


Spring 2014

The effect of state orientation on emotion dysregulation, borderline personality disorder, and nonsuicidal self-injury

Desiree LeBoeuf-Davis

Follow this and additional works at: <https://digitalcommons.latech.edu/dissertations>

 Part of the [Counseling Psychology Commons](#), [Personality and Social Contexts Commons](#), and the [Quantitative Psychology Commons](#)

**THE EFFECT OF STATE ORIENTATION ON EMOTION
DYSREGULATION, BORDERLINE PERSONALITY
DISORDER, AND NONSUICIDAL SELF-INJURY**

by

Desireé LeBoeuf-Davis, B.S., M.A.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

May 2014

UMI Number: 3662220

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI 3662220

Published by ProQuest LLC 2015. Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against unauthorized copying under Title 17, United States Code.



ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

LOUISIANA TECH UNIVERSITY

THE GRADUATE SCHOOL

April 11, 2014

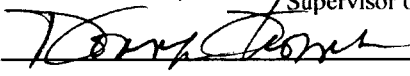
Date

We hereby recommend that the dissertation prepared under our supervision
by Desiree LeBoeuf-Davis

entitled The Effect of State Orientation on Emotion Dysregulation, Borderline
Personality Disorder, and Nonsuicidal Self-injury

be accepted in partial fulfillment of the requirements for the Degree of
Doctor of Philosophy

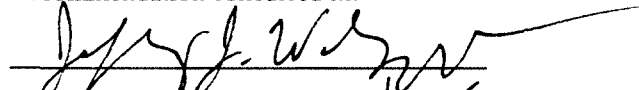
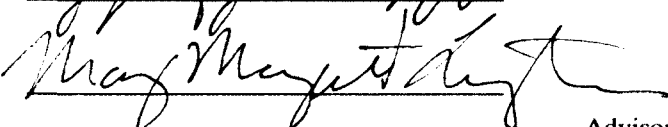

Supervisor of Dissertation Research


Head of Department

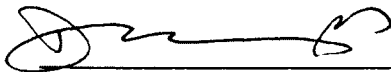
Department of Psychology

Department

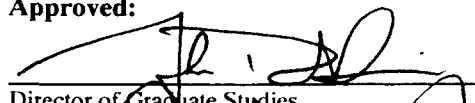
Recommendation concurred in:

Advisory Committee

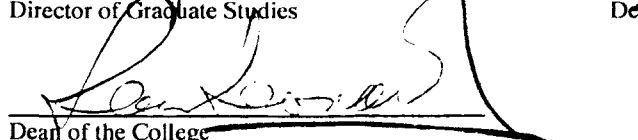


Approved:


Director of Graduate Studies

Approved:


Dean of the Graduate School


Dean of the College

ABSTRACT

The current study extends the application of Personality Systems Interactions (PSI) theory (Kuhl, 2000b) to the distinction between Nonsuicidal Self-injury (NSSI) and Borderline Personality Disorder (BPD) by examining the effect of State Orientation (Kuhl, 1994) on emotion dysregulation, BPD, and NSSI. Participants were recruited using social media and internet-based snowball techniques. Participants were directed to a web-based survey consisting of a demographic questionnaire, the Action Control Scale -24 (ACS-24; Kuhl, 1994; Kuhl & Fuhrmann, 1998), the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Gratz and Roemer, 2008), the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003), and the Inventory of Statements About Self-injury (ISAS; Klonsky & Glenn, 2009; Klonsky & Olino, 2008). Path analysis was used to test a mediation model in which State Orientation had direct effects on emotion dysregulation, BPD symptoms, and NSSI behaviors, and indirect effects on BPD symptoms and NSSI behaviors through emotion dysregulation. The hypothesized model suggested the relationship between BPD symptoms and NSSI behaviors is mediated by the total effects specified in the model. Results indicated that the specified model demonstrated marginal model-data correspondence and was not supported. The retained model (a theory consistent model) depicted direct effects of State Orientation on emotion dysregulation, but not on BPD symptoms or NSSI behaviors. However, results indicated an indirect effect of State

Orientation on BPD symptoms and NSSI behaviors. These findings are consistent with previous research suggesting that NSSI may be a distinct disorder, specifically, separate from BPD. Future research should attempt to replicate the findings of the current study and/or test the originally proposed model with alternate populations (e.g., undergraduate college students, clinical samples of various ages, and youth). Additionally, future research should incorporate other aspects of PSI theory into the NSSI and BPD literature. Clinical implications include early identification and subsequent intervention, as well as improved conceptualization of client characteristics.

APPROVAL FOR SCHOLARLY DISSEMINATION

The author grants to the Prescott Memorial Library of Louisiana Tech University the right to reproduce, by appropriate methods, upon request, any or all portions of this Dissertation. It is understood that "proper request" consists of the agreement, on the part of the requesting party, that said reproduction is for his personal use and that subsequent reproduction will not occur without written approval of the author of this Dissertation. Further, any portions of the Dissertation used in books, papers, and other works must be appropriately referenced to this Dissertation.

Finally, the author of this Dissertation reserves the right to publish freely, in the literature, at any time, any or all portions of this Dissertation.

Author DEAD
Date 4/11/14

DEDICATION

This dissertation is dedicated to my mother, Barbara J. Davis, who has supported and encouraged me throughout my life as well as my academic career. I would never have accomplished my goals without her support. I am eternally grateful for the sacrifices she has made so that I could become a scholar. Thank you.

TABLE OF CONTENTS

ABSTRACT.....	iii
DEDICATION.....	vi
LIST OF TABLES.....	xii
LIST OF FIGURES.....	xiii
ACKNOWLEDGEMENTS.....	xiv
CHAPTER 1 INTRODUCTION.....	1
Personality Systems Interactions Theory.....	3
Systems Conditioning.....	4
The Development of Disposition.....	6
Cognitive Macrosystems.....	9
Higher Level Macrosystems.....	10
Two Modulation Assumptions.....	11
State Orientation.....	15
Emotion Dysregulation.....	17
The Development of Self-Control.....	19
Modes of Volition.....	20
Diagnostic and Statistical Manual of Mental Disorders.....	24
DSM-IV-TR Axis I Disorders.....	25
DSM-IV-TR Axis II Disorders.....	25

Relevant DSM-5 Changes	26
Borderline Personality Disorder	28
Comorbidity	33
Nonsuicidal Self-Injury.....	36
Rates of Self-Injury	39
Methods of Self-Injury.....	39
Functions of Self-Injury	40
Contextual Features of Self-Injury	42
Risk Factors for Self-Injury	44
Borderline Personality Disorder	44
Theories Explaining Self-Injury	48
Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-5)	52
DSM-5 NSSI Criteria.....	54
Statement of the Problem.....	57
Justification for the Present Study	61
The Mediation Model	63
Model Hypothesis Justification	64
Model Hypothesis – Mediation of the Relationship Between BPD and NSSI.....	66
Model Hypothesis	66
Hypothesis A1 - Direct Effect of State Orientation on Emotion Dysregulation ...	67
Hypothesis A1.....	67
Hypothesis A2 - Direct Effect of State Orientation on BPD Symptoms.....	68
Hypothesis A2.....	68

Hypothesis A3 – Direct Effect of State Orientation on NSSI.....	68
Hypothesis A3.....	69
Hypothesis B1 – Indirect Effect of State Orientation on BPD	69
Hypothesis B1	70
Hypothesis B2 - Indirect Effect of State Orientation on NSSI.....	70
Hypothesis B2.....	70
Just-Identified Comparison Model	71
Model Comparison Hypothesis	72
CHAPTER 2 METHOD	73
Participants.....	73
Instruments.....	74
Demographic Questionnaire	74
Action Control Scale.....	75
The Difficulties in Emotion Regulation Scale	77
Inventory of Statements About Self-Injury	79
McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD).....	84
Procedure	86
Data Analytic Strategy.....	87
CHAPTER 3 RESULTS	90
Participants.....	90
Psychometric Properties for Measured Variables.....	91
ACS-24	91
DERS	96

MSI-BPD101

ISAS102

Preliminary Data Analysis103

Model Testing106

 Hypothesis A1107

 Hypothesis A1 Results107

 Hypothesis A2107

 Hypothesis A2 Results108

 Hypothesis A3108

 Hypothesis A3 Results108

 Hypothesis B1109

 Hypothesis B1 Results109

 Hypothesis B2109

 Hypothesis B2 Results110

 Model Hypothesis110

 Model Hypothesis Results111

CHAPTER 4 DISCUSSION121

 Findings121

 Model Hypothesis121

 Hypothesis A1122

 Hypothesis A2122

 Hypothesis A3123

 Hypothesis B1123

Hypothesis B2	123
Implications	124
Limitations	126
Directions for Future Research	127
Conclusion	129
REFERENCES	131
APPENDIX A DEMOGRAPHIC QUESTIONNAIRE	151
APPENDIX B HAKEMP-24 (ACTION CONTROL SCALE – ACS).....	153
APPENDIX C DIFFICULTIES IN EMOTION REGULATION SCALE (DERS).....	159
APPENDIX D INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS) ...	163
APPENDIX E MCLEAN SCREENING INSTRUMENT FOR BORDERLINE PERSONALITY DISORDER	170
APPENDIX F HUMAN USE COMMITTEE APPROVAL FORMS	172

LIST OF TABLES

Table 1	<i>ACS-24 Descriptive Statistics</i>	92
Table 2	<i>Preoccupation Item Total Statistics</i>	93
Table 3	<i>Hesitation Item Total Statistics</i>	94
Table 4	<i>ACS-24 Item Total Statistics</i>	95
Table 5	<i>ACS-24 Scale Correlations</i>	96
Table 6	<i>DERS Descriptive Statistics</i>	97
Table 7	<i>DERS Scale and Subscale Correlations</i>	100
Table 8	<i>MSI-BPD Item Total Statistics</i>	101
Table 9	<i>ISAS Descriptive Statistics</i>	102
Table 10	<i>Scale Inter-Correlations</i>	105

LIST OF FIGURES

Figure 1	<i>The Specified Model</i>	65
Figure 2	<i>Just-Identified Model</i>	72
Figure 3	<i>Simple Mediation Model</i>	89
Figure 4	<i>Specified Model</i>	112
Figure 5	<i>Model A</i>	114
Figure 6	<i>Model B</i>	115
Figure 7	<i>Model C</i>	116
Figure 8	<i>Theory-Consistent Model</i>	118
Figure 9	<i>Theory-Inconsistent Model</i>	119

ACKNOWLEDGEMENTS

I'd like to thank Dr. Donna Thomas for her willingness to chair this arduous endeavor, Dr. Jeff Walczyk for his methodological expertise, and Dr. Mary Margaret Livingston for her tenacity and support. Thanks to Dr. Daniel Mitchell for helping me become a better scholar, and providing your support and encouragement. I'd like to express my appreciation for Dr. Karen Nylund-Gibson for allowing me to audit her SEM class and use her course materials to grow as a scholar, Dr. Amber Gonzalez for her time and assistance, and Dr. Rebecca Rios for a sample dissertation. A special thank you goes out to Dr. Julius Kuhl for his feedback, support, encouragement, and development of Personality Systems Interactions theory. I'd like to thank Andy Pattison, Jason (JR) Atwood, and Deborah Hobden for helping me get and stay on track. I'd like to express my gratitude to Joanne Smith, Wendy Vogt, and Tony Bouchard for helping me appreciate learning. I'd like to thank the Santa Barbara Rape Crisis Center for reminding me why I started this whole process. I'm especially grateful to Lorena Bracho for making me feel welcomed, Monica Garrido for demonstrating genuine empathy, and my supervision group, especially Marilyn Goldman. Thanks for creating a safe environment in which to take risks and grow. I'd like to acknowledge my parents for all their support and encouragement. The help both of you have extended in raising a child throughout this process has made it all possible.

Finally, I'd like to acknowledge Anna Sorensen for her undying support and faith in my ability to overcome all the challenges this dissertation has involved. I surely would have lost faith and given up if she were not there to offer support, listen to me complain, and push me to keep at it. I love you. Thanks for being my "go to person" for more than a decade. P.S. – Will you marry me?

CHAPTER 1

INTRODUCTION

Historically, self-injury has been considered by some to be pathognomonic (i.e., specifically characteristic or indicative of a particular condition) of Borderline Personality Disorder (Bornovalova, Levy, Gratz, & Lejuez, 2010; Linehan, 1993). Clinically, the relationship between self-injury and Borderline Personality Disorder (BPD) frequently has led to unnecessary hospitalization and, in many cases, specialized, long-term treatment interventions (Shaffer & Jacobson, 2010). Recent research suggests that many individuals who engage in self-injurious behavior do not meet full criteria for Borderline Personality Disorder (Klonsky & Olino, 2008; Muehlenkamp, 2005; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Shaffer & Jacobson, 2010; Zlotnick et al., 1997). Other research indicates self-injury and Borderline Personality Disorder are significantly associated with emotion dysregulation (Adrian, Zeman, Erdley, Lisa, & Sim, 2011; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Selby, Bender, Gordon, Nock, & Joiner, 2012; Selby & Joiner, 2009). Furthermore, evidence suggests the relationship between self-injury and BPD is, at least partially, mediated by emotion dysregulation (Chapman, Gratz, & Brown, 2006; Selby et al., 2012; Selby & Joiner, 2009). A better understanding of the relationships among emotion dysregulation, self-injury, and Borderline Personality Disorder is warranted (American Psychiatric-

Association, 2013). The current study extends Personality Systems Interactions theory to examine the effects of State Orientation on emotion dysregulation, BPD, self-injury, and the relationships among them.

Proponents of the distinction between self-injury and Borderline Personality Disorder sought inclusion of Nonsuicidal Self-injury in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*; American Psychiatric Association, 2013); however, Nonsuicidal Self-injury (NSSI) was not added as a unique disorder; rather, it was added to Section III (i.e., the appendix) of the manual. Although the reasons for this decision remain unclear, inclusion of Nonsuicidal Self-injury in section III of the manual indicates the behavior is a *condition in need of further research*. Interestingly, extensive changes to the proposed diagnostic criteria for the Personality Disorders (i.e., a dimensional approach) were tabled, and the criteria for personality disorders remain as they were in the *DSM-IV-TR*. Although the “new” criteria were not adopted in the current manual, these criteria were added to section III of the *DSM-5*, indicating the “new” criteria are also “in need of further research.”

Given emotion dysregulation has been associated with Borderline Personality Disorder and Nonsuicidal Self-injury, as well as a variety of other dysregulated behaviors, assessment of one’s perceived ability to manage his or her emotions is essential to establishing an adequate conceptual framework for Nonsuicidal Self-injury. According to Baumann, Kaschel, and Kuhl (2007), individuals who are easily aroused to a negative affective state and possess a diminished ability for self-relaxation (i.e., State Orientation) may exhibit more maladaptive avoidance behaviors (e.g., Nonsuicidal Self-

injury), suggesting State Orientation may be a risk factor for engagement in dysregulated behavior.

Recent research suggests emotion dysregulation is a motivational force behind self-injury and Borderline Personality Disorder (Adrian et al., 2011; Gratz & Roemer, 2008; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2009; Iverson, Follette, Pistorello, & Fruzzetti, 2012; Selby & Joiner, 2009). In an effort to clarify underlying characteristics that may lead to emotion dysregulation and subsequent dysregulated behavior, the current study examines the effects of State Orientation on emotion dysregulation, Nonsuicidal Self-injury, and Borderline Personality Disorder.

Personality Systems Interactions Theory

Personality research examines the relationships between individual differences and behavioral consequences as well as how these personality features are developed (Kuhl, 2000a). The dispositional level of personality examines the individual on the trait level or across various individual characteristics (McAdams, 2006). Neurobiological perspectives (Corr, 2004; Farmer & Goldberg, 2008) define individual differences as having their origins in temperament (i.e., innate biological tendencies). Temperamental tendencies include traits such as sensitivity to reinforcement and/or punishment (Corr, 2004), introversion versus extraversion (Corr, 2004; Farmer & Goldberg, 2008), and affect sensitivity (Baumann, Kaschel, & Kuhl, 2007; Kuhl & Koole, 2008). Other approaches apply more elaborate cognitively constructed concepts such as beliefs, values, and self-appraisal (Baumeister, 1991). Implicit beliefs related to an individual's inner experience (e.g., episodic memories) are aspects of the holistic self (Kuhl, 2000a), and the holistic self is the source of affective stability and action control.

Personality Systems Interactions (PSI) theory is a comprehensive personality theory that integrates existing theories and neurobiological findings to explain behavior (Kuhl, 2000a, 2000b, 2011; Quirin, Kaze, Kuhl, & Kazén, 2009). PSI theory differs from other theories in that it focuses on the interactions between mental systems and provides a functional analysis of these system interactions. PSI theory coherently integrates subcognitive and metacognitive aspects of action control and self-regulation into the currently existing cognitive constructs explaining motivation, extending classical models of personality rather than replacing them (Kuhl, Kazén, & Koole, 2006). Kuhl distinguishes these dynamic motivational concepts from traditional cognitive representations of motivation such as expectations beliefs, and values (Baumeister, 1991). PSI theory does not replace classical motivation theory, rather it challenges a cognitive reductionist perspective (Kuhl, 2011). Similar to the Emotional Cascade theory, an individual's response to a particular stimulus is moderated by his or her thoughts and feelings in a circular fashion (Selby & Joiner, 2009). PSI theory extends motivational theory to include action control and self-regulation.

Systems Conditioning

Within the PSI framework, adequate self-regulation of emotional states is a result of systems conditioning (Kuhl, 2011). Systems conditioning refers to the strengthening of the neural pathways between the areas of the brain associated with the holistic self (e.g., the right medial prefrontal cortex) and an affect regulating system associated with reward and punishment (e.g., part of the limbic system). As with other theories, according to PSI theory, these pathways are developed through adequate interpersonal responsiveness from caregivers during early development.

