cognitive distortion,” finding that individuals with bulimia nervosa and bulimia-like qualities were more likely to show perfectionistic tendencies than individuals without.

In addition to studies linking perfectionism to eating disorders, studies in the perfectionism literature described relationships to neuroticism and anxiety, specifically Obsessive Compulsive Disorder (Flett et al., 1989; Stoeber & Otto, 2006). Individuals high in perfectionistic tendencies were found more likely to be overly worrisome, more anxious, and generally more stressed than the typical population. Some research even pointed out relationships between perfectionism and physical health dangers, such as coronary heart problems (Flett et al., 1989). Still others found perfectionistic tendencies to be harmful in terms of income and productivity (Burns, 1980). Burns described a group of highly perfectionistic professionals yielding a lower level of output and receiving a lower income than less perfectionistic individuals. It is easy to see that historically perfectionism has been closely related to negative outcomes in the scientific literature.

The general trend for much of the early perfectionism literature was the belief that perfectionism existed within one singularly described construct, i.e. that only one dimension

was at play (Stoeber & Otto, 2006). That approach concluded that all perfectionistic tendencies were unhealthy and destructive. Even though Hamachek (1978) published a study introducing a two-dimensional model featuring so-called “normal” and “neurotic” perfectionism, his novel idea did not take root for over a decade, and through the 1980’s the perfectionism literature remained dominated by one-dimensional, pathological perfectionism (Stoeber & Otto, 2006). In the early 1990’s, two separate and independently operating research groups published articles proposing multidimensional models (Frost et al., 1990; Hewitt & Flett, 1991). Not only did both Frost and colleagues and Hewitt and Flett create multifactorial theories of perfectionism, both groups created multidimensional scales with which to measure perfectionism with the same name: The Multidimensional Perfectionism Scale.

Hewitt and Flett (1991) presented a perfectionism measure that includes three separate factors: *self-oriented*, *other-oriented*, and *socially-prescribed* perfectionism. *Self-oriented* perfectionism is defined as thoughts and behaviors concerned with setting lofty goals for oneself, as well as strictly evaluating one’s performance. *Other-oriented* perfectionism involves concerns over the capabilities and performance of others, or unrealistically high expectations of what others will accomplish. The third factor, *socially-prescribed* perfectionism, describes concern over the expectations of others as they relate to one’s behavior or performance. Comparatively, the first factor can be associated with self-blame and self-punishment resulting from lack of individual performance or achievement, while the second factor can be associated with direct blame of, lack of trust in, and hostility towards others for their lack of meeting the individual’s expectations. The third factor relates

to one's perceptions of others' expectations of them and the need to meet and exceed those expectations (Hewitt & Flett, 1991).

Independent of Hewitt and Flett's (1991) multidimensional exploration of perfectionism, Frost and colleagues (1990) defined six factors proposed to reflect perfectionism. *Personal standards* describes the strong tendency to evaluate one's own performance. *Concern over mistakes* describes a subset of beliefs that mistakes translate to failures and lead to the loss of respect from others, as well as a heightened level of concern over making any mistakes at all. *Parental expectations* and *parental criticism* are closely related. The first describes beliefs that one's parents hold oneself to the highest of standards and the second that parents are overly critical of one's behavior. *Doubts about actions* encompasses the perfectionistic pressures of doing things right and that mistakes may have been made in the past. Finally, *organization* describes being strictly orderly and neat in various areas. Together, the authors contended that these six factors presented a comprehensive picture of perfectionism (Frost et al., 1990).

Soon after Frost and colleagues' (1990) and Hewitt and Flett's (1991) models were created and their measures published, Frost and colleagues (1993) published a comparison of the two that served to solidify the multidimensionality of perfectionism in the field. Their review resulted in three major findings:

1. Factor analysis demonstrated that perfectionism was described by two second-order factors.
2. These two factors, or dimensions, could be captured using combinations of the two published Multidimensional Perfectionism Scales (MPS-F, Frost et al., 1990; Frost et al., 1993; MPS-HF, Hewitt & Flett, 1991). One dimension, comprising Frost et al.'s

- (1990) concern over mistakes, doubts about actions, parental expectations, parental criticism, and Hewitt and Flett's (1991) socially prescribed perfectionism factors, was associated with negative characteristics and consequences of perfectionism, namely concerns and anxiety. The other dimension, including Frost et al.'s (1990) personal standards, organization, and Hewitt and Flett's (1991) self-oriented and other-oriented perfectionism factors, was associated with positive aspects and outcomes of perfectionism, namely organization and strivings.
3. Both of the factors were related to separate patterns of behaviors and thoughts related to perfectionism. One tended to be related to thoughts and behaviors involving standards and strivings set for oneself, while the other typically involves concerns over imperfections and disapproval of the behavior of oneself and others (Frost et al., 1993).

Since these publications, those two perfectionism dimensions have been given many names: active and passive, positive and negative, adaptive and maladaptive, and functional and dysfunctional, among others, as different research groups have investigated their relationships, associations, and meaning (Stoeber & Otto, 2006). This current investigation will refer to these dimensions as personal standards and self-evaluative perfectionism, as recommended by Stoeber and Otto (2006).

Since their publications, the MPS-F and MPS-HF have been among the most popular available perfectionism measures (Hill et al., 2004). Others exist and have been utilized frequently, but these two remain the most popular of the multidimensional measures. Acknowledging the overlap between conceptual bases for the MPS-F and MPS-HF scales while also recognizing unique scales presented by each, Hill and colleagues (2004) published

the Perfectionism Inventory (PI), an eight-scale measure with two second-order dimensions, referred to as conscientious perfectionism and self-evaluative perfectionism, each composed of four scales. Conscientious perfectionism (corresponding to personal standards perfectionism) includes the scales: organization, striving for excellence, planfulness, and high standards for others. Self-evaluative perfectionism includes the scales: concern over mistakes, need for approval, rumination, and perceived parental pressure. The PI was chosen as the perfectionism measure for the current study for its ability to successfully capture the two-factor perfectionism model.

Reinforcement Sensitivity Theory

Reinforcement sensitivity theory (RST) is a broad attempt to relate neuropsychological regulation of human behavior to individual personality (Corr, 2008). Initially proposed in 1970 by Jeffrey Gray, RST has been modified several times over the last four decades. In this theory, individual differences are proposed to be related to individual states, and in turn, overarching traits of personality (Corr, 2008). A state is described as a combination of physiological, emotional or behavioral characteristics specific to the situation under which it arises (Higgins et al., 2011). A trait is described as a relatively stable characteristic exhibited by an individual across many situations and over time (Eysenck, 1967). States can change rather rapidly, while traits tend to be stable. Essentially, RST suggests that hard-wired brain activity influences one's interpretation of and reaction to environmental stimuli (Corr, 2008). RST does not suggest that neuropsychological processes completely dominate one's reaction to a stimulus, as these underlying processes instead serve to influence the relationship between environmental stimuli (input) and reactions (output) in

individual behavior. The reactions are internal processes, not necessarily the physical behavior exhibited (Corr, 2008).

To fully understand RST, a foundation from both Hans Eysenck's (1967) and Gray and McNaughton's (2000) personality theories is useful. Eysenck's personality theory suggested that three central dimensions of personality exist: extroversion, neuroticism and psychoticism. Extroversion and neuroticism were original aspects and psychoticism was included in a later revision (Corr, 2008; Eysenck, 1967). Eysenck's construct of extroversion existed on a continuum between extroversion and introversion. Extroversion was described as involving lower cortical arousal, thus being less susceptible to arousal by sensory stimuli leading to a higher response threshold (Corr, 2008; Eysenck, 1967). Extroverts can tolerate more stimuli than introverts before becoming aroused. Introversion was described as a higher cortical arousal baseline condition associated with a higher susceptibility to arousal when presented with sensory stimuli, leading to a lower response threshold (Corr, 2008; Eysenck, 1967). In other words, extroverts require more stimulation to reach the threshold of arousal, whereas introverts require less. For example, an extrovert may require experiencing a loud, crowded and fast-paced concert to reach arousal, whereas an introvert may reach the same level of arousal by enjoying a book while sitting in a quiet room. Eysenck also described dimensions called psychoticism and neuroticism, which reflect levels of stability and interpersonal hostility, respectively.

Gray proposed an alteration of Eysenck's theory based on his development of RST by suggesting extroversion and introversion start on a neuropsychological level. His RST model suggested that extroversion and introversion, as well as neuroticism and stability, were derivatives of a more basic sensitivity to reward and/or punishment (Corr, 2008; Gray, 1981).

He proposed that individuals simultaneously showing high extroversion and low neuroticism, or classified as “impulsive” were more sensitive to signals of reward than individuals who showed both high introversion and high neuroticism, classified in the “anxiety” category. His theory also suggested that individuals in the “anxiety” category were more sensitive to signals of punishment than the “impulsive” individuals (Corr, 2008; Gray, 1981). Gray’s theory held that it was the sensitivity to reward and/or punishment that preceded personality characteristics such as extroversion and neuroticism (Corr, 2008; Gray, 1981).