Affective learning originates in infancy and leads to the development of affective dispositions. Initially infants experience affect through affective sharing (i.e., the temporary adoption of the caregiver's affective experience during parent-child interactions). These opportunities occur during parent-child play activities such as patty-cake and peek-a-boo (Jernberg & Booth, 2001). For example, when playing peek-a-boo, infants who have not developed object permanence momentarily experience aloneness and subsequent reunification; these interactions are accompanied by parental expressions of happiness, excitement, and interest that signal the "appropriate" response to reunification (i.e., positive affect). In this way, one's affective repertoire is developed through the dyadic interactions of early childhood.

According to PSI theory, this affective repertoire is the foundation upon which more elaborate cognitive systems are built (Kuhl, 2000b). PSI theory explains personality according to the systems interactions that originate with the affective repertoire developed during infancy. Kuhl further argues that the interactions facilitating the generation of positive affect and the down-regulation of negative affect outside the context of the self are insufficient to adequately develop these pathways. However, the quality of these interactions is essential to healthy development in terms of adequate action control and self-growth.

If people do not develop emotional autonomy, they will rely on others' emotions through emotional contagion (i.e., emotional symbiosis) to regulate their affect (Kuhl, 2000a). Individuals who rely on others' (typically their partner's) affect to regulate their own affect exhibit what Kuhl refers to as a symbiotic affective preference. He further argues that a symbiotic affective preference may be a result of an inadequately developed

holistic self. In other words, individuals prone to emotional dysregulation may rely on their partners to regulate their emotions resulting in an increased sense of attachment to one's partner when the partner's affect is facilitative and available. However, the perseveration of negative affect is likely to ensue if the partner's affect is not facilitative or available. This dependence is likely to lead to increased fears of abandonment. Individuals with high affiliative needs may have a propensity for symbiosis, which may lead to interpersonal strife.

The Development of Disposition

Affective disposition, similar if not synonymous with dispositional traits (McAdams, 2006), is developed in early infancy during affective learning. Adequate affective learning associated with the self-regulatory and non-defensive (self-confrontational) down-regulation of negative affect leads to the development of emotional autonomy. Emotional autonomy is developed through systems conditioning; PSI theory posits systems conditioning is an affective form of conditioning in which associative pathways in the brain are developed leading to affect regulatory dispositions. In other words, one's ability to down-regulate negative affect is neurobiologically facilitated by adequate affective sharing and resultant affective learning during infancy. Specifically, it is the external control of the child's emotions by caregivers, which is gradually internalized and integrated into the self, provided the self is active during external regulation of the child's affective state. Whenever the child does not "open up" and express his or her emotions (i.e., when the self is not activated), external regulation cannot be integrated into the self and cannot become a self-competence. This perspective is consistent with Linehan's (1993) predisposing conditions leading to Borderline

Personality Disorder and, in particular, the development of emotion dysregulation and subsequent self-injurious behavior.

Dispositional low positive affect coupled with dispositional high negative affect is especially debilitating when both action control and self-regulation are impeded (Kuhl, 2011). This phenomenon seems quite similar to previous descriptions of individuals with Borderline Personality Disorder (Linehan, 1993), especially those who engage in self-injurious behavior. According to this argument, individuals with Borderline Personality Disorder lack the ability to integrate negative feedback into the self-representational system (Kuhl, 2000a, 2011). Specifically, they are not able to down-regulate the negative affect aroused by aversive stimuli in order facilitate self-growth from the novel or discrepant information. In other words, individuals with Borderline Personality Disorder may be described as state oriented.

Dispositional high negative affect, dispositional low positive affect, and negative affect sensitivity, are conceptually similar to anhedonia. Neuroticism, which is characterized by affect lability, anxiety, angry hostility, low positive affect (i.e., depression), impulsiveness, and perceived vulnerability is associated with self-injury (Heatherton & Baumeister, 1991; LeBoeuf-Davis & Mitchell, 2012; Melvin, Weinstock, Andover, Spirito, & Yen, 2012) as well as Borderline Personality Disorder (Bornovalova et al., 2010; Kuhl, 2000a, 2011). According to Baumann and colleagues (2007), improved self-relaxation leads to decreased negative affect and improved self-motivation leads to increased positive affect. Baumann and colleagues predicted and found that the commonly observed increased risk of developing psychosomatic symptoms associated with high neuroticism (i.e., high sensitivity for negative affect) compared to individuals

with low neuroticism turns into an enhanced protection against those symptoms when self-regulation of affect is well-developed; presumably, high sensitivity becomes a source of facilitated self-development when it can be counter-regulated (Baumann et al., 2007). These results show promise for the conceptualization of individualized treatment options (e.g., interventions that improve self-relaxation and/or self-motivation skills). However, these results are limited to college students within a single semester and should be examined with a more general sample.

In addition to the dispositional level of personality, McAdams (2006) contextualizes individual patterns of behavior (i.e., characteristic adaptations) within a motivational, cognitive, and developmental framework. In other words, domain specific skills utilized to achieve a goal are examples of characteristic adaptations that have developed over time. Although these skills sets are developed over time and across settings, individual differences influence the presentation of characteristic adaptations. In other words, characteristic adaptations are contextual skill sets derived from dispositional traits.

Recent research argues personality development is a synergistic interaction between two-polarities (i.e., self- definition and interpersonal relatedness) across the lifespan (Luyten & Blatt, 2013). Self-definition is a developmental dimension of personality that can be examined across several disciplines including cognitive, evolutionary, cross-cultural, personality, and social psychology as well as philosophy and neurobiology. Interpersonal relatedness is the other pole central to personality development. Self-definition interacts with interpersonal relatedness to develop normal and/or disrupted personality presentation.

According to PSI theory, affect sensitivity and self-regulation interact in relatively stable and consistent ways; these interaction patterns represent dispositional traits (Baumann et al., 2007). The mechanisms that influence self-regulation are examined within the context of action control theory. The connections between affective learning and cognitive styles result in the development of what McAdams (2006) refers to as dispositional traits and characteristics adaptations. Action control is composed of strategies such as attention control, motivation control, emotion control, and coping with failure, which are utilized to maintain difficult intentions. Self-control (inner dictator) can be thought of as efforts to enact an intention via the inhibition of thoughts related to desirable alternatives, whereas self-regulation (inner democracy) involves attention to and satisfaction of the holistic self.

Cognitive Macrosystems

PSI theory proposes four cognitive macrosystems, two of which operate on an elementary level and two of which operate on a more advanced level (Kuhl, 2000a, 2000b). The two elementary macrosystems of PSI theory include intuitive behavior control and object recognition; the two higher-level macrosystems include intention memory and extension memory. Intuitive behavior control is a low inference behavioral system and object recognition is a low inference experiential system. Intention memory is a high inference behavioral system and extension memory is a high inference experiential system. The low inference systems can be described within the cognitive science context and the high inference systems can be thought of as characteristic adaptations.

Higher-Level Macrosystems

Intention memory is an explicit representation of behavioral intentions (Kuhl, 2000b). Intention memory can be thought of as an essential component of an integrated network of subsystems that gird analytical thinking, verbal processing, and executive functioning (i.e., planning functions). Specifically, behavioral inhibition of the enactment of an intention until an adequate opportunity presents itself is an essential function of intention memory. Analytical thinking is associated with competition between alternatives rather than an integration of alternatives. The analytical thinking associated with intention memory allows an individual to form explicit representations of intended actions and store them for future reference when an opportunity to enact the intention becomes available. These explicit representations are processed in the left prefrontal cortex, whereas the right prefrontal cortex processes the elicitation and inhibition of emotions. Extension memory is an implicit representation of the integrated self-system (Kuhl, 2000b). Hyperactivation of intention memory leads to hypoactivation of extension memory, thereby limiting one's ability to flexibly respond to challenges encountered before or during the enactment of a difficult intention. Affective states are a result of either unconscious processing of conditioned or innate stimuli, or conscious processing of cognitions; both result in individualized affective responses to stimuli.

Intention memory and extension memory interact to accommodate and/or integrate information into the holistic self. Intense stimulation of intention memory inhibits the activation of and access to extension memory, thereby hindering access to experiential aspects of the self. Neurobiological findings support the proposed direct and indirect routes for affective processing supports this argument (LeDoux, 1995). The

direct route explains subcognitive processing of affective stimuli, and the indirect route explains cognitive processing of stimuli. The direct route involves the activation of the amygdala without extensive cortical activation, whereas the indirect route involves affect modulation via the activation of more extensive cortical structures.

Two Modulation Assumptions

PSI theory is composed of two modulation assumptions: the Volitional Facilitation Assumption and the Self Facilitation Assumption (Kuhl, 2000b). The first modulation assumption (i.e., the Volitional Facilitation Assumption) asserts that positive affect allows for the activation of intuitive behavior control, which initiates the enactment of a goal held in the intention memory system. Down-regulation of positive affect facilitates maintenance of intention memory and subsequent access to intuitive behavior control. According to PSI theory, intentions are meaningful to the extent that they contribute to the conceptualization of the holistic self, which is composed of an individual's needs, values, and beliefs about oneself and his or her ability to initiate and enact an intention (Kuhl, 2000b). The two assumptions are the core of PSI theory and the mechanisms of interaction between the affective-cognitive systems.

The first modulation assumption explains how intention memory and the behavior control system can be increased by positive affect. The interaction between these two systems is referred to as action control, that is, the ability to up-regulate positive affect and down-regulate negative affect in order to function effectively. Research supporting this assumption includes studies in which action control is experimentally facilitated via external cues priming positive affect (Kuhl, 2011). Specifically, self-regulation as measured by the Stroop task increased following priming positive affect.

The second modulation assumption (i.e., the Self Facilitation Assumption) posits that the down-regulation of negative affect facilitates access to extension memory. Access to extension memory allows current stimuli to be examined within the context of currently held self-representations (i.e., various aspects of the holistic self, relevant to the current stimuli). Access to extension memory facilitates the inhibition of unexpected or unwanted stimuli recognized by the object recognition system. The premise of the second modulation assumption is that a well-developed self-system facilitates the regulation of negative affect via activation of relevant self-representational knowledge (Kuhl, 2000a, 2000b, 2011). That is, an individual with an adequately developed holistic self would be able to counter the effects of aversive feedback regarding the self, with previously stored aspects of the self and integrate the discrepant feedback into a holistic self. A stable self-representational system can tolerate discrepant or novel stimuli, integrate it into future decision-making, and balance it with an accurate assessment of one's integrated self-representational system (Kuhl, 2000a, 2000b).

The second modulation assumption of PSI theory posits that negative affect inhibits access to the holistic self (extension memory), thereby interfering with the interchanges between the holistic self and the experiential system, that is, object recognition (Kuhl, 2000a, 2000b, 2011). Based on the second modulation assumption a functional deficit is a result of impaired self-regulation, specifically the ability to down-regulate negative affect once activated. In essence, the second modulation assumption explains how once negative affect is activated rumination ensues, hindering access to the holistic self. Kuhl (2011) argues self-relaxation, a specific aspect of self-regulation necessary to down-regulate negative affect, is a form of high level avoidance motivation.

Further, self-motivation, a specific aspect of self-regulation necessary to tolerate a temporary decrease in positive affect, is a form of high-level approach motivation. Findings support the paradoxical contention that hesitant individuals have a sensitized mechanism that facilitates recognition of intention related stimuli (i.e., stimuli associated with an unsatisfied goal; Goschke & Kuhl, 1993). Hesitation can be thought of as behavioral inhibition related to the initiation of a difficult intention, and is associated with subclinical avolition.

Self-regulation describes one's ability to increase and/or decrease positive or negative affect in order to maintain momentum toward a goal held in intention memory (Baumann et al., 2007). Self-regulation is the management of one's own affect in order to facilitate continued progress toward a desired goal despite challenges throughout the process and is grounded in the two modulation assumptions (Kuhl, 2000a). Negative affect may be a primary and intense reaction to aversive stimuli for individuals high on neuroticism, anxiety, and other dimensions of personality. Mechanisms that impact self-regulation include: emotion control, attention control, motivation control, state orientation, and self-access. When multiple mechanisms are impaired, one's ability to function becomes impaired, that is, action control is impaired (Kuhl, 2000b). Self-regulation is not a single construct, but rather an amalgam of several action control mechanisms with a plethora of possible interactions. According to PSI theory, characteristic adaptations are caused by the two modulation assumptions (Kuhl, 2000a).

Consistent with Linehan's (1993) invalidating environment, which she posits leads to self-injurious behavior in individuals with Borderline Personality Disorder, Kuhl (2011) argues invalidation of experience during early development leads to impaired

action control and self-regulation. Kuhl argues dysregulated behavior, such as self-injury, may function to facilitate positive affect, specifically relief, which is reinforced by avoidance of an aversive state (avoidance motivation); alternately, this phenomenon could be attributed to approach motivation in that relief is a rewarding experience (Klonsky, 2012). Self-control involves the enactment of an unattractive instrumental behavior, for example, initiating an odious task.

Recent research has found inconsistent results regarding affect sensitivity and dysregulated behavior (Franklin et al., 2010; Glenn, Blumenthal, Klonsky, & Hajcak, 2011), however, affect regulation is more directly related to symptom development than affect sensitivity (Baumann et al., 2007; Kuhl, 2000a, 2011). Specifically, self-relaxation (i.e., the ability to down-regulate negative affect) is essential to self-growth. Individuals with dispositional negative affect possess greater object recognition for difficult to integrate stimuli. In other words, elevated negative trait affect leads to increased recognition of stimuli that lead to increased negative state affect; furthermore, these individuals tend to struggle to integrate these aversive experiences and self-growth is subsequently stifled (Kuhl, 2000a).

Individuals with a greater disposition for positive affect may be able to avoid experiencing negative affect through the activation of positive affect; it is important to recognize the neurobiological underpinnings of this process, that is, the activation of the brain's pleasure center (Kuhl, 2000a). In contrast, others may intellectualize or engage in compulsive behavior, to avoid or reduce negative affect, respectively. Although these techniques work with mild to moderate negative affect, when intense activation of negative affect occurs these avoidance motivated methods fail to down-regulate negative

affect. In other words, intense activation of negative affect requires integration of the aversive experience into the self-system (i.e., the holistic self). Kuhl argues these avoidance motivated techniques are what psychoanalytic theorists would refer to as immature defense mechanisms. Individuals with avoidant tendencies typically do not rely on symbiotic relationships to facilitate down-regulation of negative affect. Likewise, Kuhl argues that self-regulation competence moderates the need for symbiosis and is negatively associated with a state oriented affective disposition.

Luyten and Blatt (2013) argue interpersonal relatedness and self-definition and their interactions may have greater explanatory power than traits such as negative affectivity/neuroticism and extraversion. These findings suggest interactions between individual characteristics may be as important as the traits themselves in explaining dysregulated behavior patterns. Evidence for the importance of these traits can be seen in the proposed changes to the Personality Disorders diagnostic criteria currently included in Section III of the *DSM-5*; specifically, the interpersonal and self elements of personality functioning. State Orientation is an aspect of the self, in that it affects one's capacity to access one's identity and subsequently exert self-direction, that is, State Orientation impairs access to one's holistic self and the ability to employ action control.

State Orientation

State Orientation is a dispositional state following activation of negative affect that results in uncontrollable rumination, that is impaired ability to terminate ruminative states (whereas sensitivity toward negative affect enhances the frequency rather than the duration of NA). Based on the second modulation assumption, state oriented individuals may be prone to uncontrollable rumination that inhibits problem solving (Kuhl, 2000a,

2011). The second modulation assumption may explain aspects of Nonsuicidal Self-injury as well as Borderline Personality Disorder; specifically, State Orientation (i.e., inadequate self-relaxation) may lead to both Nonsuicidal Self-injury and Borderline Personality Disorder.

In contrast, State Orientation is the degree to which an individual's affective state hinders one's ability to initiate a difficult intention (Kuhl, 2000a). State Orientation is associated with affective lability, which interferes with challenging intention enactment. These findings suggest individuals high in affect sensitivity (e.g., affective lability) may be especially sensitive to stimuli related to an unfulfilled intention, leading to higher levels of negative affectivity. The subconscious activation of intention memory leads to an increase in negative affect and a decrease in positive affect. Access to self-representations stored in extension memory relevant to the unfulfilled intention is essential to optimal functioning; one must possess the ability to down-regulate the negative affect aroused to the extent that he/she can access relevant aspect of the holistic self.

Kuhl (2000a) argued affective sensitivity, or more specifically, a low positive affect disposition or high negative affect disposition is pathological when associated with insufficient affect-regulatory functioning. This contention emphasizes the importance of intact affect regulation. In fact, as mentioned above, greater sensitivity for negative affect can be facilitative for self-development given the individuals has developed adequate self-regulation (Baumann et al., 2007) or has been exposed to supportive developmental conditions promoting emotional autonomy (Belsky & Pluess, 2009). A greater sensitivity for stimuli that challenges the existing self-representations facilitates accommodation and

assimilation of discrepant or novel information relevant to the developing self-systems. Of course, subsequent down-regulation of negative affect is a prerequisite for the integration of aversive stimuli, detected by the object recognition system, into the holistic self (i.e., the self-representational system).

According to PSI theory, emotional flexibility is essential to cognitive flexibility, which in turn is a prerequisite for adaptive personality functioning. That is, adaptive personality functioning is essential to effective personality systems interactions. As with many psychological constructs, state orientation is beneficial when appropriate and when the individual can oscillate between the down-regulation of negative affect and the up-regulation of positive affect in order to initiate difficult intentions. However, when an individual is unable to escape the state oriented mode when doing so would be beneficial psychological well-being is impacted (Baumann et al., 2007; Kuhl, 1994). State Orientation is composed of two dimensions: preoccupation and hesitation. State Orientation is “the inability to escape a mode of control in which the intention of intended behavior is difficult, either as a result of preoccupation (AOF), or as a result of hesitation (AOD) of a hypothetical supervising system which controls the initiation of planned behavior” (Kuhl, 1994, pg. 51). Preoccupation is a ruminative aspect of State Orientation and hesitation is a motivational aspect of State Orientation.