Since the 1970 original publication, multiple revisions have been made to RST, the “Standard” version published in 1981 and the latest version published in 2000 (Gray & McNaughton). In the original 1970 version of RST, three systems were posited to moderate reactions to stimuli: the fight or flight system (FFS), behavioral inhibition system (BIS), and behavioral activation system (BAS). Originally, the FFS, a name coined by Cannon (1929) was described as the system moderating responses to unconditioned negative stimuli. The BIS was described as the moderator of responses to conditioned negative stimuli, or known negative stimuli. Finally, the BAS was described as the moderator of responses to solely conditioned positive stimuli, or known positive stimuli (Gray & McNaughton, 2000). Gray’s 1981 version is similar to the original version and is described as having BIS associated with the anticipation of all negative outcomes or punishments, BAS associated with the anticipation of all conditioned positive outcomes or rewards, and FFS associated with initiatives to respond to negative outcomes. “Freeze” was added to FFS in this revision as an alternative response to “Fight” and “Flight” (Corr, 2008). Carver and White (1994) published the BIS/BAS Scales in 1994 to assess BIS and BAS from the 1981 RST theory and this measure remains frequently used today. These scales assess BIS as a single construct,

but BAS as three subscales: drive, funseeking, and reward responsiveness. Drive describes a persistent pursuit of goals, funseeking a spontaneous or spur of the moment pursuit of positive outcomes, and reward responsiveness a positive anticipation of outcomes. FFFS is not measured in these scales as it is a mechanism involving a behavioral response to stimuli and is difficult to capture in a non-behavioral measure (Carver & White, 1994).

Most recently, the theory describes three modestly altered systems: the fight, flight or freeze system (FFFS), BIS, and the BAS (Gray & McNaughton, 2000). In this latest 2000 revision, FFFS was described as sensitivity to all aversive stimuli moderating the effects of fear, specifically. FFFS presents the initiative to remove oneself from harm's way in a definitively negative situation as each fight, flight and freeze response represents primary biological defense mechanisms. Next, BIS was altered from earlier RST versions to become the assessment of potential danger, or whether to avoid or proceed, what some referred to as goal conflict. The BIS assesses goal conflict but no longer any clearly aversive stimuli. The BIS activates in the face of uncertain or potentially negative situations and provides the onset of anxiety, hesitation, and an increased startle reaction (Corr, 2008; Gray & McNaughton, 2000). There is, in fact, a very close relationship between the FFFS and BIS, as Corr and Matthews (2009) noted, such that when the BIS is activated, in order to resolve the goal conflict, the BIS may increase ones capacity to react to stimuli by activating the FFFS. This "recursive loop" continues until resolution is achieved (Corr & Matthews, 2009). Finally, the BAS was revised to include the reaction to all positive stimuli, no longer just conditioned positive stimuli. Activation of the BAS is related to optimism, reward anticipation, and at times impulsivity (Corr, 2008; Gray & McNaughton, 2000). All three of these systems are

proposed to influence how individuals react in the face of various stimuli, or in various states. These state reactions aggregate over time to influence overarching personality traits.

Following these revisions, new measures were published to assess BIS and BAS. Torrubia and colleagues published the Sensitivity to Reward Sensitivity to Punishment Questionnaire (SPSRQ) in 2001, assessing reward (BAS) and punishment (BIS) response tendencies. Jackson and colleagues published the Jackson-5 Scale for Measuring Revised Reinforcement Sensitivity Theory (Jackson-5), a version of BIS and BAS assessment using fewer items than the formerly mentioned BIS/BAS Scales. In the current investigation, in addition to the BIS/BAS Scales, these two measures of RST constructs were used to predict the two-factor perfectionism model. Of the three measures, the BIS/BAS Scales (Carver & White, 1994) were developed to assess the 1981 version of RST, describing BAS as a sensitivity to conditioned positive stimuli and BIS as a sensitivity to all negative sensitivity, whereas the SPSRQ (Torrubia et al., 2001) and the Jackson-5 (Jackson, 2009) both assess the 2000 version of RST, describing BAS as a sensitivity to all positive stimuli and BIS as a goal-conflict mechanism, or sensitivity to potentially or ambiguously negative stimuli (Gray & McNaughton, 2000).

Regulatory Focus Theory

Regulatory focus theory (RFT) is a theory of goal pursuit describing peoples' individual perceptions regarding the situations in which they make decisions. These perceptions were proposed to be based on prior experience in relation to goal pursuit and outcomes (Higgins et al., 2001). That is, the means by which individuals regulate their paths toward achieving goals depends on their history with similar or relatable situations. The theory distinguishes two types of self-regulation that affect behaviors via beliefs and

emotions: promotion and prevention (Crowe & Higgins, 1997; Higgins, 1997; Semin, Higgins, de Montes, Estourget & Valencia, 2005). Promotion is concerned with achievement, advancement, and growth, whereas prevention is concerned with avoidance of loss, security, and responsibility (Crowe & Higgins, 1997; Higgins, 1997). In other words, promotion focus involves pursuing the ideals a person may aspire toward. For example, individuals with a promotion focus may be focused on being close with friends and acquiring more of their friends' affection so they may, for example, go to the movies with their friends. Prevention focus, on the other hand, involves the pursuit of security and the burden of responsibilities a person may feel. For example, individuals with a prevention focus may be focused on not losing or upsetting their friends nor damaging their relationship with them so they may also go to the movies with their friends. In either situation, the individual is making goal-directed choices to succeed or avoid loss in some fashion. Regulatory focus in these dimensions influences how individuals make those choices, what beliefs they hold about situations, and often what values they hold.

RFT does not claim that individuals are continuously in either promotion or prevention focus solely. Individuals can experience either form of focus depending on their present circumstances and prior experiences. However, individuals often are chronically focused either on promotion or prevention, meaning they are more likely to act from one or the other more often (Higgins et al., 2001). In relation to the balance of the two foci, RFT proposes that each focus has its merit in human behavior. Promotion focus, involving eagerness towards achievement, tends to ensure the attainment of positive outcomes. Prevention focus, involving vigilance towards loss, tends to ensure the absence of negative outcomes (Higgins et al., 2001). Essentially, both forms of focus are geared towards

attaining success or positivity, but differ in whether success is earned by advancement (promotion) or avoidance of loss (prevention).

RST, RFT and Perfectionism

RST lays a foundation at the basic neuropsychological level for a predisposition to respond to stimuli, be they positive or negative. The sensitivity to respond to positive stimuli, defined as the BAS, ultimately describes to what extent and how an individual excites or reacts to positivity. Given a heightened sensitivity to BAS, one could expect an individual to become more responsive to the possibility of success, to rewards, or to practically any enjoyable outcome. For example, an individual with a high BAS sensitivity could reasonably be expected to become excited over the possibility of winning an award, and then subsequently maintain arousal when actually winning the award. In anticipation of winning, the individual would likely become more motivated to perform to their utmost in the task at hand, maximizing their chances of winning. Knowing this tendency, it becomes reasonable to expect that an individual's trait level of personal standards perfectionism, which involves striving for excellence, planning, and organization, could be related to their BAS sensitivity. Further, the neuropsychological predispositions described by BAS should be expected to precede the behavioral tendencies described by personal standards perfectionism, as the former is a hard-wired neurological disposition and the latter a personality trait. Therefore, it is reasonable to expect that BAS tendencies to approach positive achievement would lead to perfectionistic behaviors geared towards success, planfulness, and high standards, or personal standards perfectionism.

Sensitivity to negative outcomes, or potentially negative outcomes, described by the BIS, ultimately describes to what extent and how an individual reacts in the face of potential

or ambiguous negativity. Given high sensitivity to BIS, one could reasonably expect an individual to become nervous, anxious or intimidated in the face of a potentially upsetting, disappointing or frustrating stimulus. For example, an individual high in BIS sensitivity may become nervous when competing for an award with an uncertain outcome. One would expect the high BIS individual to become more anxious, perhaps more irritable, and more avoidant than someone low on BIS sensitivity, particularly as they appraise the likelihood of a potentially negative situation. Knowing this, it becomes reasonable to expect that high BIS might lead to frequent concern and rumination over past and future mistakes and negative evaluation from others, which is characterized as self-evaluative perfectionism. Further, as BIS describes a neuropsychological predisposition and self-evaluative perfectionism describes a personality trait, then BIS sensitivity should precede self-evaluative perfectionism in determining behavior. Therefore, it is reasonable to expect that BIS tendencies to be sensitive to potential failure or negativity would lead to perfectionistic behaviors such as worrying or ruminating about mistakes, as well as the fear of failing to meet the expectations of others, or self-evaluative perfectionism.

Randles and colleagues (2010) conducted a study with relevant findings, assessing the relationship between BAS, BIS and perfectionism. Assessment of their findings indicated that both BAS and BIS were predictive of self-oriented perfectionism and BIS was predictive of socially prescribed perfectionism (Randles et al., 2010). Essentially, using the three-factor model of perfectionism from Hewitt and Flett's (1991) MPS, Randles and colleagues found that a tendency to be sensitive to positive stimuli (BAS) and a tendency to be sensitive to potentially negative stimuli (BIS) were both precursors to a set of perfectionistic personality traits involving setting lofty goals for oneself and concerning oneself with high personal

achievement. They further found that BIS was also associated with socially-prescribed perfectionism, or one's perceptions of high expectations from others and the need to meet them. Their findings were interesting and added to perfectionism and RST literature, but the more recently supported two-factor model of perfectionism was not used.

RFT describes a pair of foci, promotion and prevention, from which individuals view goal-oriented behavior. Individuals tend to habitually behave either with a promotion focus, wherein they view success as advancement or growth, or a prevention focus, wherein they view success as a lack of failure or prevention of loss (Higgins et al., 2001). An individual's regulatory focus may predict their personal standards and self-evaluative perfectionism. More specifically, if individuals tend to strive for success through active advancement and growth, then they may be more likely to maintain organization, strive for success in their ventures, and maintain high standards for their own behaviors and outcomes, which are features of personal standards perfectionism. Additionally, if individuals tend to strive for success through avoiding losses or failures, they may experience greater concern about making mistakes, more worries about experiencing losses, and more pressure from others to maintain success (and not fail), all features of self-evaluative perfectionism. Further, as both promotion and prevention foci are learned, state-specific tendencies (Higgins et al., 2001) and personal standards and self-evaluative perfectionism are personality traits, the RFT foci may precede perfectionism in determining behavior.

The Current Study

The current study was conducted to assess the abilities of RST and RFT constructs to predict perfectionism. Linking RST, RFT, and perfectionism provides a greater understanding of how trait perfectionism operates such that perfectionism could be

understood in the context of both dispositional qualities and state-specific behavior. This investigation was designed to examine these relationships and add to the current literature in several ways. Using the RST dimensions of BAS and BIS to predict personal standards and self-evaluative perfectionism could identify a link between these important personality constructs with potential implications for better understanding the etiology of perfectionism. In addition, multiple measures of the RST constructs BAS and BIS were used in this investigation to insure capturing the constructs as the RST literature does not indicate which RST measures are best. Finally, the current study also utilized RFT constructs as predictors of perfectionism. Adding the tendency to approach a situation focused on advancement or growth in predicting personal standards perfectionism, as well as the tendency to approach a situation focused on the avoidance of loss in predicting self-evaluative perfectionism should further add to the literature by providing additional explanation of the etiology of both forms of perfectionism.

Hypotheses

Given a predisposition to sensitivity to positive stimuli, exemplified by a heightened BAS, and a tendency to seek success through advancement and growth, exemplified by a promotion focus, it seems likely that one would also exhibit perfectionistic traits such as being organized, setting high standards, and being planful in behavior. Therefore, I hypothesized that BAS sensitivity and RFT promotion focus should each be positively associated with personal standards perfectionism, and each of these predictors should account for unique variance in personal standards perfectionism when entered together in a regression. Also, given a predisposition to sensitivity to potentially negative or ambiguous stimuli, exemplified by a heightened BIS, and a tendency to seek success through the

avoidance of failure, exemplified by a prevention focus, it seems likely that one would also exhibit perfectionistic traits such as being worried about making mistakes in the past or future, being negatively evaluated by others and perceiving pressure from external sources. Therefore, I also hypothesized that BIS sensitivity and prevention focus should each be positively associated with self-evaluative perfectionism, and each of these predictors should account for unique variance in self-evaluative perfectionism when entered together in a regression.

Method

Participants and Procedure

This study was approved by the Appalachian State University Internal Review Board (IRB) on March 31st, 2011. For IRB approval information, see Appendix A. For Consent to Participate information, see Appendix B. Participants for this investigation were drawn from Amazon's Mechanical Turk (MTurk), a web-service intended to provide the opportunity for human feedback on a variety of tasks. On this site, users, known as "turkers" are invited to take part in any of a number of available Human Intelligence Tasks (HITs), such as the HIT created for this investigation, created by "requesters." Buhrmester, Kwang, and Gosling (2011) found Mturk participants to be a slightly better representation of the U.S. population than typical internet samples and much more diverse than an undergraduate college-student sample. The same investigation found that participation is affected by compensation rate and task length in that low compensation and lengthy tasks tend to draw fewer participants. However, participation can still be achieved rapidly and inexpensively, as compensation rates do not appear to affect the quality of the data (Buhrmester et al., 2011). Most importantly, the data obtained were found to be at least as reliable as those collected using other methods

(Buhrmester et al., 2011). Overall, this service provides inexpensive, quality human participant data.

The current study's Mturk survey task consisted of two components: Mturk, for recruitment of participants, and Qualtrics, an electronic survey tool. First, participating turkers were instructed to follow a hyperlink from Mturk to Qualtrics and complete the survey provided for this investigation. Participants were instructed that upon completion of the survey on Qualtrics they would be given a pass-code to provide to Mturk to receive compensation. Only upon completion were they given the pass-code, providing proof of their survey completion and ultimately awarding them reimbursement on Mturk.

The task was opened on Mturk only for users claiming the United States as their nation of origin. The task remained open until 557 responses had been completed in Qualtrics and each participant was awarded 30 or 50 cents for total completion. The number of participants targeted was determined by maximizing the number of cases given the amount of funding made available for this investigation by Appalachian State University (\$300) and 30 cents was chosen as the original reimbursement rate that would both attract users and would allow for a large sample size. After seven days of the HIT being available, responding slowed and the reimbursement rate was increased to 50 cents to more quickly gather as much data as possible with the remainder of the funding available. After two single-day pilot attempts using Mturk and Qualtrics, data collection took approximately two weeks, from May 19, 2011 to June 2, 2011. Of the 557 completed cases received by Qualtrics, eight cases were removed because they were identified by their Mturk identification number as individuals who had completed the task twice. Further, 41 cases were removed because of invalid responding as identified by endorsement of three or more items on the Infrequency

Scale for Personality Measures (ISPM; Hundt, Kimbrel, Mitchell, & Nelson-Gray, 2008). A total of 508 cases remained in the data set.

Of the 508 cases, 34% (153 cases) were male, 65% (335 cases) were female, and the average respondent age was 32.4 years, with a standard deviation of 15.6 years and a range of 18 to 81 years. Descriptive statistics regarding respondent annual household income, ethnic background, and highest level of education achieved can be found in Table 1.

Materials

Perfectionism Inventory (PI). The PI is a 59-item measure comprising eight subscales (organization, striving for excellence, planfulness, high standards for others, concern over mistakes, need for approval, rumination, and perceived parental pressure). Each item is answered on a five-point response scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Data collected with the PI have shown adequate internal consistency reliability for both conscientious and self-evaluative perfectionism composite scales with Cronbach's alphas of .75 and .79, respectively, as well as strong construct validity and predictive power (Hill et al., 2004). The present study utilized the two higher-order composite scales, known as conscientious perfectionism, which corresponds to personal standards perfectionism, and self-evaluative perfectionism, rather than analyzing each individual subscale. An example item from the conscientious subscale organization is "I am well-organized." An example item from the self-evaluative subscale perceived parental pressure is "My parents hold me to high standards" (Hill et al., 2004).

BIS/BAS Scales. The BIS/BAS Scales have 20 items measuring four subscales (BIS, BAS-reward responsiveness, BAS-drive, and BAS-funseeking), each of which was used in the present study. Each item is answered on a four-point response scale ranging from 1 (Very True for me) to 4 (Very False for me). Data collected with the BIS/BAS Scales have shown adequate internal consistency, with Cronbach's alphas for the three BAS subscales ranging from .66 to .76 and .74 for the BIS subscale (Carver & White, 1994). Data collected with this measure have also demonstrated an adequate level of construct validity for behavioral activation and inhibition. An example item from the BIS scale is "I worry about making mistakes." An example item from the BAS drive scale is "I go out of my way to get things I want." (Carver & White, 1994). The current study included all four subscales.

Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ). The SPSRQ is a 48-item measure comprised of two 24-item scales known as sensitivity to punishment, which translates to an assessment of BIS, and sensitivity to reward, which translates to an assessment of BAS. Each item is answered either 1 (Yes) or 2 (No). Data collected with the SPSRQ have demonstrated adequate internal consistency, with Cronbach's alphas ranging from .75 to .83, adequate test-retest reliability, .87 to .89 after a three month interval, and adequate validity evidence for behavioral activation and inhibition (Torrubia et al., 2001). An example item from the reward scale is "Do you often do things to be praised?" and an example from the punishment scale is "As a child, were you troubled by punishments at home or in school?" (Torrubia et al., 2001).