Emotion Dysregulation

In order to understand emotion dysregulation, one must define the self, emotion regulation, emotion dysregulation, and related factors such as distress tolerance and experiential avoidance. The self, according to Baumeister (1991), is the conceptual notion conjured when one uses terms such as “I,” “me,” or “my.” According to this definition,

the self is the combination of roles, values, beliefs, etc. an individual considers self-relevant when using these terms. Through development, the self becomes more elaborate integrating more roles, and changing beliefs and values. The roles a person identifies with represent aspects of the self that may be challenged or threatened at times. When the self is challenged by loss of a role, for example, the urge to escape the self is activated (Baumeister, 1991). Often this urge is intensified when others observe the loss. Methods of escape include alcohol (and substance) abuse, Masochism, self-injury, binge eating, and suicide, which Baumeister contends is the ultimate escape from the self.

Linehan's (1993) three-dimensional model of emotion dysregulation suggests an etiological basis rooted in a biological predisposition (i.e., greater sensitivity to negative emotional arousal, greater arousal following activation of negative emotions, and a delayed return to baseline affect) coupled with environmental factors that impair adequate development of coping skills. According to Gratz and Roemer (2004), emotion regulation is a multidimensional trait consisting of acceptance, goal-directedness, awareness, clarity, strategies, and behavioral inhibition (i.e., the ability to refrain from engaging in dysregulated behavior) when under duress. According to Iverson and colleagues (2012), healthy emotional functioning consists of emotion regulation, distress tolerance, and experiential avoidance. In contrast, emotion dysregulation consists of diminished understanding, responding to, and management of emotional responses (Mennin, Holaway, Fresco, Moore, & Heimberg, 2007). In other words, emotion regulation has been defined in terms of the presence of characteristics and the adaptive degree to which one possesses these characteristics, and emotion dysregulation has been defined as the absence or diminished presence of these characteristics.

The Development of Self-Control

Within a developmental perspective, self-control originates from external behavioral control imposed by primary caregivers, and is later internalized and external enforcement is no longer required (Kuhl & Fuhrmann, 1998). Development continues until a holistic self is established that facilitates goal directed behavior (Heckhausen & Dweck, 1998). A life-span developmental perspective emphasizes the malleability of individual characteristics across the life span and situations, similar to McAdams' (2006) characteristic adaptations. A life-span developmental perspective helps identify patterns of behavior that facilitate the formation of adaptive and dysregulated behavior patterns, while providing evidence to support the notion that remedial development is possible (Heckhausen & Dweck, 1998).

Self-maintenance involves accessing the holistic self, stored in extension memory, whereas goal maintenance involves accessing the established goal, stored in intention memory (intention and extension memory are discussed above within the context of PSI theory and State Orientation). Ideally, self-maintenance and goal maintenance occur simultaneously, that is, the goal is internalized and consistent with the holistic self. Alternately, an individual can shift between self-maintenance and goal maintenance, alternating volitional functioning is necessary when the goal is not yet an aspect of the holistic self, as in when one is anticipating an outcome that is contingent on the goal being achieved (e.g., finishing graduate school). Self-control is more cognitively demanding than self-regulation, involving the activation of the punishment system in order to suppress maladaptive aspects of the self until the goal can be integrated into the holistic self and maintained by self-regulation, a less demanding mode of volition.

Some theorists argue emotion regulation involves control over one's emotional experience and expression as well as the ability to decrease the intensity of one's emotions. Others argue emotion regulation does not equal emotional control; rather, emotion regulation is rooted in acceptance and appreciation of one's emotional experiences and perceived effectiveness of attempts to alter one's negative emotional experience (Schuppert et al., 2009).

Modes of Volition

According to Kuhl and Fuhrmann (1998), there are two modes of volition: self-control and self-regulation. According to PSI theory the self is an integrated and implicit representation of a person's experiences, beliefs, and needs. Self-regulation involves behaving in a manner consistent with the integrated (holistic) self. The four subsystems (mentioned above) interact in various ways to influence behavior; a process referred to as central coordination, the defining characteristic underlying self-control and self-regulation. Central coordination involves various interactions within the subsystems of the mind. According to PSI theory, the mind consists of cognitive, emotional, motivational, and temperamental processes that function simultaneously; however, any one of these aspects can modulate behavior. This conceptualization suggests emotion regulation involves management of one's thoughts, emotions, motivations, and sensations. Management of one's thoughts involves the ability to disrupt ruminative processes, management of one's emotions involves the ability to down-regulate negative affect, management of one's motivations involves maintenance of goal directed behavior, and management of one's sensations involves the ability to decrease the physiological arousal.

Adolescents who self-injure employ more avoidant coping strategies including alcohol abuse and thought suppression, and exert less attention to solutions related to the presenting problem than their non-injurious peers (Evans, Hawton, Rodham, Psychol, & Deeks, 2005). Suggesting adolescent self-injurers become distracted by their emotional experience, thereby hindering their ability to generate relevant problem solving strategies. These findings are consistent with Kuhl's (2011) argument that state oriented individuals have greater difficulty maintaining goal directed behavior (i.e., in this case problem solving) following arousal of negative affect.

The tendency to avoid potentially or actually aversive emotional experiences is associated with emotion dysregulation (Gratz & Roemer, 2004). Much of the emotion dysregulation literature has its origins in Linehan's biosocial theory of Borderline Personality Disorder. Emotion dysregulation is associated with dysregulated behavior including self-injury; more precisely, the inability to refrain from dysregulated behavior is an aspect of emotion regulation and self-injury is a failure to refrain from dysregulated behavior. Emotional expressivity is negatively associated with emotion dysregulation, suggesting emotional expressivity is an aspect of emotion regulation. This argument was supported by the emotional expressivity factor of the Difficulties in Emotion Regulation Scale (DERS), discussed below. Emotion dysregulation is associated with self-injury, suggesting that emotion regulation involves suppression of impulsive urges to engage in dysregulated behavior in response to an aversive emotional state. Another aspect of emotion regulation is the ability to maintain goal directed behavior and sustained mental effort under duress. According to Gratz and Roemer (2004), emotion regulation involves acceptance of one's emotional experience, in contrast to increased negative emotions in

response to one's initial experience. Recognizing an emotional shift and the ability to label the emotion are aspects of emotion regulation, referred to as awareness and clarity, respectively (Gratz & Roemer, 2004).

Problem solving, coping skills, and emotion regulation strategies are reasonably synonymous with one another such that findings suggesting deficits in any of these categories supports the argument that one's ability to manage his or her emotions is an aspect of emotion regulation. Inadequate self-relaxation (i.e., State Orientation) is an aspect of emotion dysregulation, that is, rumination that interferes with goal directed behavior and behavioral inhibition (i.e., inhibition of maladaptive coping strategies; Baumann et al., 2007).

Distress tolerance refers to the actual or perceived ability to withstand negative emotional states (Gratz et al., 2012; Nock & Mendes, 2008; Tull, Gratz, Lutzman, Kimbrel, & Lejuez, 2010). According to Gratz and Roemer (2004), distress tolerance is an aspect of emotion dysregulation. Distress tolerance and the ability to maintain goal directed behavior when under duress is indicative of emotion regulation; in contrast, diminished distress tolerance and an inadequate ability to maintain goal directed behavior when under duress is indicative of emotion dysregulation. Inadequate distress tolerance is associated with emotion dysregulation and experiential avoidance (Gratz et al., 2009; Iverson et al., 2012).

Similar to distress tolerance and emotion dysregulation, experiential avoidance is an unwillingness to remain in contact with an aversive internal experience (e.g., thoughts, emotions, sensations, memories, and urges) by escaping or avoiding the internal experience (Iverson et al., 2012). Experiential avoidance involves behavior that functions

as avoidance or escape from unwanted emotions, thoughts, or somatic sensations (Chapman et al., 2006; Selby & Joiner, 2009; Tull, Jakupcak, Paulson, & Gratz, 2007). These somatic sensations discussed may be associated with anxiety (Tull et al., 2007), impulsive urgency (Glenn & Klonsky, 2010), or tension that frequently precedes self-injury (Klonsky & Glenn, 2009; Klonsky & Olino, 2008; Selby et al., 2012). Experiential avoidance also involves thought suppression (Tull et al., 2007), alcohol and substance abuse (Bornovalova, Tull, Gratz, Levy, & Lejuez, 2011), impulsive eating (binging; Heatherton & Baumeister, 1991), impulsive spending, attempted suicide (Baumeister, 1991), self-injury, dissociation (Arney & Crowther, 2008), and avoidant coping strategies (Chapman & Dixon-Gordon, 2007; Gratz & Chapman, 2007).

According to Baumeister (1991), people attempt to escape the self to avoid self-deprecating cognitive processes, to find solace from demands associated with aspects of the self, or to experience the transcendence associated with being disconnected from the self. He argues these functions are not mutually exclusive; rather, they possess similar features and frequently overlap. Baumeister argues people are especially prone to engaging in escape behaviors following challenges to the self. This argument is consistent with the contention that stimuli that are discrepant with one's holistic self frequently lead to negative affect (Kuhl, 2001). How one manages discrepant or, as Baumeister (1991) put it, calamitous feedback, may involve escape behavior, especially when the individual has a limited capacity to down-regulate the negative affect aroused (e.g., state oriented individuals). According to Iverson and colleagues (2012), experiential avoidance is a function of emotion dysregulation and distress tolerance.

Diagnostic and Statistical Manual of Mental Disorders

The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revised (*DSM-IV-TR*) utilizes a polythetic categorical model that organizes diagnoses into clinical syndromes, based on endorsement (or presence) of a minimum number of criteria for the given diagnosis. In other words, when the minimum number of criteria is present an individual is thought to have exceeded the diagnostic threshold for that disorder. In addition to a categorical syndrome approach to diagnosing mental disorders, the *DSM-IV-TR* utilized a comprehensive multiaxial assessment system to evaluate individuals across five axes (domains) relative to effective treatment. The five axes in the *DSM-IV-TR* multiaxial classification system include: Axis I – Clinical Disorders, Other conditions that may be the focus of clinical attention; Axis II – Personality Disorders and Mental Retardation; Axis III – General Medical Conditions; Axis IV – Psychosocial and Environmental Problems; and Axis V - Global Assessment of Functioning. When a diagnostic evaluation is completed, the clinician utilizes client's reports (either, verbal as in a diagnostic interview, or written as in self-report rating scales) regarding symptoms and behaviors present, as well as psychosocial and environmental factors that may affect treatment, in order to assess Axes I, II, IV, and V. The client's medical history is obtained from his/her primary care physician with consent, and diagnoses reported in the client's medical history are included on Axis III. Throughout his/her interactions with the client, the evaluator utilizes clinical judgment to note signs (observable symptoms) associated with various disorders and incorporates his/her observations into the multiaxial assessment and subsequent diagnosis (or diagnoses). When available and consent is obtained, the evaluator utilizes other reporting sources such as family members,

significant others, court documents, testing results, and archival records to facilitate accurate evaluation of the presenting problem.

DSM-IV-TR Axis I Disorders

Axis I is comprised of most classifications within the manual except those classified on Axis II. Unless otherwise specified, Axis I diagnoses are the focus of treatment. In the event there is not enough evidence to provide a diagnosis on a given axis, diagnosis is deferred until additional information is available. Although self-injury frequently occurs concomitantly with a variety of Axis I diagnoses, including; Post-traumatic Stress Disorder, Major Depressive Disorder, Anxiety Disorders, and Impulse-control disorders; self-injury is most frequently associated with the Axis II diagnosis of Borderline Personality Disorder (Shaffer & Jacobson, 2010).

DSM-IV-TR Axis II Disorders

Axis II is comprised of the Personality Disorders and Mental Retardation, as well as prominent maladaptive personality features and defense mechanisms (e.g., borderline personality features or frequent use of dissociation, respectively; (American Psychiatric Association, 2000). Mental Retardation is classified as a Disorder Usually First Diagnosed in Infancy, Childhood, or Adolescence, and is further delineated according to degree of severity; Mild Mental Retardation – Intelligence Quotient (IQ) level 50-55; Moderate Mental Retardation – IQ level 35-40 to 50-55; Severe Mental Retardation – IQ level 20-25 to 35-40; Profound Mental Retardation – IQ level below 20 or 25. Great behavioral variation within the diagnoses of Mental Retardation exists; therefore, behavioral descriptions of individuals with Mental Retardation are varied. For example, one individual with Mental Retardation may be passive and dependent, whereas another

individual may be aggressive and impulsive. Certain general medical conditions associated with Mental Retardation (e.g., Lesch-Nyhan syndrome) are associated with stereotypic self-injurious behavior, however, this form of self-injury is distinct from the non-stereotypic form that is the focus of this study.

According to *DSM-IV-TR* (American Psychiatric Association, 2000), classification of Mental Retardation and Personality Disorders on Axis II aims to ensure adequate evaluation of these two major disorder categories as the signs and symptoms of these disorders may be overshadowed by the more florid Axis I disorders. In other words, disorders on Axis II may require more thorough evaluation in order to be detected, especially when in conjunction with the primary Axis I diagnosis. Although moderate to profound Mental Retardation would be readily observable within an initial assessment, Mild Mental Retardation and the personality disorders may go undetected if not fully examined, thereby hindering successful treatment of the comorbid Axis I disorder(s). Likewise, adequate evaluation of the Axis II disorders is intended to distinguish chronic characterological symptoms from those typically more episodic, as in the Axis I disorders.

Relevant DSM-5 Changes

In 1999 the *DSM* revision process began with an evaluation of the strengths and weaknesses of the manual based on contemporary research (American Psychiatric Association, 2013). The evaluation resulted in “A Research Agenda for *DSM-V*,” which was a monograph of the proceedings. Subsequently thirteen diagnostic work groups were formed and a 5-year process of reviewing literature, performing secondary analyses, publishing findings, drafting proposed diagnostic criteria, obtaining public comment,

presenting preliminary findings associated with the proposed criteria, performing field trials, and revising accordingly was initiated. The work groups proposed revisions according to the rationale, scope of changes, potential impact, strength of empirical support, clarity, and clinical utility (American Psychiatric Association, 2013). Draft revisions were guided by the following principles: feasibility in routine practice, empirical foundation, continuity over revision, and no a priori limits on the proportion of changes. Placement in Section III, “Conditions for further study,” was a result of the amount of research focusing on the diagnosis, reliability and validity of the diagnosis, and benefits associated with continued research.

The Global Assessment of Functioning (GAF) scale was dropped due to lack of clarity and inconsistency between raters. The World Health Organization Disability Assessment Schedule (WHODAS) has been added to the “Assessment Measures” chapter of Section III, for further study of its utility as a global measure of impairment. The change most relevant to the current study is the elimination of the multiaxial diagnostic system. The *DSM-5* documents diagnoses according to nonaxial designations, that is, Axes I, II, and III have been combined and disorders relevant to the individual’s mental disorder(s) should be listed without axial distinction. According to the *DSM-5* (2013), this change is a holistic interpretation of symptom presentation consistent with the text of the *DSM-IV-TR* (2000), which states “the Multiaxial distinction among Axis I, Axis II, and Axis III disorders does not imply that there are fundamental differences in their conceptualization, that mental disorders are unrelated to physical or biological factors or processes, or that general medical conditions are unrelated to behavioral or psychological factors or processes” (American Psychiatric Association, 2013, pg. 29). Although the

DSM-5 has abandoned the multiaxial classification system, the manual has retained the personality disorder clusters and diagnostic criteria.

Borderline Personality Disorder

According to the *DSM* (American Psychiatric Association, 2000, 2013), a diagnosis of Personality Disorder is warranted when individual traits become rigid and maladaptive causing distress or impairment; present in two or more areas (e.g., cognition, affectivity, interpersonal functioning, impulse control), as well as across a broad range of situations and areas of functioning (e.g., social, occupational, and academic).

Specifically, a Personality Disorder is “an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual’s culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment” (pg. 685). In other words, a clinician first determines that an individual’s symptom presentation exceeds the diagnostic threshold for a diagnosis of Personality Disorder and subsequently diagnoses the specific personality disorder (or multiple disorders where applicable). The *DSM-5* (American Psychiatric Association, 2000) organizes specific personality disorder diagnoses into one of three general clusters (i.e., A, B, & C). Cluster A diagnoses are referred to as odd or eccentric; cluster B diagnoses are referred to as dramatic, emotional, or erratic; and the cluster C diagnoses are referred to as anxious or fearful.

Given that Borderline Personality Disorder is the only diagnosis that accounts for the type of self-injury that is the focus of this study; an examination of BPD criteria is warranted. In contrast, stereotypic self-injury may be associated with a variety of *DSM-IV-TR* diagnoses including Mental Retardation, Pervasive Developmental Disorders, or

Stereotypic Movement Disorders, however, this study attempts to distinguish the two types of self-injury.

Full criteria for BPD are satisfied by the presence of five of nine possible diagnostic criteria; as a result, two individuals diagnosed with BPD might present with only a single common criterion. According to the *DSM*, Borderline Personality Disorder Diagnostic Criteria include the following:

- A. A pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:
 1. Frantic efforts to avoid real or imagined abandonment. Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.
 2. A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation
 3. Identity disturbance: markedly and persistently unstable self image or sense of self
 4. Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.
 5. Recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior
 6. Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days)

7. Chronic feelings of emptiness
8. Inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights).
9. Transient, stress-related paranoid ideation or severe dissociative symptoms

Borderline Personality Disorder is characterized by diminished distress tolerance and emotional avoidance, aspects of emotion dysregulation (Gratz, Rosenthal et al., 2009). Specifically, individuals with Borderline Personality Disorder tend to abandon goal-directed behavior when the behavior induces or is accompanied by emotional distress and are less willing to initiate a task that they anticipate will induce distress. Self-injury is one means by which individuals with Borderline Personality Disorder attempt to ameliorate unavoidable distress (Selby et al., 2012).

Clarity of emotions, emotion regulation, and private emotional attention (i.e., emotional awareness) are negatively associated with Borderline Personality Disorder symptoms. Similarly, private emotional preoccupation (i.e., rumination) and public emotional monitoring are positively associated with Borderline Personality Disorder symptoms (Leible & Snell, 2004). In other words, although they tend to ruminate about their internal emotional experiences, individuals with Borderline Personality Disorder tend to lack awareness of their internal emotional experiences (Selby, Anestis, Bender, & Joiner, 2009). Additionally, they are reportedly aware of and concerned about other's reactions to their emotional experiences.

These findings are consistent with Linehan's (1993) biosocial theory of BPD in which a biological predisposition (i.e., emotional vulnerability) and environmental factors (e.g., invalidation) interact, leading to the development of the disorder. Linehan argues

the resultant emotional avoidance and diminished distress tolerance are directly associated with engagement in dysregulated behavior, including self-injury. Recent research suggests avoidance of abandonment, relationship instability, identity disturbance, affective instability (lability), feelings of emptiness, anger, impulsivity, and paranoia/dissociation are elevated when self-injury is present (Bornovalova et al., 2010). Other behaviors associated with the tendency to avoid noxious emotional states include substance abuse, dissociative behaviors, and disordered eating (Chapman, Specht, & Cellucci, 2005). Borderline Personality Disorder symptom severity is positively associated with temperamental vulnerabilities including emotional instability, impulsivity, and interpersonal instability (Bornovalova et al., 2010). Borderline Personality Disorder symptom severity is also associated with higher rates of cocaine and alcohol dependence as well as anxiety and mood disorders. Although these findings support the underlying influence of emotion dysregulation (i.e., emotional avoidance and diminished distress tolerance) in the development of Borderline Personality Disorder, that is not to say emotion dysregulation does not play a central role in the development of other psychological disorders or phenomena. Distress tolerance has been found to mediate the relationship between emotional arousal (i.e., emotional cascades) and behavioral dysregulation (Selby & Joiner, 2009), suggesting that distress tolerance may play a significant role in the engagement in dysregulated behavior.

Borderline Personality Disorder is associated with poor social problem solving and emotion regulation difficulties (Dixon-Gordon, Chapman, Lovasz, & Walters, 2011). Specifically, greater Borderline Personality Disorder symptom severity is associated with fewer relevant solutions to hypothetical social problems and a greater number of

inappropriate solutions when emotionally distressed. Negative outcomes associated with BPD features in a nonclinical sample of young adults (i.e., undergraduate college students) included diminished academic achievement, greater number of semesters on academic probation, and social problems (Bagge et al., 2004). According to Dixon-Gordon and colleagues (2011), induced negative emotions mediated the relationship between Borderline Personality Disorder symptoms and decreased relevant social problem solving solutions generated. These findings suggest a negative affective state may temporarily impair one's ability to access effective problem solving skills and if this state persists, as with state orientated individuals, dysregulated behavior may follow.

Based on *DSM-IV-TR* criteria, Bornovalova and colleagues (2010) argue self-injury and avoidance of abandonment distinguish a high symptom severity Borderline Personality Disorder group from three less severe groups, supporting a dimensional conceptualization of Borderline Personality Disorder in which self-injury is indicative of a more severe "type" of Borderline Personality Disorder. Similarly, Chapman and others (2005) found greater Borderline Personality Disorder symptom severity is associated with higher self-injury frequency and greater experiential avoidance.

Some researchers argue women with Borderline Personality Disorder are likely to engage in a variety of self-injurious behaviors (Sansone, Wiederman, Sansone, & Monteith, 2000). Overdosing and self-hitting are significantly more likely to be endorsed by women with Borderline Personality Disorder in a psychiatric sample than those in a primary care sample. Women with BPD in the primary care sample were more likely to endorse abusing laxatives than their psychiatric sample counterparts. Although these differences were observed, women with BPD in both samples were likely to engage in a

variety of intrapersonal self-injurious behaviors including cutting, scratching, and self-hitting or head banging. Interestingly, several of the self-injurious behaviors endorsed by women in the two samples included a variety of interpersonally oriented behaviors (Sansone et al., 2000) not currently considered aspects of NSSI per Section III of the *DSM-5*, but suggestive of the interpersonal problems associated with BPD per Section III of the *DSM-5* (American Psychiatric Association, 2013). The behaviors most frequently endorsed among women with BPD in the psychiatric sample included self-defeating thoughts (89%), engagement in emotionally abusive relationships (82%), promiscuity (67%), alcohol abuse (63%), hitting self (52%), and reckless driving (52%). It is important to note that a single occurrence of the behaviors assessed contributed to the likelihood of being diagnosed with BPD. These findings suggest there are two distinct types of dysregulated behavior (i.e., intrapersonal and interpersonal). Furthermore, interpersonal behavioral dysregulation may be more indicative of BPD than intrapersonal behavioral dysregulation, which may be indicative of either BPD or poor emotion regulation that leads to impulsive urgency (Glenn & Klonsky, 2010) and subsequent behavioral dysregulation.

Comorbidity

Borderline Personality Disorder has high rates of comorbidity with anorexia nervosa including the restricting (24%), purging (26%), and bingeing-purging (32%) types as well as those with a mixed presentation (18%) suggesting an association between the two disorders and at least one other risk factor (Selby et al., 2010). Individuals with Anorexia Nervosa and Borderline Personality Disorder were more likely to report alcohol and substance abuse, self-injury, hitting someone or breaking things, greater incidents of

fighting/arguing, overdosing, binge-eating, and impulsive spending. In addition to an increased likelihood of engaging in the above-mentioned dysregulated behaviors, BPD symptoms were also associated with risky sexual behavior, and shoplifting/stealing. The goal of this study was refinement of dysregulated behaviors associated with BPD within a sample of individuals with anorexia nervosa, however, all dysregulated behaviors examined were associated with BPD. These findings suggest behavioral dysregulation is a core feature of BPD. Furthermore, the specific behavior may be less important than the phenomena of behavioral dysregulation itself. This argument was supported by recent research suggesting NSSI is a feature of BPD in some cases and a unique disorder in others (Selby et al., 2012).

Selby and Joiner (2009) extend Linehan's (1993) biosocial theory of BPD with the emotional cascade model of BPD emergence. Selby and Joiner's (2009) model includes emotional cascades and expectancy validation (i.e., reinforcement of negative cognitions about oneself following dysregulated behavior). "Emotional cascades are vicious cycles of intense rumination and negative affect that may induce aversive emotional states (Selby et al., 2009, pg. 375). The emotional cascade model describes hypervigilance as a key feature of BPD that results from childhood abuse, invalidation, cognitive distortions, and biological vulnerabilities (Selby & Joiner, 2009). The emotional cascade model describes these influences as distal factors that lead to the activation of an aversive cognitive, affective cycle (i.e., an emotional cascade), which subsequently leads to behavioral dysregulation, low distress tolerance, and the emergence of BPD. According to the concept of expectancy validation, engagement in dysregulated behavior leads to invalidation and criticism from significant others, which in turn leads to

activation of the cognitive, affective cycle (i.e., an emotional cascade) and further development of the disorder. In other words, engaging in behaviors that result in invalidation restarts the sequence of events leading to the emergence of the disorder, and reinforces the cycle described in the emotional cascade model.

Emotional cascades occur when an activating event triggers rumination, which in turn negatively impacts behavior regulation (Selby & Joiner, 2009). In other words, once the aversive cognitive, affective cycle (i.e., an intense ruminative process) is activated the result is an emotional cascade leading to behavioral dysregulation. Within the emotional cascades model, behavioral dysregulation is a negatively reinforced form of escape from the aversive cognitive, affective cycle (i.e., the ruminative process). Thought suppression and low distress tolerance contributes to this process. Emotional cascades, low distress tolerance, suicidal behavior, behavioral dysregulation, and expectancy validation are proximal factors leading to the emergence of BPD.

According to the emotional cascades model, rumination is the link between behavioral dysregulation and BPD symptoms (Selby et al., 2009). In a recent study emotional cascades fully mediated the relationship between BPD symptoms and behavioral dysregulation (including NSSI). NSSI is frequently employed to manage emotion dysregulation because it is “potent” enough to disrupt the emotional cascade. Selby et al., (2009) further argue rumination is the driving force behind dysregulated behavior, suggesting that accounting for ruminative processes and emotion dysregulation (i.e., impaired functioning under duress) in the engagement of the dysregulated behavior (including NSSI) fully mediate the relationship between NSSI and BPD. Given that affect regulation is the primary function for NSSI (Klonsky, 2007), this contention seems

reasonable. Intense focusing on aversive cognitive and emotional experiences (i.e., brooding) is one aspect of rumination thought to lead to dysregulated behavior. This argument suggests a measure assessing a construct similar to brooding (i.e., State Orientation) should at least partially mediate the relationship between dysregulated behavior (including NSSI) and other phenomena affected by brooding (BPD).

The emotional cascade model proposed by Selby and colleagues (2009) provided an excellent fit to the data; we anticipated that the current study's model would have a less than perfect fit to the data, because over-identified models exhibit less than perfect fit to the data, in contrast to just-identified models which are expected to perfectly fit the data as there are zero degrees of freedom in the χ^2 test. Although the direct path between BPD and behavioral dysregulation was fully mediated, the indirect effect of BPD on behavioral dysregulation remained, suggesting BPD leads to emotional cascades, which lead to behavioral dysregulation.

Nonsuicidal Self-Injury

As a result of increased prevalence in the United States, self-injury has gained attention in recent years although the occurrence of self-injury has existed for centuries across cultures (Favazza, 1998). Self-injury is startlingly prevalent among adolescents, leading to increased attention as a cultural phenomenon (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011). The current definition of self-injury has evolved due to concerns related to stigma, incomplete or inadequate description of the behavior, confusion with unintentional and stereotypic self-injury, and confusion with suicidal behavior (Gratz, 2001; Nock & Favazza, 2009). Diagnostic criteria for Nonsuicidal Self-injury, per section

II of the *DSM*, distinguish the behavior from attempted suicide and provide a functional framework for the behavior.

Favazza operationally defined self-mutilation as “the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent” (1996, pg. 225). Gratz (2001) adopted this definition to refer to Deliberate Self-Harm in an effort to reduce the stigma associated with the term self-mutilation. Favazza (1996) further classified self-mutilation according to degree of tissue damage, rate of the behavior, and pattern of the behavior. Favazza’s classification system resulted in three categories of self-mutilation: major, stereotypic, and moderate/superficial.

Major self-mutilation involves extensive tissue damage, occurs infrequently, and includes behaviors such as eye enucleation, autocastration, and limb amputation (Favazza, 1998). Major self-mutilation is typically present with psychosis and frequently accompanied by delusional explanations. Themes associated with major self-mutilation include: religious and/or sexual atonement, spiritual purification, punishment for sins, identification with Christ, other biblical references (e.g., “tear out an offending eye” or “cutting off an offending hand”), becoming a eunuch for heaven’s sake, demonic influences, heavenly commands or visions, desire to be female (e.g., as in Gender Identity Disorder), fear of homosexuality, control of hypersexuality, and repudiation of troublesome genitals.

Stereotypic self-mutilation is typically rhythmic, does not involve an implement, and is associated with Axis I disorders such as Mental Retardation, Stereotypic Movement Disorder, Autism, and Asperger Syndrome (American Psychiatric Association, 2000). Moderate/superficial self-mutilation is compulsive, episodic,

repetitive, or a combination of these three subtypes (Favazza, 1996).

Moderate/superficial, episodic or repetitive self-injury consisting of self-injurious behavior that is low in lethality, resulting in minor tissue damage. Favazza argued that moderate/superficial, episodic or repetitive self-injury frequently requires the use of an implement, contains ritualistic and symbolic components, and usually occurs in solitude. The argument for symbolic aspects of NSSI is supported by the findings that the carving of words or symbols is a commonly reported behavior among self-injurers (48%; Klonsky & Olino, 2008). Although historically, moderate/superficial self-injury has occurred in isolation, recent research indicates peer involvement with self-injury is quite common among adolescents (82%; Nock & Prinstein, 2005). Compulsive self-mutilation is better categorized as an impulse control disorder as may be seen in Trichotillomania or compulsive hand washing associated with Obsessive Compulsive Disorder; in other words, the function of the behavior is distinctly different than that associated with moderate/superficial self-mutilation, associated with Nonsuicidal Self-injury.

Previous terminology defining self-injurious behavior was inconsistently utilized, leading to prevalence rates ranging from 4 to 47%, at least in part, due to varied definitions of the behavior. Distinguishing self-injury from a suicide attempt has been essential to determining the prevalence of the behavior. As a result, Nock and Favazza (2009) advocate for the consistent use of the term Nonsuicidal Self-injury among researchers and clinicians. Factors that have influenced this evolution include distinguishing NSSI from stereotypic self-injury (associated with a variety of *DSM-IV-TR* diagnoses identified above) and suicidal behavior and/or gestures (Nock & Favazza, 2009). Recent research suggests individual assessment of the methods, functions, and

context in which NSSI occurs is clinically relevant to the development of effective treatment planning (Klonsky et al., 2011; Nock & Prinstein, 2004).

Rates of Self-Injury

Observed rates of self-injury have varied across studies from 4%- 47% (Gratz, 2001; Laye-Gindhu & Schonert-Reichl, 2005; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Ross & Heath, 2002; Whitlock, Eckenrode, & Silverman, 2006). Ross and Heath (2002) observed 13.9% of high school students reported at least one incident of self-injury prior to participation in the study. According to Lloyd-Richardson and others (2007), exclusive of attempted suicide, wound picking, and "other" (i.e., unspecified) methods of self-injury, 46.5% of adolescents in a community sample endorsed having engaged in self-injurious behavior in the previous year.

There is a relative dearth of research examining self-injury in children; as a result, limited data regarding childhood rates of self-injury are available. Based on retrospective reports from adolescents, young adults (Muehlenkamp & Gutierrez, 2004), and college students (Whitlock et al., 2006) estimated rates of childhood self-injury (i.e., childhood onset) are approximately 5%. The average age of onset for NSSI is approximately 13 years. The average age of termination for the behavior is less clear as in some cases the behavior continues into adulthood, non-clinical adult samples range from 4 - 6% and an estimated 11% or more in clinical samples (Klonsky et al., 2011).

Methods of Self-Injury

Self-cutting is the most common method of NSSI (Glenn & Klonsky, 2010), followed by self-hitting, pinching, scratching, and biting (Ross & Heath, 2002). Cutting is often the first method with which individuals experiment (Todd & Abwender, 2012).

Of adolescents who reported self-injuring, 42% reported only one method, 52% reported two to five methods, and 6% reported greater than six methods (Lloyd-Richardson et al., 2007). According to Glenn and Klonsky (2010), the vast majority (96%) of self-injurers engage in more than one method and a substantial proportion (81%) reported three or more methods. Severity of self-injury increases as the number of methods employed increases (Klonsky & Glenn, 2009). The risk of a suicide attempt by a self-injurer increases as the number of methods and incidents of self-injury increases (Brunner et al. 2007; Klonsky & Olino 2008; Lloyd-Richardson 2007; Nock et al. 2006; Zlotnick et al. 1997). According to Robertson and others (2012), the number self-injurious methods employed is positively associated with Openness to Experience, Sensitivity to Punishment and Sensitivity to Reward, and negatively associated with Conscientiousness. These findings suggest number of different self-injurious methods is indicative of increased severity (Brunner et al., 2007; Gratz, 2001; Klonsky & Olino, 2008; Lloyd-Richardson et al., 2007; Nock, Holmberg, Photos, & Michel, 2007; Robertson, Miskey, Mitchell & Nelson-Gray, 2012).

Functions of Self-Injury

In addition to the growing body of literature identifying risk factors and clinical concomitants of NSSI, a functional framework has emerged (Klonsky & Olino, 2008; Nock & Prinstein, 2004, 2005). The vast majority (80%) of self-injurers report automatic negative reinforcement (i.e., the amelioration of negative emotions or cognitions) as the primary motivation for engagement in the behavior. Automatic Negative Reinforcement (ANR) is a well-documented motivation for engaging in self-injury (Nock, 2009). Given the frequency at which self-injurers report ANR for engagement in the behavior, it's

likely that self-injurers are more frequently motivated to escape a noxious affective experience than non-injurers. Automatic negative and automatic positive reinforcement are significantly positively correlated with one another, however these correlations are sufficiently low that the two constructs should be considered different aspects of automatic reinforcement (Nock & Prinstein, 2004, 2005; Robertson et al., 2012).

Adolescent self-injurers reported intrapersonal – negative reinforcement approximately two thirds (64.7%) of the time, intrapersonal – positive reinforcement approximately one quarter (24.5%) of the time, interpersonal – negative reinforcement approximately 15% of the time, and least often, interpersonal – positive reinforcement approximately four percent of the time. Ninety-three percent of self-injurers reported thoughts about engaging in NSSI five times per week, on average; and 86% reported having engaged in NSSI at least once per week (1.6 times). In one study, 22-28% of self-injurious adolescents endorsed intrapersonal, automatic reinforcers for the behavior, and 19-31% reported social reinforcers for the behavior (Lloyd-Richardson et al., 2007) with an average of 4.76 reinforcers. Minor self-injurious behaviors were only associated with intrapersonal, automatic negative reinforcement (e.g., ameliorate negative affect, whereas moderate self-injurious behaviors were highly correlated with all four examined functions. Self-injurers with a history of attempted suicide reported a greater number of prior psychiatric hospitalizations, a greater extent of previous outpatient psychiatric treatment, and current suicidal ideation. These findings suggest that more severe self-injury is associated with an increased number of motivations and likely an increased frequency as well.

Interestingly the most severe group had the highest rates of cutting and also reported the highest degree of automatic reinforcement. Clearly, the functional model of self-injury offers a clinically relevant framework within which motivational intent can be examined (Klonsky & Glenn, 2009; Nock & Prinstein, 2004, 2005).