Jackson-5 Scales for Measuring Revised Reinforcement Sensitivity Theory (Jackson-5). The Jackson-5 scales used in the current study are the r-BAS and r-BIS, referred to in the current investigation as Jackson-5 BAS and Jackson-5 BIS, each of which

contains six items. Each item is answered on a five-point response scale ranging from 1 (Completely Disagree) to 5 (Completely Agree). Data collected with the r-BAS and r-BIS scales have demonstrated Cronbach's alphas of .80 and .74, respectively, and supportive validity evidence for behavioral activation and inhibition (Jackson, 2009). An example item from the BAS scale is "I like to do things spontaneously." An example item from the BIS scale is "I want to avoid looking bad" (Jackson, 2009).

The Event Reaction Questionnaire (ERQ). The ERQ is an 11-item measure used to assess promotion focus and prevention focus as components of regulatory focus theory. Each item is answered on a five-point response scale ranging from 1 to 5. Response wording varies from item to item, including "Never or Seldom" or "Never True" for response choice one and "Very Often," "Always," or "Very Often True" for response choice five. Data collected with the ERQ have shown internal consistency, with Cronbach's alphas of .73 and .80, adequate test-retest reliability of .79 and evidence in support of validity (Higgins et al., 2001). An example item from the promotion scale is "How often have you accomplished things that got you "psyched" to work even harder?" and an example from the prevention scale is "I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them." (Higgins et al., 2001).

The Infrequency Scale for Personality Measures (ISPM). The ISPM is a 13-item scale that is embedded among other measures to ensure the thoughtful responding of participants. An endorsement of any item of the measure is extremely unlikely (e.g. "I cannot remember when I talked with someone who wore glasses") and indicates a potentially invalid response style. To maintain consistency with how the ISPM has been used in previous studies, endorsement of three or more items on the ISPM indicates invalid

responding and excludes the participant from analyses (Hundt, Kimbrel, Mitchell, & Nelson-Gray, 2008).

Results

Table 1 presents data on household income, ethnic background, and educational completion for participants of the current study. Examination of these data reflects an ethnically diverse group of participants, composed mostly of Caucasians, but including 18% of participants from several other ethnic backgrounds. Additionally, approximately half of the sample reported earning between \$25,000 and \$75,000 annually, which suggests the sample is representative of the US population in terms of household income, given an approximate average household income of about \$50,000, according to the US Census Bureau (2010). Examination of Table 1 also indicates a diverse but accomplished sample in terms of education, with approximately 86% having varied levels of post-high school education.

Descriptive statistics and correlational data for all perfectionism, reinforcement sensitivity and regulatory focus variables can be found in Table 2. Means and standard deviations of each of the scales of interest were found to be comparable to the means in previous literature (e.g., Self-Evaluative perfectionism $M = 12.36$, $SD = 3.32$ is comparable to Hill et al.'s (2004) $M = 11.68$, $SD = 2.61$), indicating consistent measurement of constructs compared to previous samples. All of the scales yielded acceptable coefficient alphas with the exception of BAS Funseeking, which had an alpha coefficient of .10 (Table 2). This evidence of low reliability indicates low homogeneity in item content, which reduces confidence in the validity of analyses with this subscale. Gender differences for the various constructs under investigation were assessed and significant differences were found with women scoring higher on Self-Evaluative perfectionism, BAS Drive, BAS Reward

Responsiveness, BIS, and Punishment. Men scored higher only on Reward (see Table 3).

After analyses revealed significant differences between men and women, subsequent analyses assessing Self-Evaluative perfectionism used hierarchical regression, accounting for gender before RST and RFT predictors.

Table 2 indicates that all measures of BAS correlate with each other at least at the .05 level of statistical significance, as do all BIS measures with each other. Table 2 also indicates that BAS Drive and Reward Responsiveness, as well as Reward, all of which are measures of BAS constructs, correlate with Personal Standards perfectionism with at least a .001 level of statistical significance and all measures of BIS correlate with Self-Evaluative perfectionism with at least a .001 level of statistical significance. Additionally, Table 2 provides evidence that BAS Drive, BAS Reward Responsiveness, and Reward correlate with Self-Evaluative perfectionism at least at the .05 level of statistical significance, and that Reward actually has a stronger correlation ($r = .37$) with Self-Evaluative perfectionism than it does with Personal Standards perfectionism ($r = .23$). It should be noted that BAS Funseeking and Jackson-5 BAS correlate neither with Personal Standards perfectionism nor with Self-Evaluative perfectionism, unlike the other measures of BAS constructs. Additionally, all BIS indices correlate with Personal Standards perfectionism with a .001 level of statistical significance. Neither of these relationship trends was anticipated when forming hypotheses. It should also be noted that the correlations between Jackson-5 BIS and Personal Standards and Self-Evaluative perfectionism ($r = .43$) and ($r = .46$) are nearly identical, suggesting comparable associations between Jackson-5 BIS and both perfectionism scales.

Examination of Table 2 also indicates an interesting correlation pattern: BAS Reward Responsiveness correlates ($r = .22$) with Personal Standards perfectionism, but correlates more strongly ($r = .43$) with BAS Drive, suggesting that a stronger relationship may exist between the two BAS measures than between Reward Responsiveness and Personal Standards. It should be expected that two measures of BAS constructs correlate, given their measurement of very similar constructs. However, taken in the context of BAS Drive and Reward Responsiveness' abilities to predict Personal Standards perfectionism when entered together into a regression with Funseeking and Reward, these correlations provide evidence that the association between these constructs negatively influenced the appearance of the predictive ability of BAS Reward Responsiveness.

One of the goals of the current investigation was to assess differences between measures of RST and their relationships to perfectionism. Thus, Fisher's z tests of the difference between two independent correlation coefficients (Preacher, 2002) were conducted to assess for any statistically significant differences between correlations of the various RST scales and their respective criterion perfectionism scales. Results of these tests can be found in Tables 4 and 5. These Fisher z tests indicated BAS correlated most highly with Personal Standards perfectionism when measured by BAS Drive. BAS correlated to a lesser extent with Personal Standards perfectionism when measured by both BAS Reward Responsiveness and the SPSRQ, as the differences in their correlations with Personal Standards did not reach significance at a criterion of $\alpha < .05$. BAS failed to correlate with Personal Standards perfection at a statistical significance level of .05 when measured by the Jackson-5 scales. Fisher's z tests also indicated that BIS correlated most highly with Self-Evaluative perfectionism when measured by both the BIS/BAS Scales and the SPSRQ, as the difference

in their correlations with Self-Evaluative perfectionism did not reach significance at a criterion of $\alpha < .05$. BIS correlated with Self-Evaluative perfectionism to a lesser degree when measured by the Jackson-5 scales.

BAS and Promotion Sensitivity Predict Personal Standards Perfectionism

The first prediction was that BAS sensitivity and RFT promotion focus would both have a positive predictive relationship with personal standards perfectionism and that when entered together into a regression, each would account for unique variance. To test this hypothesis, I conducted three analyses regressing personal standards perfectionism onto RST and RFT. Three regression analyses were used in order to include each of the three RST measures discussed, each along with the sole RFT measure. Results of these regression analyses predicting personal standards perfectionism are presented in Table 4.

In the first analysis, I used the BAS Scales (Carver & White, 1994), a measure of behavioral activation, and the ERQ measure of promotion sensitivity (Higgins et al., 2001), to predict personal standards perfectionism. The BAS Scales utilize three subscales of BAS known as (a) Drive, which describes a persistent pursuit of goals, (b) Funseeking, which describes spontaneous pursuit of enjoyable outcomes, and (c) Reward Responsiveness, which describes the degree of positive anticipation of positive outcomes. The first analysis proved successful, $F(4, 503) = 28.95, p < .001, R^2 = .19$, in predicting Personal Standards perfectionism (Table 6). In this analysis, BAS drive, $\beta = .34, p < .001$, BAS Funseeking, $\beta = -.17, p < .001$, and Promotion, $\beta = .19, p < .001$, each made a statistically significant contribution to the prediction of Personal Standards perfectionism. BAS Funseeking contributed in the negative direction, indicating higher BAS Funseeking scores were associated with lower Personal Standards perfectionism scores. BAS Reward

Responsiveness, $\beta = .07$, $p = .11$, did not make a statistically significant contribution to the prediction of Personal Standards perfectionism. Previously, it was noted that Reward Responsiveness was correlated ($r = .22$) with Personal Standards perfectionism and these regression results suggest that the variance accounted for by Reward Responsiveness is shared variance with Drive and/or Promotion.