Contextual Features of Self-Injury

According to Ross and Heath (2002), Caucasian students represented the largest proportion of self-injurers regardless of socioeconomic status and the ethnic composition of the school they attended. Similarly, according to Lloyd-Richardson and colleagues (2007), African American participants were less likely than their Caucasians counterparts to report engaging in self-injurious behavior in general and less likely to endorse moderate forms of self-injury (i.e., African American participants reported more mild forms of self-injury). These results remained constant across urban and suburban academic settings.

In one study, girls reported significantly higher rates of self-injury than boys, 64% and 36%, respectively (Heath, Ross, Toste, Charlebois & Nedechewa, 2009), however, other studies have revealed no significant gender differences (Glenn & Klonsky, 2010). Melvin and colleagues (2012) found females were more likely than males to report intrapersonal functions for their self-injurious behavior, albeit not significantly.

Cutting oneself has a very low lethality, accounting for less than 0.5% of suicides committed by individuals under the age of 24, and only 0.6% of suicides committed by individuals of all ages. Nonsuicidal self-injurers report higher levels of self-esteem and less interpersonal conflict with their parents than their suicidal counterparts (Brausch & Gutierrez, 2010; Evans et al., 2005; Muehlenkamp & Gutierrez, 2004). Nock and

Favazza (2009) advocate for consistent use of the term Nonsuicidal Self-injury in place of previously utilized terms in order to establish a common language between researchers and clinicians.

According to Glenn and Klonsky (2010), self-injurers were significantly younger as a group than their non-injuring counterparts, and the self-injuring group had significantly more members endorsing full diagnostic criteria for Major Depressive Disorder, Generalized Anxiety Disorder, and Alcohol Abuse; likewise Ross and Heath (2002) indicated depression and anxiety were associated with self-injury. These findings suggest self-injury is associated with a variety of concomitants not just Borderline Personality Disorder.

In a study of undergraduate college students, subjective pain experience predicted bruising behaviors, burning behaviors, and the use of multiple methods of NSSI (Todd & Abwender, 2012), however, subjective pain experience did not predict NSSI in general or cutting specifically. Interestingly, Ross and Heath (2002) revealed a qualitative distinction between hitting oneself and hitting an external object (e.g., hitting a wall) in interviews with adolescents; that is, when they reported hitting an object it was most frequently precipitated by anger toward others, whereas when they reported hitting oneself it was most frequently precipitated by anger (or other self-directed emotions; e.g., self-hatred or a desire to punish oneself) toward oneself. These results suggest self-deprecation may be a primary function of NSSI, at least for some self-injurers. It is unclear whether there were gender differences regarding anger and/or other provocative emotions. Although adolescents who self-injure are at a greater risk for suicidal thoughts and suicide attempts (Nock et al., 2006; Prinstein et al., 2008), the distinction between

Nonsuicidal Self-injury and self-injury involving suicidal intent is essential to the consistent evaluation of the target behavior (i.e., Nonsuicidal Self-injury).

Risk Factors for Self-injury

Risk factors for self-injury include emotion dysregulation, diminished coping strategies, poor self-regulation, poor interpersonal communication, self-criticism, self-derogation, alexithymia, and in adolescents, the presence of peer involvement in the behavior (Davis, 2012; Gratz et al., 2006; Klonsky et al., 2011; Klonsky & Olino, 2008; Nock & Prinstein, 2004, 2005). According to Miskey, Hill, and Huelsman (2012), perfectionism, rumination, organization (i.e., the tendency to be neat, orderly, and disciplined), and concern over mistakes (inversely) significantly predict the frequency of self-injury. Interestingly, extraversion predicted cutting frequency, whereas introversion predicted duration of cutting. Individuals who engage in self-injurious behavior have significantly greater negative affect than individuals who do not engage in the behavior (Davis, 2012; Nock & Prinstein, 2004 & 2005; Linehan, 1993) as well as significantly greater affective lability (Bornoalova et al, 2010; Linehan, 1993).

Borderline Personality Disorder

Dubo, Zanarini, Lewis, and Williams (1997) observed an association between Borderline Personality Disorder and self-destructive behavior, including self-injury. Linehan (1993) identified higher levels of negative affect (i.e., depressed mood), suppressed anger (i.e., inhibited anger), and overcontrol as characteristic of typical self-injuring borderlines. Linehan (1993) describes chronic self-injuring borderline individuals, as less likely than their non-injurious counterparts to outwardly display anger; rather, they tend to engage in passive and submissive interpersonal interactions

(Linehan, 1993). Self-injury (i.e., self-mutilation) and Borderline Personality Disorder are both associated with childhood trauma including sexual abuse, physical abuse, and neglect (Dubo et al., 1997). A similar relationship between neglect (e.g., a caregiver's failure to protect and/or provide consistent need satisfaction) and chronic self-injurious behavior was also noted. Interestingly, neglect moderated/mediated the association between sexual abuse and self-injury. Finally, they argue that a lack of emotional responsiveness and lack of protection from caregivers' plays a role in the development of emotion dysregulation, a characteristic associated with Borderline Personality Disorder and self-injury (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2009).

According to Selby and colleagues (2009), rumination about aversive events is a risk factor for engagement in self-injury. Najmi and others (2007) suggest self-injury may function as a means of distracting oneself from aversive thoughts (i.e., aversive rumination) in addition to aversive affective states. These findings support those observed in the aversive self-awareness findings of Arney and Crowther (2008).

Research suggests self-injurers are a heterogeneous group often exhibiting full diagnostic criteria for a variety of mental health diagnoses including Major Depressive Disorder, Generalized Anxiety Disorder, and Alcohol Abuse (Klonsky & Olino, 2008). Similarly, Glenn and Klonsky (2010) identified greater concomitance with depression, anxiety, and alcohol abuse, among self-injurers than non-self-injurers. Furthermore, Axis I symptoms mediated differences in Sensation Seeking between self-injurers and non-self-injurers, however, Impulsive Urgency and Premeditation were not mediated by Axis I symptoms. According to Jeter and colleagues (2012), self-injurers report higher rates of

abuse, experiential avoidance, depression, and anxiety, however, experiential avoidance partially mediated the relationship between Nonsuicidal Self-injury and abuse history.

Glenn and Klonsky (2010) identified Impulsive Urgency (i.e., a tendency to engage in impulsive behaviors in response to a negative state) as the trait most characteristic of self-injurers, followed by decreased Premeditation (i.e., the ability to postpone action in order to consider potential outcomes), and increased Sensation Seeking (i.e., a propensity for seeking excitement and adventure). Decreased levels of Premeditation observed by Glenn and Klonsky (2010) corroborate earlier research (Evans, Hawton, Rodham, Psychol, & Deeks, 2005) suggesting individuals who engage in NSSI suffer from inadequate self-regulation (behavioral inhibition, planning, and executive functioning). Additionally, adolescent self-injurers were more likely than their non-injurious counterparts to seek help from their peers than other sources (Evans, Hawton, Rodham, Psychol, & Deeks 2005; Evans et al., 2005). Perseverance (i.e., the ability to follow a task to completion) was not significantly different between injurers and non-injurers, however, individuals who self-injure and exhibit low Perseverance, engage in more frequent self-injury than their high Perseverance counterparts. Likewise, impulsivity was significantly associated with number of self-injurious methods (Lynam, Miller, Miller, Bornovalova, & Lejuez, 2011). However, this may in fact be a form of state impulsivity (i.e., impulsive urgency) rather than trait impulsivity. Impulsive urgency is an aversive affective state that may elicit a burgeoning desire to escape or eliminate the experienced state (Glenn & Klonsky, 2010). Suggesting, affective tension increases following an activating event and continues until the individual engages in self-injury, or in some cases, once the individual decides to self-injure.

Gratz (2008) revealed that the relationship between dysregulated behavior (including self-injury) and childhood maltreatment is mediated by emotion dysregulation, suggesting that childhood maltreatment leads to emotion dysregulation resulting in an increased risk of dysregulated behavior later in life. Recent research suggests the influence of childhood maltreatment on intimate partner abuse is also mediated by emotion dysregulation (Gratz & Chapman, 2007; Gratz, Paulson, Jakupack & Tull, 2009). Specifically, men who had experienced childhood maltreatment yet had developed emotion regulation strategies had fewer incidents of intimate partner violence than their emotionally dysregulated counterparts. These findings suggest intimate partner abuse may function as a behavioral emotion regulation mechanism for males who experienced childhood maltreatment and have not developed emotion regulation skills.

In one study, adolescents at risk for suicide with a history of self-injury were more likely to meet criteria for an eating disorder and to report higher levels of anxiety, depression, and negative affect (Melvin et al., 2012). Suicidal thoughts rarely occur simultaneously with thoughts of NSSI, however, thoughts of substance use and bingeing/purging occurred simultaneously with thoughts of NSSI rather frequently (i.e., 15-20% of the time; Nock, Prinstein, & Sterba, 2009). Furthermore frequency of self-injury is positively predicted by intensity of thoughts about the behavior and negatively predicted by duration of thoughts about the behavior. Although a shorter duration of self-injurious thoughts may be an artifact of actual engagement in the behavior resulting in the cessation of the thoughts. Social problems are associated with interpersonal functions of nonsuicidal self-injury (Hilt, Cha, & Nolen-Hoeksema, 2008; Nock & Mendes, 2008), whereas greater sensitivity to stress and a history of escape behavior (e.g., suicide

attempts) predict intrapersonal functions of nonsuicidal self-injury (Nock & Mendes, 2008; Nock & Prinstein, 2004, 2005).

Theories Explaining Self-Injury

Self-injury has been documented as a method of altering one's affective state rather than an effort to terminate one's life (Franklin et al., 2010; Gratz, 2001, 2003; Klonsky, 2007; Nock & Prinstein, 2004, 2005; Ross & Heath, 2002; Selby et al., 2012; Shaffer & Jacobson, 2010). Recent research comparing Nonsuicidal Self-injury to attempted overdose in youth (Brausch & Gutierrez, 2010; Evans, Hawton, & Rodham, 2005; Muehlenkamp & Gutierrez, 2004) consistently reveals significantly less suicidal ideation in the self-injuring group. The vast majority (87%) of cutting (or puncturing) incidents evaluated at emergency departments lack suicidal intent. A substantial proportion of adolescents (88%) who cut, report the incident is inaccurately deemed a suicide attempt. In spite of these findings, 10-30% of individuals who present at emergency departments having cut or pierced their skin are admitted as inpatients (Shaffer & Jacobson, 2010).

Smith, Cox, and Saradjian (1999) proposed moderate/superficial repetitive and/or episodic self-injury is associated with a neurochemical rush. Specifically, the release of endogenous neurotransmitters (i.e., opioids and serotonin) in response to physical trauma leads to subsequent feelings of calm or euphoria. They argue tolerance develops and more extreme self-injury is necessary to elicit the same euphoric experience.

Several emotion focused theories have been used to explain self-injury including but not limited to: the affect regulation model, dissociation model, experiential avoidance model, emotional cascade model, thought suppression model, and the integrated model.

According to Davis (2012), a protective pathway composed of improved affect regulation, increased positive affect, decreased negative affect, and increased self-regulation can prevent the occurrence of the behavior. In other words, the development of these skills moderates the association between an activating event and engagement in self-injury.

According to Selby and Joiner's (2009), Emotional Cascade Model, nonsuicidal self-injury is one of many dysregulated behaviors present in individuals diagnosed with Borderline Personality Disorder, per *DSM-IV-TR* criteria. The sequence of emotional stimulus followed by ruminative processes (i.e., positive feedback loops) intensifies the aversive affective state leading to behavioral dysregulation (e.g., NSSI). This series of events is what Selby and Joiner refer to as an emotional cascade. Similarly, dissociation is a cognitive method of escaping negative affective states that may be associated with greater affect sensitivity. Furthermore, they argue a reciprocal relationship between rumination and thought suppression exists. They further contend that the distracting, dysregulated behaviors including: reckless driving, impulsive spending, shop lifting, pathological gambling; and of course self-injury need be adequately stimulating to disrupt the ruminative thoughts fueling the affective, cognitive cycle. According to Selby and Joiner, rumination on negative affect leads to increased emotional intensity, and subsequently more rumination in a circular manner.

According to the Experiential Avoidance Theory, initially proposed by Marsha Linehan (1993), as it applies to self-injury within the context of BPD; more recently elaborated by Chapman, Gratz, and Brown (2006) and supported by Arney and Crowther (2008), self-injury is a means of avoiding unwanted or aversive experiences. They further

contend that self-injury regulates intense emotions and increases distress tolerance as its primary mechanism (Chapman et al., 2006). According to Gratz, Rosenthal, and others (2009), self-injurers are less willing to experience distress in order to complete a task than their non-injurious counterparts, however, their performance on the task is not significantly different. Interestingly, self-injurers did not report significantly greater distress, in spite of their decreased willingness to experience a negative affective state. Suggesting a low threshold for distress tolerance rather than greater subjective distress.

Based on experiential avoidance theory, Turner, Layden, and Chapman (2012) examined the role of experiential avoidance in the prediction of NSSI over the course of six months. Experiential avoidance predicted future engagement in self-injury and the number of methods endorsed above and beyond that accounted for by other risk factors (i.e., emotion dysregulation, affect intensity and reactivity, and distress tolerance; Turner et al., 2012). According to Turner and colleagues (2012), experiential avoidance fully mediates the association between emotion dysregulation and frequency of self-injurious behavior. Given that Turner and others (2012) found experiential avoidance fully mediated the association between emotion dysregulation and frequency of self-injurious behavior, State Orientation may be associated with overall incidents of nonsuicidal self-injury as well as Borderline Personality Disorder symptoms and emotion dysregulation. In addition to support for the experiential avoidance model, Arney and Crowther's (2008) research supports the previously observed association between self-injury and dissociation (Klonsky, 2007), however, the variance accounted for by dissociation is relatively small after controlling for aversive self-awareness.

Reinforcement Sensitivity Theory is a biologically based theory (Corr, 2004). Sensitivity to Punishment adds a unique contribution to the prediction of number of NSSI methods (Robertson et al., 2012). Severity of NSSI increases as the number of methods employed increases (Klonsky & Glenn, 2009) and the number of self-injurious methods employed is positively associated with Sensitivity to Punishment and Sensitivity to Reward (Robertson et al., 2012).

Self-injurers report more subjective distress than was observed via a physiological measure (i.e., their subjective experience of distress was greater than physiological indicators of distress; Franklin et al., 2010; Glenn et al., 2011); suggesting an individual's cognitive appraisal of distress predicts self-injury, although physiological responses may not significantly predict self-injury. These results suggest cognitive appraisals leading to emotional distress may be essential components of affect sensitivity.

Nonsuicidal Self-injury (NSSI) is the "direct, deliberate destruction of one's own body tissue in the absence of suicidal intent" (Nock & Favazza, 2009, pg. 9). This definition eliminates acts of self-injury that do not result in direct (primary) self-injury (e.g., taking an overdose) and narrows the scope of behaviors to those that result in direct bodily injury (e.g., cutting or burning one's own skin). Although the severity of the damage that results from the self-injurious act may vary substantially, essential to this definition of NSSI is that the injury is a result of the individual's own actions rather than a delayed process resulting from the act (e.g., an overdose after having consumed an exorbitant amount of a substance). In addition to the necessary components of NSSI per this definition, the injury must occur outside any culturally sanctioned form of self-inflicted injury (see Favazza, 1996). NSSI as defined by Nock and Favazza (2009) is the

foundation of the *DSM-5* disorder warranting further investigation, and the form of NSSI that is the focus of this study.

**Diagnostic and Statistical Manual of Mental Disorders --
Fifth Edition (DSM-5)**

According to the *Guidelines for Making Changes to the DSM-V* (Kendler, Kupfer, Narrow, Phillips, & Fawcett, 2009), a change to the manual needs to be initiated by a reason for the change that is adequately supported by relevant literature. Specifically, the Guidelines argue the magnitude of evidence in support of a change should be proportional to the magnitude of the change. The addition of a new diagnosis is considered a major change, requiring substantial empirical support; this description is especially true of a pattern of behavior previously accounted for by another diagnosis. Specifically, the Guidelines argue that significant changes to the manual require empirical support of high-priority validators including: antecedents, heritability, predictive, diagnostic stability, course, and response to treatment studies. In order for major changes to be made to the manual, the change needs to be consistently supported across validators and methodological approaches, with little contradictory evidence. Diagnostic validators and clinical utility should aid in the distinction between two similar diagnoses, with the benefits of differential diagnosis always exceeding the potential harm.

For a new diagnosis to be included in the manual, careful examination of the relationship between the new diagnosis and established diagnoses that account for the behavior as well as the consequences of the addition (e.g., potential harm and available treatments) must be conducted and support the addition (Kendler et al., 2009). The

behavior or symptoms should be indicative of a diagnosis, not merely a variation of normal psychological functioning. Features of a diagnosis are defined as: a pattern of behavior that leads to distress or impairment and exceeds culturally sanctioned responses to the precipitating event. The behavior pattern reflects an underlying disturbance not better accounted for by social deviance. Finally, the diagnosis should facilitate improved clinical conceptualization and treatment planning.

Additionally, the Guidelines suggest diagnoses in the appendix be reviewed for deletion, promotion, or retention (Kendler et al., 2009). Reasons a diagnosis would be deleted from the *DSM-5* appendix include inadequate empirical support (e.g., too few studies or studies with low reliability) and inadequate differentiation from an existing category or diagnosis. The diagnosis should be promoted if guidelines for addition to the manual are met. Finally, retention in the *DSM-5* appendix would be a result of increased empirical support for the diagnosis, overlap with other diagnoses, potential maleficence, or an unclear need for the addition. Retention (or entry) into the appendix (i.e., section III) of *DSM-5* suggests empirical evidence adequately supports further examination and potential promotion to the main manual in a future edition. The reliability validator for a new diagnosis may be a roadblock to inclusion for Nonsuicidal Self-injury in future manuals given the developmental trajectory of the behavior (i.e., the observed decline in incidents into early and middle adulthood, with most self-injurers stopping the behavior by their mid-twenties; Klonsky et al., 2011). These findings suggest self-injury may function as a means of managing one's internal affective experience prior to the development of the prefrontal cortex in adolescents; furthermore, self-injury may be indicative of inadequately developed affect regulation in adults.

Although incidents of NSSI, per Section III of the *DSM-5*, exclude behaviors involving suicidal intent many who self-injure will attempt suicide at some point (Shaffer & Jacobson, 2010). The likelihood that an individual who engages in Nonsuicidal Self-injury will attempt suicide is greater in clinical populations, those who employ multiple methods, and those who report more incidents of self-injury (Brunner et al., 2007; Cloutier, Martin, Kennedy, Nixon, & Muehlenkamp, 2010; Nock & Banaji, 2007; Zlotnick et al., 1997).

DSM-5 NSSI Criteria

The diagnostic criteria for NSSI per *DSM-5* are listed below.

1. In the last year, the individual has, on 5 or more days, engaged in intentional self-inflicted damage to the surface of his or her body, of a sort likely to induce bleeding, bruising or pain (e.g., cutting, burning, stabbing, hitting, excessive rubbing), with the expectation that the injury will lead to only minor or moderate physical harm (i.e., there is no suicidal intent). Note: The absence of suicidal intent has either been stated by the individual or can be inferred by the individual's repeated engagement in a behavior that the individual knows, or has learned, is not likely to result in death.
2. The individual engages in the self-injurious behavior with one or more of the following expectation:
 1. To obtain relief from a negative feeling or cognitive state.
 2. To resolve an interpersonal difficulty.
 3. To induce a positive feeling state.

Note: The desired relief or response is experienced during or shortly after the self-injury, and the individual may display patterns of behavior suggesting a dependence on repeatedly engaging in it.

3. The intentional self-injury is associated with at least one of the following:
 1. Interpersonal difficulties or negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurring in the period immediately prior to the self-injurious act.
 2. Prior to engaging in the act, a period of preoccupation with the intended behavior that is difficult to control.
 3. Thinking about self-injury that occurs frequently, even when it is not acted upon.
4. The behavior is not socially sanctioned (e.g., body piercing, tattooing, part of a religious or cultural ritual) and is not restricted to picking a scab or nail biting.
5. The behavior or its consequences cause clinically significant distress or interference in interpersonal, academic, or other important areas of functioning.
6. The behavior does not occur exclusively during psychotic episodes, delirium, substance intoxication, or substance withdrawal. In individuals with a neurodevelopmental disorder, the behavior is not part of a pattern of repetitive stereotypies. The behavior is not better explained by another mental or medical disorder (e.g., psychotic disorder, autism spectrum disorder, intellectual disability, Lesch-Nyhan syndrome, stereotypic movement disorder with self-injury, trichotillomania [hair-pulling disorder], and excoriation [skin-picking] disorder).

Marsha Linehan (1993) noted that negative state affect is typical of individuals with Borderline Personality Disorder who self-injure, suggesting an association between negative affect (e.g., depressed mood) and self-injury. Emotion dysregulation is significantly associated with self-injury as well as Borderline Personality Disorder (Bornovalova, Hicks, Patrick, Iacono, & McGue, 2011; Bornovalova et al., 2010; Gratz & Roemer, 2008; Gratz, Rosenthal et al., 2009). Given, emotion dysregulation has been associated with Borderline Personality Disorder and self-injury as well as a variety of other dysregulated behaviors. Assessment of one's perceived ability to manage his or her emotions is essential to establishing an adequate conceptual framework for self-injurious behavior.

NSSI acts as a means of adjusting negative affective states. Trait impulsivity may not account for predictive variance, but that as one's negative state increases so does one's need for escape from the negative affective state may increase one's state impulsivity (Glenn & Klonsky, 2010). For example, impulsivity/impulsiveness is increased by one's emotional state if that state is aversive. Likewise, Gratz and others (2009) examined the association between group status (BPD or no PD) and two aspects of emotion dysregulation (i.e., willingness to experience distress in order to engage in goal-directed behavior and the ability to engage in goal-directed behavior when distressed).

Individuals with an under-developed and undifferentiated self-representational model (as may be present in Borderline Personality Disorder) may experience greater difficulty accessing aspects of the self, thereby hindering down-regulation of negative affect (Kuhl, 2011). According to this contention, the second modulation assumption of

PSI theory may explain aspects of self-injury not otherwise accounted for by symptoms of Borderline Personality Disorder. In contrast, individuals with a fully developed holistic self are capable of accessing self-representational knowledge, thereby down-regulating negative affect in order to maintain goal directed behavior in the face of stressful events.

Statement of the Problem

Marsha Linehan's groundbreaking *Cognitive Behavioral Treatment of Borderline Personality Disorder* (1993) highlighted the relationship between self-injury and Borderline Personality Disorder. The strength of this relationship has been reinforced by self-injury becoming a diagnostic criterion for Borderline Personality Disorder (i.e., Criterion 5; American Psychiatric Association, 1994). Borderline Personality Disorder per the *DSM-IV-TR* (2000) was the only diagnosis for which nonsuicidal, non-stereotypic self-injury was a diagnostic criterion. Shaffer and Jacobson (2010) argued Nonsuicidal Self-injury is a behavioral phenomenon common among youth aged 12-17 years that it should be a unique disorder in the *DSM-5*, however, Nonsuicidal Self-injury is classified in section III of the *DSM-5* as a *condition requiring further research* (2013). The current study responds to the call for further research examining self-injury; specifically, this study examines the relationships between State Orientation, emotion dysregulation, Borderline Personality Disorder, and Nonsuicidal Self-injury.

Linehan (1993) identifies higher levels of negative trait affect (i.e., depressed mood), suppressed anger (i.e., inhibited anger), and over-control as characteristic of a typical self-injuring borderline individual. She describes chronic self-injuring borderline individuals as less likely to display anger outwardly than their non-injurious counterparts; rather they tend to engage in passive and submissive interpersonal interactions (i.e.,

shaped behavior patterns). Although many individuals who engage in repeated self-injury do not meet full criteria for BPD (American Psychiatric Association, 2013) the behavior remains a symptom of the disorder.

Emotion dysregulation is consistently associated with self-injury (Franklin et al., 2010; Gratz & Roemer, 2004, 2008; Klonsky & Glenn, 2009; Nock & Mendes, 2008). According to Klonsky (2007), self-injury is frequently preceded by acute negative affect and followed by a sense of relief (or a decrease in negative affect). In fact relief from negative affect was the most frequently cited function of self-injury. Additionally, laboratory proxies for self-injury suggest decreased affective arousal following self-injurious behavior. In a study conducted by Lloyd-Richardson and colleagues (2007), 22-28% of self-injurious adolescents endorsed intrapersonal, automatic reinforcers for the behavior, and 19-31% reported social reinforcers for the behavior. The average number of reinforcers endorsed in the study was 4.76. Minor self-injurious behaviors were only associated with intrapersonal, automatic negative reinforcement (e.g., ameliorate negative affect), whereas moderate self-injurious behaviors were highly correlated interpersonal as well as intrapersonal functions.

In contrast, the relationship between emotional reactivity and self-injury is less consistent (Franklin et al., 2010; Glenn et al., 2011). Specifically, Franklin and colleagues (2010), and Glenn and colleagues (2011) observed discrepancies between emotional reactivity as measured by self-report, and emotional reactivity as measured by skin conductance and startle-response, respectively. Janis and Nock (2008) contend that individuals with a history of self-injury may be poor reporters of their inner experience

and the processes underlying their engagement in self-injury; as a result, self-report measures may not adequately assess affective experiences (Franklin et al., 2010).

Discrepancies between self-report and psychophysiological measures of emotional reactivity (i.e., Franklin et al., 2010; Glenn et al., 2011) suggest the two measures assess slightly different aspects of the target construct. The discrepancy between self-report measures and physiological measures of emotional reactivity suggests that negative affect increases with contemplation, which may be indicative of ruminative processes.

According to Shaffer and Jacobson (2010), NSSI has frequently been regarded as an aspect of Borderline Personality Disorder, which leads to the misconception that individuals who engage in NSSI have Borderline Personality Disorder. Excluding attempted suicide, wound picking, and "other" 46.5% of adolescents in a community sample endorsed having engaged in self-injurious behavior in the previous year (Lloyd-Richardson et al., 2007). Of the adolescents who reported self-injuring 42 % reported only one method, 52% reported 2-5 methods, and 6% reported greater than six methods. African American participants were less likely than their Caucasian counterparts to report engaging in self-injurious behavior in general and were less likely to endorse moderate forms of self-injurious behavior. Self-injurers with a history of attempted suicide reported a greater number of psychiatric hospitalizations and more extensive outpatient treatment by history, as well as an increased likelihood for current suicidal ideation (Klonsky, 2007).

Selby and colleagues (2012) conducted a study comparing self-injurers without Borderline Personality Disorder (n = 65), individuals with Borderline Personality

Disorder who do and do not self-injure ($n = 24$), and a clinical comparison group that did not meet criteria for inclusion in either of the other two groups ($n = 482$). The Nonsuicidal Self-injury & Borderline Personality Disorder groups were characterized by greater emotional lability, abuse history, interpersonal conflict, strange beliefs, and aggression than the comparison group. The Nonsuicidal Self-injury group was defined according to *DSM-5* section III criteria. The Borderline Personality Disorder group was defined according to *DSM-IV-TR* criteria via the Structured Clinical Interview for Axis II Diagnoses (SCID-II). The Nonsuicidal Self-injury and Borderline Personality Disorder groups did not differ from one another significantly in overall functioning or symptom severity, however, Selby and colleagues (2012) argue these results supported the inclusion of Nonsuicidal Self-injury as a unique disorder in the *DSM-5*.

According to Quirin and colleagues (2009), affect is a result of the activation of representations within the individual's associative network. This activation occurs on the pre-conceptual schematic level of processing. PSI theory highlights the distinction between affect sensitivity (i.e., how readily and intensely one's affect shifts to a positive or negative state) and affect regulation (i.e., how adept one is at maintaining functioning once an affective state is elicited; Baumann et al., 2007). Furthermore, affect regulation is composed of distinct factors including self-motivation and self-relaxation. Acquisition of adequate self-regulation is essential to the development of adaptive personality functioning. When one's affect regulation is inadequately developed, the risk for engagement in dysregulated behavior increases. For example, Neuroticism would be a personality trait in which high negative affect lability and limited (i.e., inadequate) affect regulation interact to create an increased risk for maladaptive coping (Baumann et al.,

2007). Glenn & Klonsky (2010) observed decreased premeditation (i.e., impulsive urgency) among self-injurers, corroborating earlier research suggesting individuals who engage in self-injury suffer from an affect regulation deficit (e.g., diminished behavioral inhibition under duress; Lynam et al., 2011). In a study conducted by Gratz and colleagues (2006) self-injurers were less willing to experience distress in order to complete a task than their non-injurious counterparts, however, performance on the task was not significantly different across groups.

Justification for the Present Study

In spite of recent research indicating self-injury exists in the absence of other diagnoses (Klonsky & Glenn, 2009; Klonsky, 2011; Shaffer & Jacobson, 2010), Nonsuicidal Self-injury, as a distinct disorder, is classified as a *condition in need of further research* (American Psychiatric Association, 2013). Historically self-injury has been pathognomonic (i.e., specifically characteristic or indicative of a particular disease or condition) of BPD, although many individuals who engage in self-injury do not meet full criteria for BPD (Klonsky et al., 2011; Nock et al., 2006; Selby et al., 2012; Shaffer & Jacobson, 2010; Zlotnick et al., 1997). Given the relationship between Borderline Personality Disorder and self-injury (Bornovalova et al., 2010; Selby et al., 2012; Selby & Joiner, 2009), the relationship between emotion dysregulation and Borderline Personality Disorder (Gratz & Chapman, 2007; Gratz et al., 2009; Iverson et al., 2012; Tull et al., 2010) and the relationship between emotion dysregulation and self-injury (Adrian et al., 2011; Esposito-Smythers et al., 2010; Franklin et al., 2010; Gratz & Roemer, 2008), further research examining the factors leading to self-injurious behavior is warranted.

Research suggests there is a relationship between BPD and self-destructive behavior, including self-injury (Dubo et al., 1997, Chapman et al., 2005; Gratz, 2003; Selby & Joiner, 2009; Selby et al., 2010; Selby et al., 2012), however, this relationship may be mediated by emotion dysregulation and rumination (Selby & Joiner, 2009). Emotion dysregulation has been associated with BPD and NSSI, as well as a variety of other dysregulated behaviors including: peer (Adrian et al., 2011) substance abuse (Bornovalova et al., 2011), disordered eating (Brausch & Gutierrez, 2010), and domestic violence (Jakupcak, Salters, Gratz & Roemer, 2003). According to PSI theory (Kuhl, 2000a), state-oriented people ruminate about aversive events as a result of an inadequately developed self-system and focus on their affective experience at the expense of volitional control due to impaired access to the holistic self. State-oriented individuals respond to challenges by ruminating about the aversive events, which impairs their ability to generate relevant solutions. According to the emotional cascades model, rumination plays a significant role in the engagement of dysregulated behavior, including NSSI (Selby et al., 2009). Specifically, emotional cascades fully mediated the relationship between dysregulated behavior and BPD, suggesting rumination is a critical factor influencing both BPD and NSSI. Similarly, cognitive processes (including rumination) are associated with emotional dysregulation (Hilt et al., 2008; Selby & Joiner, 2009), suggesting rumination leads to emotion dysregulation. Given the consistent relationship between affect regulation and both BPD and NSSI, assessment of one's perceived ability to manage his or her emotions is essential to establishing an adequate conceptual framework for NSSI.

The Mediation Model

The specified path diagram is a formal statement (i.e., a hypothesis) about the hypothesized pattern of relationships among a set of variables. Often studies use mediation analyses to identify a previously unmeasured variable (e.g., State Orientation) with which two correlated variables (e.g., BPD and NSSI) are both correlated. Mediation studies attempt to explain the relationship between the two originally correlated variables in terms of the mediating variable. For example, the relationship between NSSI and childhood sexual abuse is well documented (Gratz & Chapman, 2007; Gratz, 2003; Weierich & Nock, 2008), however, recent research suggests this relationship may be better explained by a confounding relationship each of these variables has with other variables (Gratz & Chapman, 2007; Klonsky & Moyer, 2008; Muehlenkamp, Kerr, Bradley, & Adams Larsen, 2010; Weierich & Nock, 2008). A recent study that examined whether posttraumatic stress symptoms mediate the relationship between NSSI and childhood sexual abuse (Weierich & Nock, 2008) found that both re-experiencing (i.e., physiological arousal and intrusive trauma related images) and avoidance/numbing (i.e., diminished positive affect, dulled emotions, and efforts to avoid triggers related to trauma) fully mediate the relationship between NSSI and childhood sexual abuse, independently. Interestingly, both avoidance/numbing and re-experiencing are reportedly experienced during episodes of emotional dysregulation.

The specified model (see Figure 1) suggests that emotion dysregulation leads to BPD, rather than results from the disorder; furthermore, State Orientation leads to emotion dysregulation. This argument is based in the notion that a dispositional trait (i.e., State Orientation) leads to dysfunction, in contrast to dysfunction leading to the

dispositional trait. Recall that a dispositional trait is developed in a biosocial manner (Kuhl, 2000a); specifically, temperamental characteristics interact with environmental influences to develop dispositional traits that function relatively consistently across setting and time. These dispositional traits combine to form characteristic adaptations (McAdams, 2006), which are behavioral representations of personality. Dispositional traits lead to behavioral patterns (i.e., characteristic adaptations) which in turn lead to personality development. In other words, a specific type of dysregulated behavior (e.g., NSSI) can result from emotion dysregulation in the absence of a personality disorder (i.e., BPD). In the proposed mediation model, State Orientation leads to emotion dysregulation, which in turn leads to the development of behavioral dysregulation.

Model Hypothesis Justification

The specified model depicts direct paths (a) from State Orientation to emotion dysregulation, Borderline Personality Disorder, and Nonsuicidal Self-injury.

Furthermore, the specified model depicts indirect paths (b) from State Orientation to Nonsuicidal Self-injury via emotion dysregulation, and from State Orientation to Borderline Personality Disorder via emotion dysregulation.

All path coefficients are expected to be positive. There is no path diagrammed between Borderline Personality Disorder and Nonsuicidal Self-injury, because as the model indicates, the relationship between Borderline Personality Disorder and Nonsuicidal Self-injury is fully mediated by the total effects specified in the model. The specified model suggests NSSI and BPD share a causal trajectory that mediates the relationship between the two phenomena.

Consistent with these findings the specified model, shown in Figure 1, depicts the hypothesized cause-and-effect relationships among State Orientation, emotion dysregulation, BPD symptoms, and number of NSSI behaviors endorsed.