In the second analysis, I used the SPSRQ Reward scale (Torrubia et al., 2001) to measure behavioral activation, and the ERQ Promotion scale (Higgins et al., 2001) to predict Personal Standards perfectionism. Again, this analysis significantly predicted, $F(2, 505) = 23.71$, $p < .001$, $R^2 = .09$, Personal Standards perfectionism. Both Reward, $\beta = .18$, $p < .001$, and Promotion, $\beta = .18$, $p < .001$, made statistically significant contributions to the prediction of Personal Standards perfectionism (Table 6).

In the third analysis, I used the Jackson-5 BAS (Jackson, 2009) to measure behavioral activation and the ERQ Promotion scale (Higgins et al., 2001) to predict Personal Standards perfectionism. This analysis significantly predicted, $F(2, 505) = 14.56$, $p < .001$, $R^2 = .06$, Personal Standards perfectionism. In this analysis, the Jackson-5 BAS, $\beta = -.01$, $p = .78$, did not significantly contribute to the prediction of Personal Standards perfectionism, while Promotion, $\beta = .24$, $p < .001$, did (Table 6).

BIS and Prevention Sensitivity Predict Self-Evaluative Perfectionism

The second prediction was that BIS sensitivity and RFT prevention would both have a positive predictive relationship with self-evaluative perfectionism and that when entered together in a regression, each would account for unique statistically significant variance. To test this hypothesis, I conducted three analyses regressing Self-Evaluative perfectionism on BIS and RFT Prevention. Three regression analyses were used again to include each of the

three BIS RST measures, each along with the sole RFT Prevention measure. In the course of preliminary analyses, Self-Evaluative perfectionism scores were found to significantly differ in terms of gender such that women, $M = 12.73$, $SD = 3.37$, scored significantly higher, $t(506) = -5.20$, $p < .001$, than men, $M = 11.65$, $SD = 3.61$. Thus, hierarchical regression analyses were used in testing the second hypothesis to first control for the effects of gender on Self-Evaluative perfectionism, then the effects of both BIS and Prevention. Step one of each hierarchical regression analysis included only gender as a predictor, while step two in each added BIS and Prevention predictors. Results of each hierarchical regression analysis predicting Self-Evaluative perfectionism are found in Table 7.

In the first regression analysis, I included gender, the BIS Scale (Carver & White, 1994) to measure behavioral inhibition, and the ERQ measure of prevention focus (Higgins et al., 2001), to predict Self-Evaluative perfectionism. Examination of step one, which included only gender as a predictor, indicated that gender, $\beta = .15$, $p < .001$, significantly predicted Self-Evaluative perfectionism, $\Delta R^2 = .02$, $\Delta F(1, 506) = 12.35$, $p < .001$. In step two BIS and Prevention were added into the regression analysis, $\Delta R^2 = .44$, $\Delta F(2, 505) = 207.27$, $p < .001$. With the addition of BIS and Prevention in step two, both BIS, $\beta = .66$, $p < .001$, and Prevention, $\beta = .10$, $p < .001$, were statistically significant predictors of Self-Evaluative perfectionism, but gender, $\beta = .01$, $p = .40$, was not. The full model was statistically significant, $R^2 = .46$, $F(3, 504) = 219.54$, $p < .001$ (Table 7).

In the second regression analysis, I included gender, the SPSRQ Punishment scale (Torrubia et al., 2001) and the ERQ Prevention scale (Higgins et al., 2001) to predict Self-Evaluative perfectionism. Step one of this analysis was the same as step one of the first analysis. In step two Punishment and Prevention were added into the regression analysis,

$\Delta R^2 = .35$, $\Delta F(2, 505) = 141.80$, $p < .001$. With the addition of Punishment and Prevention in step two, both Punishment, $\beta = .58$, $p < .001$, and Prevention, $\beta = .11$, $p < .001$, were statistically significant predictors of Self-Evaluative perfectionism, but gender, $\beta = .06$, $p = .12$ was not. The full model was statistically significant, $R^2 = .38$, $F(3, 504) = 154.15$, $p < .001$ (Table 7).

In the third regression analysis, I included gender, the Jackson-5 BIS (Jackson, 2009) to measure behavioral inhibition and the ERQ Prevention scale (Higgins et al., 2001) to predict Self-Evaluative perfectionism. Step one, again, was the same in this analysis as in the previous two. In step two, the Jackson-5 BIS and Prevention were added into the regression analysis, $\Delta R^2 = .22$, $\Delta F(2, 505) = 73.48$, $p < .001$. With the addition of Jackson-5 BIS and Prevention in step two, gender, $\beta = .15$, $p < .001$, BIS, $\beta = .43$, $p < .001$, and Prevention, $\beta = .14$, $p < .001$, were all statistically significant predictors of Self-Evaluative perfectionism. The full model was statistically significant, $R^2 = .24$, $F(3, 504) = 85.82$, $p < .001$ (Table 7).

Discussion

The current study was conducted to examine the capabilities of RST and RFT to predict perfectionism. Specifically, high BAS and promotion sensitivities were hypothesized to predict high personal standards perfectionism and high BIS and prevention sensitivities were hypothesized to predict high self-evaluative perfectionism such that each predictor accounted for unique variance when entered together in a regression. Examination of the results of all regression analyses suggested a number of discussion points. RST was a successful predictor of perfectionism; specifically, BAS was a successful predictor of personal standards perfectionism and BIS was a successful predictor of self-evaluative perfectionism. These findings were consistent with those of Randles and colleagues (2010). In their study, BAS Drive and Reward Responsiveness scales were found to correlate

strongly with MPS-HF Self-Oriented perfectionism, a measure of one's internal motivation to achieve success (an indicator of personal standards perfectionism), while BIS was found to correlate strongly with MPS-HF Socially-Prescribed perfectionism, a measure of one's experienced need to satisfy the perceived expectations of others (an indicator of self-evaluative perfectionism; Randles et al., 2010).

The current study also demonstrated that RFT was a successful predictor of perfectionism; specifically, promotion was a successful predictor of personal standards perfectionism and prevention was a successful predictor of self-evaluative perfectionism. These findings were consistent with the current study's hypotheses and are discussed below.

Gender Differences

Upon analysis of the results of the current study, gender differences for several predictor and criterion variables were found. Specifically, the findings of the current investigation indicate that women may tend to exhibit more self-evaluative perfectionistic traits of worry, concern, and rumination over their performance and potential mistakes than men. Additionally, women appear to have higher BAS drive which includes a sensitivity to possess a strong will to maintain behaviors that are likely to cause positive outcomes, as well as BAS reward responsiveness which includes sensitivity to the possibility of payoffs from positive situations, as measured by the Carver and White (1994) BAS Scales. Findings also indicate that women may have a more heightened BIS sensitivity to the possibility of negativity or danger, as well as ambiguity. However, women scored lower than men on the SPSRQ Reward scale providing mixed results by gender for the multiple BAS scales. No significant gender differences were found for the Jackson 5 BAS or BIS scales.

Hill and colleagues (2004) reported no significant gender differences on any of their eight scales of the PI. Other studies of the two-factor model of perfectionism generally do not address potential gender differences (Stoeber & Otto, 2006). More recently, Randles and colleagues (2010) in their study of perfectionism and RST were not able to draw a sufficiently large group of men to examine gender differences in terms of either perfectionism or RST constructs. However, in a review of RST, Corr and Matthews (2009) reported women scoring higher on both BIS and BAS Reward Responsiveness, as measured by the BIS/BAS Scales (Carver & White, 1994), than men, consistent with the findings of the current study.

BAS and Promotion Predict Personal Standards Perfectionism

Examination of the results indicates that each of the three regression models including a BAS measure and a promotion measure was successful in predicting Personal Standards perfectionism, although obviously differing in amount of variance accounted for. As mentioned previously, the first regression analysis including the BAS Scales (Carver & White, 1994) and Promotion provided the most complete accounting of variance, followed by the SRSPQ and Promotion, and the Jackson-5 and Promotion, respectively.

The fact that both Carver and White's (1994) BAS measure and Torrubia and colleagues' (2001) SRSPQ BAS measure both predicted Personal Standards perfectionism, but Jackson's (2009) BAS measure did not, suggests that the Jackson 5 BAS may be a less successful measure of the construct. Jackson's (2009) BIS measure did successfully predict its respective criterion however, and will be discussed below.

Personal standards perfectionism describes a group of thoughts and behaviors geared towards setting lofty standards for oneself and others, striving with effort to meet those

standards, being organized and taking measures to equip oneself with necessary tools to succeed, among other characteristics. This type of perfectionism has been previously described as a healthier, more adaptive perfectionism than its counterpart, self-evaluative perfectionism (Stoeber & Otto, 2006). One hypothesis supported in this investigation suggested that BAS, or the basic neuropsychological tendencies influencing approach to positive stimuli, predicts personal standards perfectionism. The results indicate that the more likely one is to become aroused at the prospect of various positive stimuli, whether conditioned or not, the more likely that individual may be to approach various situations with organization, planfulness, high standards and a concern for high performance outcomes. This relationship implies that a significant portion of the behavioral and cognitive tendencies of personal standards perfectionism may be derived from a basic and inherent disposition to respond to rewards or positivity.