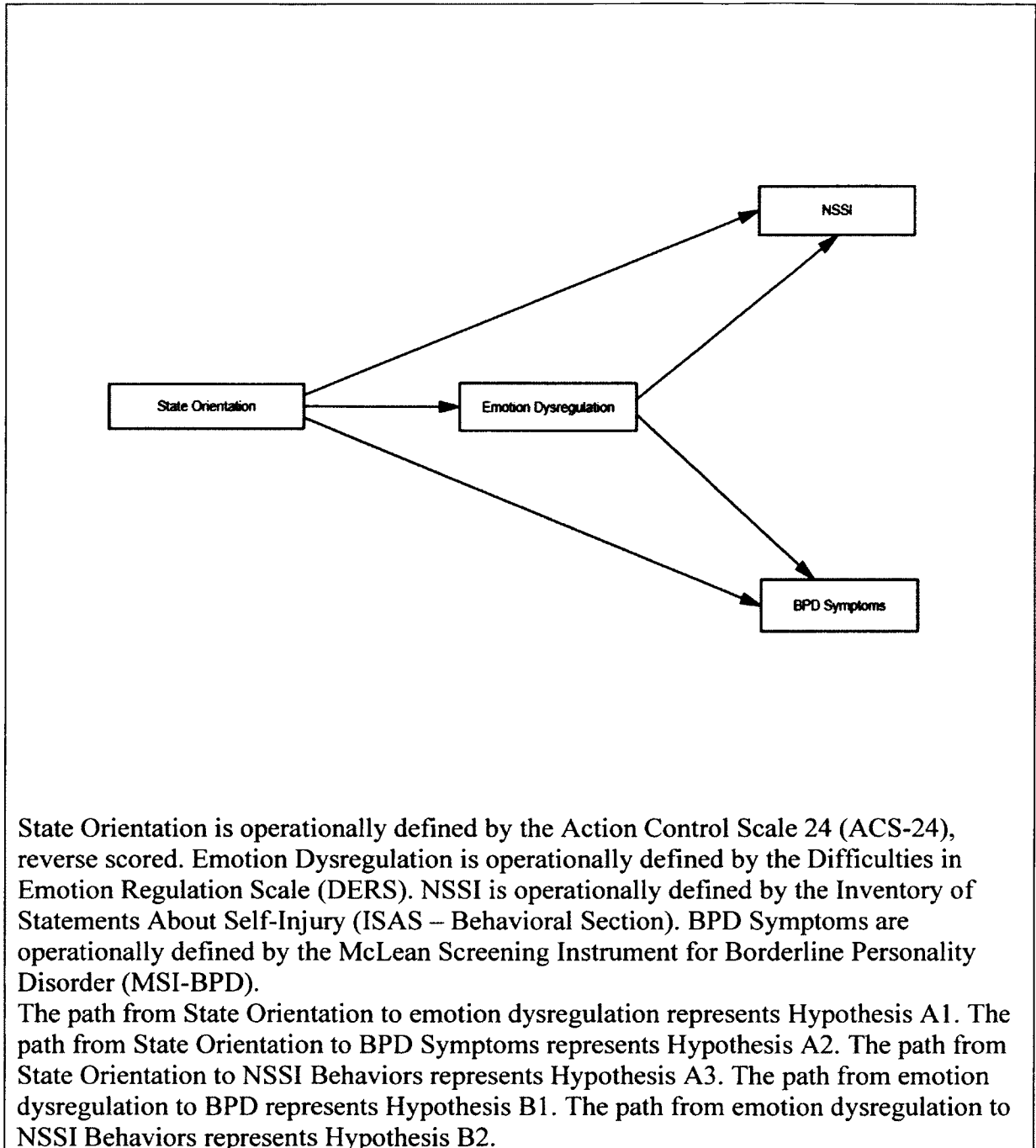


Figure 1 *The Specified Model*

In the specified model, State Orientation is a biosocial predisposition to emotion dysregulation which, in turn, leads to BPD symptoms and NSSI uniquely. Furthermore, the mediation model indicates that State Orientation also indirectly effects number of BPD symptoms and NSSI behaviors. Finally, the model specifies the path coefficient between BPD symptoms and NSSI behaviors equal zero.

Model Hypothesis – Mediation of the Relationship Between BPD and NSSI

The proposed model emphasizes the effect of State Orientation on emotion dysregulation, and the subsequent effect of emotion dysregulation on BPD and NSSI. The hypothesized causal model suggests State Orientation, leads to emotion dysregulation, BPD symptoms, and Nonsuicidal Self-injury. Specifically, State Orientation (Kuhl, 1994) is a dispositional characteristic that leads to emotion dysregulation, BPD, and NSSI. In the specified model, State Orientation has a total effect on emotion dysregulation, BPD, and NSSI that fully mediates the relationship between BPD and NSSI. The direct path between BPD symptoms and number of different NSSI methods is fixed at zero, indicating that the relationship between BPD and NSSI does not significantly differ from zero.

Model Hypothesis

The specified model does not fit the data significantly worse than a just-identified model. Furthermore, we anticipate that the increased parsimony of the over-identified model compensates for the decrease in model fitness. The overall fitness of the specified model does not significantly differ from an exact fit. The overall fitness of the specified model does not significantly differ from the just-identified model as indicated by a non-significant chi-square difference test. Specifically, when the previously free parameter

(i.e., the path coefficient between BPD symptoms and NSSI methods) is fixed at zero, the overall fit of the model does not decrease significantly.

Hypothesis A1 - Direct Effect of State Orientation on Emotion Dysregulation

The direct path from State Orientation to emotion dysregulation specifies a directional relationship between State Orientation and emotion dysregulation. Assuming that State Orientation, as described above (Kuhl, 2000a, 2011), is similar to the construct of rumination (Kuhl & Baumann, 2000; Selby et al., 2009; Selby & Joiner, 2009), research suggesting rumination leads to dysregulated emotions (Hilt et al., 2008; Selby et al., 2009; Selby & Joiner, 2009) also suggests that State Orientation is positively associated with emotion dysregulation. The anticipated positive association between State Orientation and emotion dysregulation is consistent with these findings. The direct path between State Orientation and emotion dysregulation represents path the specified cause-and-effect relationship between the two variables, respectively.

Hypothesis A1

There is a direct effect of State Orientation on emotion dysregulation. According to the model, State Orientation (as measured by the Action Control Scale; ACS-24) increases, emotion dysregulation (as measured by the full-scale Difficulties in Emotion Regulation Scale; DERS) increases, that is, higher scores on the ACS are positively associated with higher scores on the full-scale DERS. Specifically, State Orientation is an exogenous variable that, according to the model, directly affects emotion dysregulation (greater State Orientation, greater emotion dysregulation).

Hypothesis A2 - Direct Effect of State Orientation on BPD Symptoms

The direct path from State Orientation to BPD specifies a directional relationship between State Orientation and BPD. As mentioned above, State Orientation is similar to the construct of rumination (Kuhl & Baumann, 2000; Kuhl, 2000b); therefore, research indicating rumination is positively associated with BPD (Kuhl, 2000a; Selby et al., 2009; Selby & Joiner, 2009) suggests State Orientation is also positively associated with BPD. The anticipated positive association between State Orientation and BPD was supported by these findings. The direct path between State Orientation and BPD represents hypothesis A2.

Hypothesis A2

There is a direct effect of State Orientation on Borderline Personality Disorder symptoms. According to the model, as State Orientation (as measured by the ACS-24) increases, the number of Borderline Personality Disorder symptoms endorsed on the MSI-BPD increases, that is, higher scores on the ACS-24 are positively associated with a greater number of Borderline Personality Disorder symptoms endorsed on the MSI-BPD. Specifically, State Orientation is an exogenous variable that, according to the model, directly affects Borderline Personality Disorder symptoms (greater State Orientation, greater number of BPD symptoms).

Hypothesis A3 – Direct Effect of State Orientation on NSSI

The direct path from State Orientation to NSSI specifies a directional relationship between State Orientation and NSSI. Recent research suggests that rumination leads to NSSI (Hilt et al., 2008; Miskey, 2012; Selby et al., 2012) and that rumination is conceptually similar to State Orientation (Kuhl & Baumann, 2000; Kuhl, 2000b);

therefore, it is reasonable to hypothesize a similar relationship between State Orientation and NSSI. The anticipated association between State Orientation and NSSI is consistent with these findings. The direct path between State Orientation and NSSI represents hypothesis A3.

Hypothesis A3

There is a direct effect of State Orientation on Nonsuicidal Self-injury. According to the model, as State Orientation (as measured by the ACS-24) increases, the number of Nonsuicidal Self-injurious behaviors endorsed on the Inventory of Statements about Self-injury Scale (ISAS) increases, that is, higher scores on the ACS-24 are positively associated with a greater number self-injurious behaviors endorsed on the ISAS. Specifically, State Orientation is an exogenous variable that, according to the model, directly affects self-injurious behavior (greater State Orientation, greater number of NSSI behaviors).

Hypothesis B1 – Indirect Effect of State Orientation on BPD

The indirect path from State Orientation specifies the mediating relationship between State Orientation and BPD through emotion dysregulation. Recent research suggests that rumination (i.e., a construct similar to State Orientation) leads to emotion dysregulation (i.e., an emotional cascade), which in turn, results in the emergence of BPD (Selby et al., 2009, 2012; Selby & Joiner, 2009). These findings support the hypothesized indirect path between State Orientation and BPD. The indirect path from State Orientation to BPD through emotion dysregulation represents hypothesis B1.

Hypothesis B1

There is an indirect effect of State Orientation on Borderline Personality Disorder via emotion dysregulation. Emotion dysregulation is the mediator that, according to the model, is affected by State Orientation (greater State Orientation, greater emotion dysregulation); in turn, emotion dysregulation affects Borderline Personality Disorder symptoms (greater emotion dysregulation, greater number of BPD symptoms). Specifically, emotion dysregulation mediates the relationship between State Orientation and Borderline Personality Disorder symptoms.

Hypothesis B2 - Indirect Effect of State Orientation on NSSI

Hypothesis B2 examines the mediating relationship between State Orientation and NSSI through emotion dysregulation. Recent research suggests that rumination (i.e., a construct similar to State Orientation) leads to emotion dysregulation (i.e., an emotional cascade), which in turn, leads to dysregulated behavior, including NSSI (Selby et al., 2012; Selby & Joiner, 2009). These findings support the hypothesized indirect path between State Orientation and NSSI. The indirect path from State Orientation to NSSI through emotion dysregulation represents hypothesis B2.

Hypothesis B2

There is an indirect effect of State Orientation on Nonsuicidal Self-injury via emotion dysregulation. Emotion dysregulation is the mediator that, according to the model, is affected by State Orientation (greater State Orientation, greater emotion dysregulation); in turn, emotion dysregulation affects self-injurious behavior (greater emotion dysregulation, greater number of NSSI behaviors endorsed). Specifically,

emotion dysregulation mediates the relationship between State Orientation and Nonsuicidal Self-injury.

Just-Identified Comparison Model

The just-identified model, shown in Figure 2, specifies direct paths (a) from State Orientation to emotion dysregulation, Borderline Personality Disorder, and Nonsuicidal Self-injury. Furthermore, the just-identified model specifies indirect paths (b) from State Orientation to Nonsuicidal Self-injury via Borderline Personality Disorder and from State Orientation to Nonsuicidal Self-injury via emotion dysregulation. Finally, the just-identified model specifies an indirect path (c) from State Orientation to Nonsuicidal Self-Injury via emotion dysregulation and Borderline Personality Disorder. Figure 2 provides a diagrammatic representation of the just-identified model.

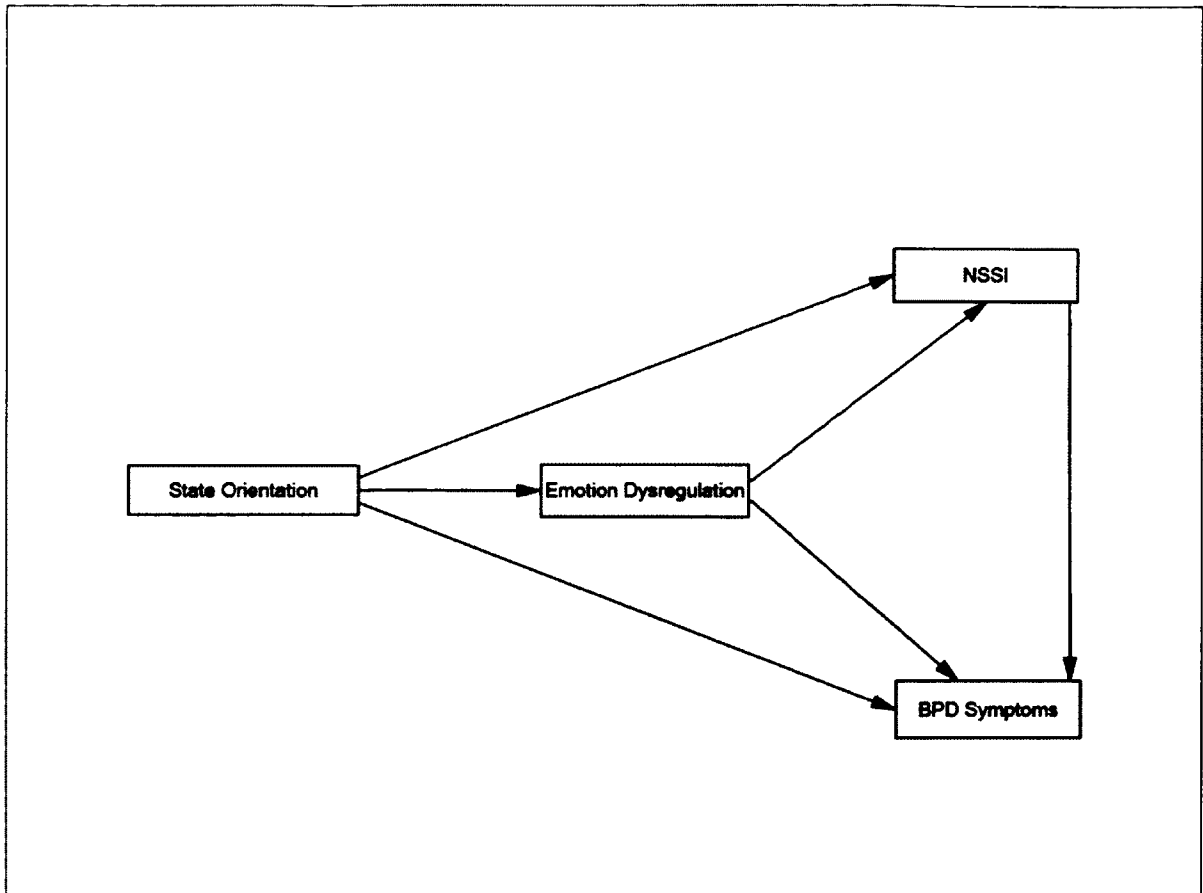


Figure 2 *Just-Identified Model*

Model Comparison Hypothesis

The current study compares the specified model, in which the relationship between BPD and NSSI is constrained to zero, to a just-identified model, in which the relationship between BPD and NSSI is estimated by the data. If the hypothesized mediation model fit is not appreciably worse than the just-identified model fit, the more parsimonious model is preferred. Mediation explains the process underlying the relationship between two (or more) variables (MacKinnon, 2011). Thus, mediation in the specified model explains the process underlying the relationship between BPD and NSSI.

CHAPTER 2

METHOD

Participants

Participants were recruited via internet-based social networking venues including Facebook (n = 57), LinkedIn (n = 14), Twitter (n = 32), Tumblr (n = 37), personal referrals (n = 50), and professional referrals (n = 30). Given that recruiting venue classification was not mutually exclusive, participants may have provided more than one response to this question. For example, a single participant may have reported having learned about the study through a personal referral on Facebook. Also, in order to preserve anonymity individuals were not forced to provide a response regarding source of recruitment. Visual analysis of the response patterns, via frequency distribution tables, indicates that the distribution of sample data did not become distorted by the recategorization of responses.

Individuals who responded to all to the items associated with the study's inventories were considered "completers." Of the 273 people who initiated the study, 213 were considered "completers." Individuals who endorsed self-injurious behaviors on the ISAS, a screening instrument used to differentiate individuals who self-injure from those who do not, responded to questions related to the context and functions of the behavior in which he or she engages. Individuals who did not respond to the contextual and/or functional items on the ISAS were included in the analyses as "completers," because this

was the criteria for completion if no self-injurious behaviors were endorsed. Specifically, all cases included in the statistical analyses answered all the target items (i.e., those included in the path model) in the survey either by endorsement or advancement in the study without endorsing any self-injurious behaviors. Non-endorsement of self-injurious behaviors, resulted in being redirected to a “thank you” page including resource information related to self-injury and suicide prevention, as well as a link to the “reward opportunity,” which was not connected in any way to the survey responses. One individual who completed the survey, per the above mentioned criteria, but selected “decline to answer” for 25% (i.e., 6 out of 24) of the items associated with one scale was eliminated from the data set.

Instruments

Participants completed a demographic questionnaire (see Appendix A), followed by the Action Control Scale - Short Version (24 items; see Appendix B), the Difficulties in Emotion Regulation Scale (36 items, see Appendix C), the Inventory of Statements About Self-injury (12 method items, ~10 contextual items, and 39 functional items; see Appendix D), and the McLean Screening Instrument for Borderline Personality Disorder (10 items; see Appendix E). These measures were presented in the order specified above, for all participants, as is common in research examining affective experiences that may be influenced by responding to items of a sensitive nature (Quirin et al., 2009). Specifically, participants responded to items of a less sensitive nature first and respond to more provocative items later.

Demographic Questionnaire

The demographic questionnaire assessed age, gender, ethnicity, sexual orientation, relationship status, level of education, income, religious affiliation, and how they had learned about the study. Correlational analyses were employed to test for significant associations between age and the measured variables. Given that State Orientation is a dispositional trait, no significant association between age and State Orientation was anticipated.

Action Control Scale

The Action Control Scale (ACS) is a nonreactive measure of one's perceived experience when faced with a frustrating or a daunting task (Kuhl, 1994). Items on a nonreactive self-report measure are formulated such that the construct being measured is not obvious to the respondent. Kuhl recommends nonreactive methods of assessing self-regulatory competence (Kuhl, 2000a). The ACS-24 is a 24-item version of the ACS. The ACS-24 assesses decision-related (AOD) and failure-related (AOF) action orientation (Kuhl & Fuhrmann, 1998). Action orientation is the dimensional and theoretical opposite of State Orientation.