In addition to BAS being a successful predictor of personal standards perfectionism, RFT promotion was successful as well. Promotion describes a behavioral tendency to approach goal-oriented situations by attempting to achieve the goal by advancement, growth, or forward movement, as opposed to its prevention counterpart which focuses on attempting to achieve a goal by preventing loss or defending against failure. RFT promotion appears to assess an approach behavior beyond what is accounted for by BAS in predicting adaptive perfectionistic trait behavior. When compared to the hard-wired tendency of BAS to be sensitive to positive stimuli, promotion is a more experiential, state-specific tendency to attempt to achieve success by advancement rather than protection against loss. Whereas the former is a neuropsychological predisposition that is inherent to the individual, the latter is a tendency to act that is learned and molded over time and influenced by experience. The

addition of promotion as a significant predictor implies that in addition to hard-wired dispositions to respond to positive stimuli, personal standards perfectionism may also be partially derived from the manner in which individuals generally attempt to achieve success across situations, suggesting that their tendency to succeed by advancement rather than defense against loss may be a precursor to personal standards. When combining both precursors to perfectionistic behaviors, it appears that personal standards perfectionism may be a derivative of both inherited and developed tendencies. This suggests that while individuals may be susceptible to certain predisposing factors, particularly those which govern their inherent response to positive stimuli (BAS), to display personal standards perfectionism, their experiences, particularly those that teach an individual that advancement tends to yield success (promotion), also can influence perfectionistic trait behaviors.

Examination of the results of the present study indicates relationships that were not anticipated in forming hypotheses. The Carver and White (1994) measure of BAS includes three subscales, respectively assessing the aforementioned drive, reward responsiveness, and funseeking, all of which were expected to positively associate with personal standards perfectionism. Drive describes a select type of BAS that involves putting forth significant effort towards achieving goals, attaining success, or experiencing positive stimuli. Reward responsiveness describes another type of BAS involving the sensitivity to potential positive outcomes, or the anticipation of experiencing such stimuli. Funseeking describes the third type of BAS involving sensitivity to and/or tendency to become aroused by spur-of-the-moment positive stimuli, or a less calculated and more impulsive experience of positivity (Carver & White, 1994).

According to the results of the current study, drive is the only form of BAS that positively predicts personal standards perfectionism, suggesting that the more an individual displays a basic neuropsychological urge to strive for positivity with effort, the more likely they may be to display the organized and planful high personal standards perfectionism. Reward responsiveness, while it correlates with personal standards perfectionism (see Table 2), appears to overlap empirically with drive, funseeking, or promotion, as it did not provide unique predictive variance. Given the correlations shown in Table 2, it appears that reward responsiveness mostly overlaps with drive, suggesting that the portion of one's tendency to respond positively to the presence of rewards or positive stimuli (reward responsiveness) that relates to personal standards perfectionism is also captured by one's predisposition to a strong tendency approach positive stimuli (drive). Further, it appears that the tendency to approach those positive stimuli (drive) may provide a better prediction of personal standards perfectionism.

Finally, funseeking appears to be a portion of BAS tendencies that is counterproductive to personal standards perfectionism, as the regression results indicate lower tendencies to spontaneously engage in momentary positive experience may be indicative of a higher personal standards perfectionism. This finding suggest that personal standards perfectionism is negatively associated with impulsive, spur-of-the-moment motivations, implying that the organizational, conscientious behaviors and thoughts of the personal standards perfectionist are not fleeting, but instead more calculated. The funseeking subscale also demonstrated poor inter-item consistency for this sample with a low alpha coefficient indicating more error in analyses using this subscale than other measures, thus casting doubt on any conclusions, based on the BAS Funseeking scale. In sum, the multiple

regression analysis using Carver and White's (1994) BAS measure accounted for more variance than did either of the other two BAS scale analyses (see Table 4). Drive was the most robust BAS predictor of personal standards perfectionism, suggesting this construct that includes an effortful attention to positive goals is associated with a positive striving personality.

BIS and Prevention Predict Self-Evaluative Perfectionism

Examination of the results indicates that each of the three regression analyses including a BIS measure and a prevention measure, although obviously differing in amount of variance accounted for, was successful in predicting self-evaluative perfectionism. The first regression analysis including the Carver and White (1994) BIS Scale and ERQ Prevention provided the most complete accounting of variance, followed by the SRSPQ and Prevention, and the Jackson-5 and Prevention, respectively.

In comparison, the amount of variance accounted for by each of the three BIS and prevention analyses was higher than that of any of the three BAS and promotion analyses. In other words, BIS and prevention conceptually are more robust predictors of self-evaluative perfectionism than are BAS and promotion of personal standards perfectionism (see Table 5). Thus, it appears likely that the BIS construct is more strongly related to self-evaluative perfectionism than BAS is related to personal standards perfectionism, suggesting that BAS and promotion were less useful in accounting for personal standards perfectionism than were BIS and prevention in accounting for self-evaluative perfectionism. This may reflect a superiority in capturing BIS relative to BAS in the measures used in the current study. Or the relationship between BAS and personal standards perfectionism is simply less robust than the relationship between BIS and self-evaluative perfectionism.

BIS describes a neuropsychological predisposition towards sensitivity to all potentially negative or ambiguous stimuli. Results of the current study suggest that BIS sensitivity is successful in predicting perfectionistic tendencies to worry, feel anxiety about mistakes, feel pressure from external sources, and ruminate over past behavior. All these personality characteristics, definitive of self-evaluative perfectionism, are manifestations of anxiety or worry over experiencing negative stimuli or outcomes. Therefore, it appears parallel with BAS predicting personal standards perfectionism that BIS predicts self-evaluative perfectionism in that the hard-wired predispositions over time and through experience can lead to longstanding personality traits. This relationship suggests that a significant portion of the behavioral and cognitive tendencies of self-evaluative perfectionism may be derived from a hard-wired disposition to experience anxiety or hesitation in the presence of negative stimuli. That inherent anxiety to avoid aversive stimuli may provide a precursor to self-evaluative perfectionists' tendencies to highlight their own mistakes, feel great amounts of pressure from external sources, and have difficulty avoiding rumination following failure.

Just as RFT promotion was supported as a tendency to approach goal-oriented situations that influences the manifestation of personal standards perfectionism, RFT prevention influences the manifestation of self-evaluative perfectionism. The tendency to display prevention focus across situations, where an individual attempts to succeed by avoiding loss, protecting themselves from failure, and essentially limiting the possibility of negative outcomes, strongly predicts the personality characteristic of self-evaluative perfectionism. Crowe and Higgins (1997) demonstrated this prevention tendency in a signal detection paradigm in which prevention focused individuals were more likely to take a

“conservative” approach, guarding against errors of commission and quitting more readily when engaged in a difficult task or after having recently failed. The results of this investigation suggest that prevention-focused individuals demonstrated higher levels of self-evaluative perfectionism.

Just as the predispositions of BIS sensitivity may influence perfectionism, the tendencies of prevention may as well. In sum, one’s tendency to address potential or explicit negativity with concern, apprehension, and/or anxiety (BIS), coupled with one’s tendency to avoid losses, failure, or negative outcome (prevention), may predict a longstanding personality trait comprised of worry over mistakes, rumination over past behavior, need for approval, and perceived pressure from external sources, which characterizes self-evaluative perfectionism.

Examination of RST Measures

The results reflect differences between measures of RST, specifically differences between the scales purporting to measure the BAS and BIS constructs. Examination of Table 2 as it relates to RST measures indicates statistically significant correlations among all measures of BAS, as well as among all measures of BIS. However, many of these correlations are modest, suggesting some divergence in constructs. The modest correlations between BAS scales respectively and BIS scales respectively all suggest relatively weak to modest relationships between scales that supposedly measure the same or very similar constructs. This finding suggests that differences exist between the three RST measures, but as the current investigation only assessed their correlational associations, further analyses would be necessary to better illuminate specific differences between these measures.

Differences exist between BAS measures in their correlations to personal standards perfectionism and BIS measures in their correlations to self-evaluative perfectionism. Examination of results of Fisher's z test of the difference between two independent correlation coefficients (Preacher, 2002) found in Tables 4 and 5 suggest that overall, the Carver and White (1994) BAS and BIS scales were correlated more highly with their coinciding perfectionism measures, followed by the SRSPQ reward and punishment scales. The Jackson-5 BAS and BIS demonstrated the weakest correlations with their coinciding perfectionism measures. This same pattern was manifest in regression analyses, where the Carver and White (1994) scales accounted for the most variance in predicting perfectionism, followed by the SRSPQ scales and then the Jackson-5 scales.

The SRSPQ and Jackson-5 assess the 2000 RST revision and the Carver and White (1994) BIS/BAS Scales assess the 1981 RST. Analysis of the results of this investigation suggests that regardless of the change in construct definition between the 1981 and 2000 RST versions, the measures appear to capture the same latent construct and that construct is predictive of perfectionism in both versions. A future investigation might further analyze each RST measure for conceptual similarities and differences in item content to further inform the selection of RST measures.

Limitations and Implications for Future Research

The sample was unevenly distributed across the demographics of education and gender, providing a relatively highly educated and more female sample. These sample demographics indicate that the participants had more formal education than the average of the United States population (Peres-Pena, 2012; United States Census, 2010) which could limit the generalizability of the results.

While this investigation found various indices of both BAS and BIS to be statistically significant predictors of perfectionism, future research might include an item level analysis of the respective RST scales, and careful assessment for meaningful differences in the constructs they capture and the quality of scale construction.

Future research may also add to the validity of findings of the relationship between RST and perfectionism by assessing these variables in other countries. In doing so, the nature of these associations between constructs could be established in other populations adding confidence to the findings and making it possible for meaningful comparisons to be made across multiple nationalities. Results indicate that RFT is a statistically significant predictor of perfectionism, but not as robust as RST. Future research may also assess other constructs to compliment RST and RFT in the prediction of perfectionism.

An area of study that has long exhibited a relationship to perfectionism is psychopathology, specifically depression and anxiety disorders (Rasmussen & Eisen, 1992; Rosen, Murkofsky, Steekler, & Skolnick, 1989). Future research might assess potential relationship between RST and perfectionism as they pertain to the development of depression or anxiety. For instance, existing RST literature suggests that BIS/BAS dispositions have an effect on the development of anxiety disorders, such that those who are more sensitive to signals of punishment are more likely to exhibit signs of anxiety (Gray & McNaughton, 2000). Existing perfectionism literature posits that self-evaluative perfectionism tends to associate with the development of anxious and depressive tendencies as well (Stoeber & Otto, 2006). Future research may assess anxiety and depressive disorders with both RST and perfectionism dimensions as predictors. This type of investigation may further illuminate the understanding of the etiology of these categories of psychopathology.

These RST, RFT and perfectionism findings also invite an investigation that includes a behavioral component intended to assess risk/reward behaviors that might exemplify BAS and BIS predispositions, as well as promotion and prevention principles, given that RST and RFT both involve response to both positive and negative outcomes. Such a risk/reward paradigm may be a gambling opportunity, for instance, wherein the subject is offered the choice to risk losing their earnings to attempt to increase their reward. This type of paradigm could use RST theory to predict how one addresses the ambiguous and potentially negative situation of losing rewards compared to the potential of increasing rewards, while concurrently assessing the role of perfectionism. Using this or another paradigm could provide an avenue for assessment of the role of RST, RFT and perfectionism in determining behavior related to risk/reward.

Summary

This study assessed the relationship between RST, RFT and perfectionism. Specifically, the study indicated that BAS (RST) and promotion (RFT) both predicted personal standards perfectionism and that BIS (RST) and prevention (RFT) both predicted self-evaluative perfectionism. These findings suggest that pre-dispositional tendencies in response to stimuli, both approach oriented (BAS) and avoidance oriented (BIS), predict perfectionistic personality. Additionally, the findings suggest that behaviorally learned tendencies to achieve success either by gain (promotions focus) or the avoidance of loss (prevention focus) are also predictive of perfectionistic tendencies.

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Tables and Figures

Table 1

Household Income, Ethnic Background, and Highest Level of Education

	<i>n</i>	Percent
\$0-\$25,000	155	30.5
\$25,000-\$50,000	161	31.7
\$50,000-\$75,000	92	18.1
\$75,000-\$100,000	55	10.8
>\$100,000	45	8.9
<hr/>		
Caucasian/European	400	78.7
African American	32	6.3
Hispanic/Latino	19	3.7
American Indian	1	0.2
Asian	41	8.1
Other	15	3.0
<hr/>		
Some High School	13	2.6
High School Graduate	58	11.4
Some College	168	33.1
Associates/Professional Degree/Certificate	50	9.8
Bachelor's Degree	161	31.7
Graduate Degree	58	11.4

Note. Only participants who identified as living within the United States were allowed to complete the Task.

Table 2
Descriptive Statistics and Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. PI Personal Standards	.92											
2. PI Self-Evaluative	.49***	.95										
3. BAS Drive	.35***	.19***	.88									
4. BAS Funseeking	-.05	.08	.26***	.10								
5. BAS Reward Responsiveness	.22***	.09*	.43***	.13**	.83							
6. BIS	.32***	.67***	.10*	-.08	.26***	.86						
7. Reward	.23***	.37***	.36***	.34***	.19***	.17***	.81					
8. Punishment	.17***	.60***	-.06	-.05	.02	.64***	.12**	.89				
9. Jackson-5 BAS	.03	-.03	.33***	.58***	.22***	-.22***	.32***	-.31***	.83			
10. Jackson-5 BIS	.43***	.46***	.30***	.16***	.28***	.35***	.44***	.25***	.21***	.77		
11. Promotion	.23***	.30***	.14**	.10*	.13**	.16***	.27***	.16***	.18***	.27***	.81	
12. Prevention	.01	.18***	.15**	.24***	.09*	.12**	.29***	.12**	.14**	.12**	.13**	.80
<i>Mean</i>	14.08	12.36	11.46	10.34	17.90	20.76	10.78	12.91	20.94	22.60	19.46	15.42
<i>Standard Deviation</i>	2.49	3.32	2.92	1.84	2.31	4.54	4.63	6.17	4.54	3.96	2.39	3.05

Note. *n* = 508. Values located on the main diagonal are Coefficient Alphas for the respective variables. PI = Perfectionism Inventory (Hill et al., 2004); BAS = Behavioral Activation System; BIS = Behavioral Inhibition System (Carver & White, 1994); Reward = Sensitivity to Reward (BAS SPSRQ); Punishment = Sensitivity to Punishment (BIS SPSRQ); Jackson-5 = Scales for Measuring Revised Reinforcement Sensitivity Theory (Jackson, 2009); Promotion and Prevention = scales of the Event Reaction Questionnaire (ERQ; Higgins et al., 2001) assessing Regulatory Focus.
* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 3

Tests of Differences between Men and Women

Scale	<i>M (SD)</i> Men	<i>M (SD)</i> Women	<i>t</i>	<i>df</i>	<i>p</i>
Self-Evaluative perfectionism	11.65 (3.61)	12.73 (3.37)	-3.51	506	<.001
BAS Drive	11.01 (2.84)	11.69 (2.94)	-2.50	506	<.05
BAS Reward Responsiveness	17.11 (2.56)	18.30 (2.10)	-5.70	506	<.001
BIS	19.34 (4.42)	21.50 (4.43)	-5.20	506	<.001
Reward	11.51 (4.46)	10.40 (4.67)	2.58	506	<.05
Punishment	11.31 (6.34)	13.73 (5.93)	-4.25	506	<.001

Note. Self-Evaluative perfectionism = scale of the Perfectionism Inventory (PI; Hill et al., 2004); BAS = Behavioral Activation System (Carver & White, 1994); BIS = Behavioral Inhibition System (Carver & White, 1994); Reward = Sensitivity to Reward (BAS SPSRQ; Torrubia et al., 2001); Punishment = Sensitivity to Punishment (BIS SPSRQ; Torrubia et al., 2001).

Table 4

Fisher's z tests of Differences Between Correlation Coefficients Between BAS Scales and Personal Standards Perfectionism Scale

Construct	Measures	<i>r</i>	<i>z</i>	<i>p</i>
BAS	BAS Drive = Carver & White, 1994	.35	2.09	<.05
	SPSRQ = Torrubia et al., 2001	.23		
	BAS Reward Responsiveness = Carver & White, 1994	.22	-.17	.87
	SPSRQ = Torrubia et al., 2001	.23		
	BAS Drive = Carver & White, 1994	.35	5.33	<.001
	Jackson-5 = Jackson, 2009	.03		
	BAS Reward Responsiveness = Carver & White, 1994	.22	3.08	<.05
	Jackson-5 = Jackson, 2009	.03		
	SPSRQ = Torrubia et al., 2001	.23	3.24	<.01
	Jackson-5 = Jackson, 2009	.03		

Note. BAS = Behavioral Activation System (Carver & White, 1994); BAS Drive = scale of the BIS/BAS Scales (Carver & White, 1994); SPSRQ = Sensitivity to Punishment Sensitivity to Reward Questionnaire (Torrubia et al., 2001); BAS Reward Responsiveness = scale of BIS/BAS Scales (Carver & White, 1994); Jackson-5 = Scales for Measuring Revised Reinforcement Sensitivity Theory (Jackson, 2009).

Table 5

Fisher's z tests of Differences Between Correlation Coefficients Between BIS Scales and Self-Evaluative Perfectionism Scale

Construct	Measures	<i>r</i>	<i>z</i>	<i>p</i>
BIS	BIS/BAS Scales = Carver & White, 1994	.67	1.87	.06
	SPSRQ = Torrubia et al., 2001	.60		
	BIS/BAS Scales = Carver & White, 1994	.67	4.98	<.001
	Jackson-5 = Jackson, 2009	.46		
	SPSRQ = Torrubia et al., 2001	.60	3.11	<.01
	Jackson-5 = Jackson, 2009	.46		

Note. BIS = Behavioral Inhibition System (Carver & White, 1994); BIS/BAS Scales (Carver & White, 1994); SPSRQ = Sensitivity to Punishment Sensitivity to Reward Questionnaire (Torrubia et al., 2001); Jackson-5 = Scales for Measuring Revised Reinforcement Sensitivity Theory (Jackson, 2009).

Table 6

Behavioral Activation, Promotion Predict Personal Standards Perfectionism Regression Analysis

		Personal Standards Perfectionism				
		<i>R</i> ²	<i>F</i>	<i>df</i>	β	<i>p</i>
Analysis 1 ^a		.19	28.95	4, 503		<.001
	BAS-D				.34	<.001
	BAS-F				-.17	<.001
	BAS-R				.07	.11
	Promotion				.19	<.001
Analysis 2 ^b		.09	23.71	2, 505		<.001
	Reward				.18	<.001
	Promotion				.18	<.001
Analysis 3 ^c		.06	14.56	2, 505		<.001
	Jackson-5				-.01	.78
	BAS					
	Promotion				.24	<.001

Note: BAS = Behavioral Activation System (Carver & White, 1994); BAS-D = BAS Drive (BAS Scales; Carver & White, 1994); BAS-F = BAS Funseeking (BAS Scales; Carver & White, 1994); BAS-R = BAS Reward Responsiveness (BAS Scales; Carver & White, 1994); Promotion = scale of the Event Reaction Questionnaire (ERQ; Higgins et al., 2001); Reward = Sensitivity to Reward (BAS SPSRQ; Torrubia et al., 2001); Jackson-5 = Scales for Measuring Revised Reinforcement Sensitivity Theory (Jackson, 2009).

^a Analysis 1 Predictors: BAS Drive, BAS Funseeking, BAS Reward Responsiveness, and Promotion; Criterion: Personal Standards Perfectionism.

^b Analysis 2 Predictors: Reward and Promotion; Criterion: Personal Standards Perfectionism.

^c Analysis 3 Predictors: Jackson-5 BAS and Promotion; Criterion: Personal Standards Perfectionism.

Table 7

Behavioral Inhibition, Prevention Predict Self-Evaluative Perfectionism Hierarchical Regression Analysis

		Self-Evaluative Perfectionism					
		R^2	ΔR^2	ΔF	df	β	P
Analysis 1 ^a							
	Step 1	.02	.02	12.35	1, 506		<.001
	Gender					.15	<.001
	Step 2	.46	.44	207.20	3, 504		<.001
	Gender					.01	.40
	BIS					.66	<.001
	Prevention					.10	<.01
Analysis 2 ^b							
	Step 1	.02	.02	12.35	1, 506		<.001
	Gender					.15	<.001
	Step 2	.37	.35	141.80	3, 504		<.001
	Gender					.06	.12
	Punishment					.58	<.001
	Prevention					.11	<.01
Analysis 3 ^c							
	Step 1	.02	.02	12.35	1, 506		<.001
	Gender					.15	<.001
	Step 2	.24	.22	73.48	3, 504		<.001
	Gender					.15	<.001
	Jackson-5					.43	<.001
	BIS						
	Prevention					.14	<.01

Note. BIS = Behavioral Inhibition System (BIS Scales; Carver & White, 1994); Prevention = scale of the Event Reaction Questionnaire (ERQ; Higgins et al., 2001); Punishment = Sensitivity to Punishment (BIS SPSRQ; Torrubia et al., 2001); Jackson-5 = Scales for Measuring Revised Reinforcement Sensitivity Theory (Jackson, 2009).

^a Analysis 1 Step 1 Predictor: Gender; Step 2 Predictors: Gender, BIS, and Prevention; Criterion: Self-Evaluative Perfectionism.

^b Analysis 2 Step 1 Predictor: Gender; Step 2 Predictors: Gender, Punishment, and Prevention; Criterion: Self-Evaluative Perfectionism.

^c Analysis 3 Step 1 Predictor: Gender; Step 2 Predictors: Gender, Jackson-5 BIS, and Prevention; Criterion: Self-Evaluative Perfectionism.

Appendix A

To: Charles Mautz
Psychology
CAMPUS MAIL

From: Julie Taubman, Institutional Review Board
Date: 3/31/2011
RE: Notice of IRB Exemption
Study #: 11-0261

Sponsors: University Funded
Study Title: Reinforcement Sensitivity Theory and Regulatory Focus Predicts Perfectionism.
Exemption Category: (2) Anonymous Educational Tests; Surveys, Interviews or Observations

This submission has been reviewed by the IRB Office and was determined to be exempt from further review according to the regulatory category cited above under 45 CFR 46.101(b). Should you change any aspect of the proposal, you must contact the IRB before implementing the changes to make sure the exempt status continues to apply. Otherwise, you do not need to request an annual renewal of IRB approval. Please notify the IRB Office when you have completed the study. Best wishes with your research!

CC:
Robert Hill, Psychology

Appendix B

Consent to Participate in Research on Personality and Behavior

Information to Consider About this Research

Opinions and activities

Principal Investigator: Charles Mautz and Dr. Robert W. Hill

Department: Psychology

Contact Information:

Charles Mautz, Psychology Department, Appalachian State University, Boone, NC, 28608.

Dr. Robert W. Hill, Psychology Department, Appalachian State University, Boone NC.
28608.

What is the purpose of this research?

This research is intended to inform the field of research regarding individual personality traits and behaviors.

What will I be asked to do?

You will be asked to answer a series of multiple choice questions pertaining to your personality and behavior requiring about 30-60 minutes.

What are possible harms or discomforts that I might experience during the research?

To the best of our knowledge, the risk of harm for participating in this research study is no more than you would experience in everyday life.

What are the possible benefits of this research?

You likely will experience no personal benefit from your participation, other than your Mturk compensation, but the information gained through this research will inform various fields of personality research.

Will I be paid for taking part in the research?

Yes. For your participation, you will be paid \$.50. *Note: participation that yields less than truthful responses will result in no compensation. Please pay attention to your responses and be honest.

How will you keep my private information confidential?

No identifying information will be asked of any participant, nor will any data be released beyond the control of the principle investigators and research committee.

Who can I contact if I have questions?

You may contact the Principal Investigators through email at mautzcp@email.appstate.edu or hillrw@appstate.edu if you have concerns. If you have questions about your rights as someone taking part in research, contact the Appalachian Institutional Review Board Administrator at 828-262-2130 (days), through email at irb@appstate.edu or at Appalachian State University, Office of Research and Sponsored Programs, IRB Administrator, Boone, NC 28608.

Do I have to participate? What else should I know?

Your participation in this research is completely voluntary. If you choose not to volunteer, there will be no penalty and you will not lose any benefits or rights you would normally have. If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. There will be no penalty and no loss of benefits or rights if you decide at any time to stop participating in the study. However, if you decide to stop during the survey task, you will not receive compensation.

This research project has been approved, as required, by the Institutional Review Board of Appalachian State University This study was approved on [3-31-2011](#).

I have decided I want to take part in this research. What should I do now?

- I have read all of the above information.
- I understand that I can stop taking part in this study at any time.
- I understand I am not giving up any of my rights.
- **By continuing with the on line questionnaires I consent to participate.**

Vita

Charles Mautz was born in Blacksburg, Virginia on September 12th, 1987. He attended grade school in Greensboro, North Carolina and graduated from Grimsley Senior High School in June, 2006. In the fall of 2006, Mr. Mautz enrolled at North Carolina State University, where he studied for one year. In the fall of 2007, Mr. Mautz enrolled at the University of North Carolina at Chapel Hill, where he earned a Bachelor of Arts in Psychology in May, 2010. In the fall of 2010, Mr. Mautz enrolled in the Master of Arts in Clinical Health Psychology program at Appalachian State University. He received a Master of Arts in Clinical Health Psychology in August, 2013. This investigation is Mr. Mautz's Master's Thesis and was supervised by Robert W. Hill, PhD, Appalachian State University.