Items on the ACS-24 are forced-choice sentence completion statements in which one response is indicative of action orientation and the alternate response is indicative of State Orientation (Kuhl, 1994). Items assessing failure-related State Orientation (i.e., preoccupation) include: "When I have lost something valuable and can't find it anywhere" and "When I have put all my effort into doing a really good job on something and the whole thing doesn't work out." Responses indicative of failure-related State Orientation include: "I have a hard time concentrating on anything else" and "I have

trouble doing anything else at all.” In contrast, responses indicative of failure-related action orientation (AOF) include: “I don’t dwell on it” and “I don’t have too much difficulty starting something else.”

Items assessing decision-related State Orientation (i.e., hesitation) include: “When I am getting ready to tackle a difficult problem” and “When I am facing a big project that has to be done.” Responses indicative of decision-related State Orientation are: “It feels like I am facing a big mountain that I don’t think I can climb” and “I often spend too long thinking about where I should begin.” In contrast, responses indicative of decision-related action orientation (AOD) include: “I look for a way that the problem can be approached in a suitable manner” and “I don’t have any problems getting started.”

Recent research reporting the psychometric properties of the ACS demonstrate good internal consistencies (Cronbach’s $\alpha = .83$ and $\alpha = .85$) for the AOD and AOF, respectively (Baumann et al., 2007). The ACS manual reports moderate internal consistencies for the AOD (Cronbach’s $\alpha = .70$), AOF (Cronbach’s $\alpha = .78$) subscales and for the combined scale (Cronbach’s $\alpha = .81$). Observed internal consistencies for the AOF and AOD subscales as well as the combined ACS are reported in Chapter 3.

The ACS-24 is composed of two dimensions of State Orientation, decision-related action orientation (i.e., hesitation) and failure-related action orientation (i.e., preoccupation). Kuhl (1994) refers to rumination as an aspect of failure-related State Orientation, in which perseverating and intrusive cognitions frequently impact one’s ability to initiate a change in behavior. Furthermore, hesitation involves difficulties initiating an intended activity, in the absence of ruminative processes. Hesitation is negatively associated with positive affect (Baumann et al., 2007), suggesting it may also

be associated with a decreased willingness to down-regulate one's positive affect. In other words, individuals high in hesitant State Orientation may be less willing to initiate activities likely to result in a decrease in positive affect (Baumann et al., 2007; Kuhl, 1994).

The AOD and AOF produce scores ranging from 0-12 (Kuhl, 1994; i.e., an interval scale). State Orientation scores are calculated by combining the two scale's (i.e., AOD and AOF) reversed scores, producing continuous values ranging from 0-24. Validation studies reported item means ranging from .26 to .74 for the AOF, and .35 to .66 for the AOD (Kuhl, 1994).

The Difficulties in Emotion Regulation Scale

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a comprehensive measure of overall emotion dysregulation including six subscales: nonacceptance of emotional responses (Nonacceptance), lack of emotional awareness (Awareness), limited access to emotion-regulation strategies (Strategies), difficulties engaging in goal-directed behavior when emotionally aroused (Goals), impulse-control difficulties (Impulse), and lack of emotional clarity (Clarity). The DERS is a widely accepted, reliable and valid measure of emotion dysregulation in adults, and a moderately supported measure of emotion dysregulation in adolescents (Weinberg & Klonsky, 2009).

The DERS is a 36-item self-report measure designed to assess emotion dysregulation (Gratz & Roemer, 2004). Respondents indicate on a Likert scale ranging from 1-5 the frequency with which items are self-relevant; that is, how often each item applies to oneself. The items are weighted as follows: 1 is *almost never* (0-10%), 2 is *sometimes* (11-35%), 3 is *about half the time* (36-65%), 4 is *most of the time* (66-90%),

and 5 is *almost always* (91-100%). All items are recoded (i.e., reverse scored where necessary) so that higher scores indicate greater difficulty regulating one's emotions (i.e., greater emotion dysregulation).

The nonacceptance subscale consists of six items; the goals subscale consists of five items; the impulse subscale consists of six items; the awareness subscale consists of six items; the strategies subscale consists of eight items; and the clarity subscale consists of five items (Gratz & Roemer, 2004). Sample items for each subscale include: "When I'm upset, I feel guilty for feeling that way" (nonacceptance); "When I'm upset, I have difficulty concentrating" (goals); "When I'm upset, I lose control over my behaviors" (impulse); "I am attentive to my feelings" (awareness); "When I'm upset, I believe that I'll end up feeling very depressed" (strategies); and "I have difficulty making sense out of my feelings" (clarity).

The psychometric validity of the DERS has been established in a variety of populations; the full measure and its subscales exhibited good internal consistency, test-retest reliability, and construct validity (Gratz & Roemer, 2004, 2008; Turner et al., 2012; Vasilev, Crowell, Beauchaine, Mead, & Gatzke-Kopp, 2009; Weinberg & Klonsky, 2009). In the initial psychometric study of the DERS (Gratz & Roemer, 2004), internal consistency for the overall scale was high (Cronbach's $\alpha = .93, p < .05$) and internal consistency for the six subscales was moderate (Cronbach's $\alpha > .80, p < .05$). Observed internal consistencies for the full-scale DERS and DERS subscales are reported in Chapter 3.

The predictive validity of the DERS is supported by correlations with NSSI and intimate partner abuse, both behavioral examples of emotion dysregulation (Gratz et al.,

2009; Gratz & Roemer, 2008; Selby & Joiner, 2009). The construct validity of the DERS is supported by correlations among DERS scales and the General Expectancy for Negative Mood Regulation Scale (NMR), the Acceptance and Action Questionnaire, and the Emotional Expressivity Scale (i.e., negative associations). As noted above, poor negative mood regulation and experiential avoidance are aspects of emotion dysregulation (Gratz, Rosenthal et al., 2009; Iverson et al., 2012) and emotional expressivity is an aspect of emotion regulation (Tull et al., 2007).

Sex differences between males and females and the predictive utility of the DERS for NSSI were observed (Gratz & Roemer, 2004). Specifically, the overall DERS score, and the Goals, Strategies, and Clarity subscale scores significantly predict NSSI in females, whereas in males, the overall DERS score and the Non-acceptance and Impulse subscale scores significantly predict NSSI scores. Interestingly, overall DERS scores predict NSSI in both males and females. Permission to use the DERS may be obtained upon request from the author, and was granted via electronic mail. The full-scale DERS score ranges from 36-180; means and standard deviations in the initial validation study among men and women were ($M = 77.99, SD = 20.72$) and ($M = 80.66, SD = 18.79$), respectively. Full-scale DERS scores did not significantly differ between men and women.

Inventory of Statements About Self-Injury

The Inventory of Statements About Self-injury (ISAS; Klonsky & Glenn, 2009; Klonsky & Olino, 2008) is a comprehensive measure of the frequency of 12 specific self-injurious methods (i.e., cutting, hitting self, etc.) and 13 reported functions (i.e., see Klonsky, 2007 for a full review) of self-injury, as well as its contextual features (e.g.,

alone, with peers, under the influence of alcohol, etc.). According to Latimer and others (2013), the ISAS assesses a moderate breadth of self-injurious behaviors. Prevalence as measured by the ISAS (i.e., 25%; Klonsky & Olino, 2008) was comparable to previous research examining self-injury (i.e., 17%; Whitlock et al., 2006); these findings are more conservative than those observed by others using the Deliberate Self-Harm Inventory (i.e., 31 - 35%; Gratz & Roemer, 2004; Gratz, 2001; LeBoeuf-Davis & Mitchell, 2012). In another study, self-injury rates as measured by the ISAS were higher (i.e., 31%; Klonsky & Glenn, 2009) and more similar to those previously mentioned as measured by the Deliberate Self-harm Inventory (Gratz & Roemer, 2004; Gratz, 2001; LeBoeuf-Davis & Mitchell, 2012). These findings suggest the ISAS provides a moderate estimate of the prevalence of NSSI in non-clinical populations.

The first section of the ISAS assesses lifetime frequency of 12 methods of NSSI including banging/ hitting self, biting, burning, carving, cutting, wound picking, needle-sticking, pinching, hair pulling, rubbing skin against rough surfaces, severe scratching, and swallowing chemicals (Klonsky & Olino, 2008). Respondents indicate the estimated incidence of each of the 12 methods of NSSI. Five additional questions assess descriptive and contextual factors, including age of onset, the experience of pain during NSSI, whether NSSI is performed alone or around others, time between the urge to self-injure and the act, and whether the individual wants to stop self-injuring; the latter four use a multiple-choice format. The ISAS distinguishes between cutting and carving (i.e., cutting and carving are unique items of the ISAS), which is important because the ISAS has demonstrated differential frequencies between cutting and carving, and latent class

comparison suggests carving is associated with greater BPD symptoms than cutting alone (Klonsky & Olino, 2008).

A recent study comparing six frequently used measures of NSSI suggests the ISAS has fair internal consistency. In fact, the ISAS demonstrated the highest internal consistency ($\alpha = .826$) of the six measures (Latimer, Meade, & Tennant, 2013). NSSI scores were calculated based on the absence (0) or presence (1) of each method assessed by the behavioral section of the ISAS. Latimer and colleagues (2013) also revealed differential item functioning for cutting; that is, females were significantly more likely to endorse this item than males. All items on the ISAS demonstrated adequate fit. Local response dependency was observed between cutting and carving, biting and pinching, and severe scratching, interfering with wound healing, and rubbing skin against rough surface. Although Latimer and others (2013) argue cutting and carving should be collapsed into a single item based on statistical grounds, variable rates and class differences (Klonsky & Olino, 2008) suggest the distinction between these two items is clinically relevant. The functional section (i.e., section II) of the ISAS was not included in the study.

Item hierarchies are derived from logits, based on the assumption that a lower frequency item assumes endorsement of higher frequency items. In other words, the less likely an item (i.e., a behavior) is to be endorsed, the more likely it is other items (i.e., behaviors) would also be endorsed. The item hierarchy of the ISAS ranged from a logit = 1.351 for banging or hitting self to logit = 1.015 for sticking self with needles (Latimer et al., 2013). Item hierarchies are based on the ease with which an item is endorsed, suggesting greater representation of the construct being measured for items further up the

hierarchy. For example, with the ISAS hitting oneself would be considered a low severity item in contrast to sticking oneself with needles, which would be considered a high severity item. Interestingly, Klonsky and Olino (2008) found a severe class of self-injurers was more likely than the other three classes identified in the analysis to report carving and sticking oneself with needles, suggesting these behaviors are indicative of more severe self-injurious behavior patterns.

One-year test-retest reliability with 63% of the original sample retained at the one-year follow-up study ranged from .52 (biting) to .83 (burning), with a median of .68 (Glenn & Klonsky, 2011). Due to significant outliers in the frequency of some NSSI behaviors, Spearman's rho was computed to measure test-retest reliability (stability). Due to habitual performance, some NSSI behaviors (e.g., pinching, pulling hair, and banging/hitting self) resulted in very high estimated frequencies. Results indicated good test-retest reliability over one-year, suggesting moderate to fair measurement stability of NSSI over one year.

The behavioral section (section1) of the ISAS assessed the number of different methods of NSSI and their frequency. Permission to use the ISAS was gained upon request from the author, and was granted via email. Research indicates that the number of different methods employed is a reliable and valid measure of NSSI severity (Latimer et al., 2013; Robertson et al., 2012). Measures of self-injury frequently assess lifetime presence of various self-injurious behaviors, however, remoteness in memory of the occurrence may adversely impact frequency estimates. The current study assessed lifetime and past-year presence of 12 different specific NSSI methods (with the option to report non-included methods).

Recent research examining the one-year test-retest reliability of the ISAS indicated open response format estimates of NSSI result in a highly skewed frequency distribution, which is problematic for analyses assuming normality (Glenn & Klonsky, 2011). One method of reducing the impact of highly skewed data, is the use of dichotomous scoring of each method (i.e., no - 0, yes - 1) in which the total number of endorsed methods is summed, producing a continuous variable. Summing number of different behaviors endorsed also results in a positively skewed frequency distribution, but eliminates extreme outliers. In the current study, ISAS scores for use in the path analysis range from 0-13, where a score of 0 indicates never having engaged in any of the methods of self-injury assessed by the ISAS, and a score of 13 indicates having engaged in all of the methods of self-injury assessed by the ISAS (including an “other” method). The number of endorsed self-injurious behaviors are summed to create the NSSI variable score. We anticipated positively skewed and leptokurtic NSSI scores (see data analytic plan regarding transformation).

Klonsky and Olinio (2008) presented lifetime frequency data according to the following ranges of behavior(s) 0, 1-2, 3-10, and > 10 times per method, data were specific to the ISAS. Similarly, Nock and Prinstein (2004) reported observed frequency of methods as measured by a similar instrument (i.e., the FASM) according to the following ranges of behavior(s) 0, 1, 2-5, 6-10, >= 11. Raw frequencies (lifetime and past-year) are reported as descriptive data according to the ranges used by Nock and Prinstein (2004), as they allow for greater variability and distinguish a single incident of self-injury from multiple incidents.

Individuals who endorse one or more methods of NSSI complete a second section of the ISAS, which assesses 13 commonly reported functions (i.e., motivations) for NSSI: affect-regulation, anti-dissociation, anti-suicide, autonomy, interpersonal boundaries, interpersonal influence, marking distress, peer bonding, self-care, self-punishment, revenge, sensation seeking, and toughness (Klonsky & Glenn, 2009). The 13 functions represent two distinct factors, interpersonal and intrapersonal functions. These two factors are conceptually similar to the social and automatic reinforcers proposed by Nock and Prinstein (2004, 2005) a contention that has been statistically supported (Glenn & Klonsky, 2009; Klonsky & Glenn, 2009; Klonsky & Olino, 2008). An individual who reports engagement in one or more methods of self-injury, rates the relevance of each function on the following 3-point Likert scale (0 = not relevant, 1 = somewhat relevant, 3 = very relevant) for each endorsed method.

Internal consistency was high for the interpersonal function (Cronbach's $\alpha = .88$, $p < .05$) and moderate for the intrapersonal function (Cronbach's $\alpha = .80$, $p < .05$). Predictive validity for the ISAS was supported by correlations among the two factors and the clinical variables including: Depression, Anxiety, BPD, and solitary engagement in the behavior (i.e., engaging in self-injury while alone).

McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD)

The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) is a 10-item dichotomous (i.e., true/false), self-report measure, with excellent sensitivity and specificity (i.e., above .90) based on *DSM-IV-TR* diagnostic criteria for BPD (Zanarini et al., 2003). The MSI-BPD exhibits adequate internal consistency ($\alpha = .73$). The MSI-BPD has been used in studies examining BPD (Chanen et al., 2008) and

NSSI (Klonsky & Glenn, 2009; Klonsky & Olino, 2008), and is beneficial to this study because it assesses BPD per the *DSM-5* (American Psychiatric Association, 2000, 2013). Permission to use the MSI-BPD is gained upon request from the author, and was granted via email.

Scores on the MSI-BPD range from 0-10, where 0 indicates endorsement of none of the items assessing BPD symptoms and 10 indicates endorsement of all of the items assessing BPD symptoms. Item frequencies in the initial validation study ranged from 44.5% (dissociation) to 82.5% (distrustfulness). Full-criteria for BPD per the *DSM-5* includes nine specific criteria, however, initial validation statistics for the MSI-BPD indicated two distinct items best assess the paranoia/dissociation diagnostic criterion. A single item for each criterion assesses all other criteria. In the current study, MSI-BPD scores ranged from 0-9 rather than 0-10 to avoid creating a false relationship between BPD symptoms (exclusive of self-injury) and NSSI.

Although inclusion of the MSI-BPD item pertaining to engagement in self-mutilation did not significantly increase the zero-order correlation between self-injury and Borderline Personality Disorder (Chapman et al., 2005), statistical exclusion of the item is warranted because the path coefficient between the two variables is fixed at zero (i.e., no path is depicted in the model) inclusion of the item may create an inflated relationship between NSSI and BPD. Given that partial mediation was achieved with criterion 5 included, and full mediation was achieved after excluding the item from the analyses (Selby et al., 2009), statistical exclusion of the item is warranted.

Procedure

Participants were directed to a cloud based survey system (i.e., SurveyMonkey®) where they read an Informed Consent page, requiring acknowledgement of being at least 18 years of age and willingness to participate in the study (see Appendix F for the Human Use Committee Approval Form). Participants were informed of their right to withdraw from the study at any time and an exit button labeled, “I no longer wish to participate in this study” was provided on each page of the survey. Recruitment announcements read, “We are seeking adults aged 18 and 99 years to participate in a study examining how one’s ability to handle his or her emotions when upset may lead to engagement in poor coping strategies. Participation involves responding to an online questionnaire (including items of a personal nature). The questionnaire should take approximately 25-40 minutes to complete. Upon completion of the study you will be redirected to a separate survey (only your contact information will be obtained and will not be connected to your responses to the other items) and given the opportunity to enter a drawing for one of several \$25 rewards. You may only participate in the study one time. Feel free to forward the study link to others who may be interested in participating.”

Following informed consent, participants responded to survey items. Measures were presented in the following order: the demographic questionnaire, the ACS-24, the DERS, the MSI-BPD, and the ISAS. Upon completion of the study, participants read a debriefing statement providing links to resources for self-injury (e.g., www.selfinjury.com) and suicide prevention (i.e., <http://www.suicidepreventionlifeline.org/>). Selfinjury.com is a trigger free support venue (i.e., the site is moderated to prevent negative behavioral contagion) and resource,

providing information regarding service providers (including local providers where available), institutional interventions, and family support. Suicidepreventionlifeline.org is a federally funded resource in connection with the Substance Abuse and Mental Health Services Administration. Resources available at suiciepreventionlifeline.org include live chat, a 24-hour hotline, blogs, educational videos, and virtual supports (e.g., free e-cards for those in need). Individuals who exited the study prior to completion, were also redirected to the debriefing statement and the reward opportunity.

The debriefing statement offered participants the opportunity to enter a weekly drawing for \$25. In order to preserve anonymity regarding sensitive content, participants interested in entering the drawing were redirected to a separate survey, at which time they provided contact information required to enter the weekly drawing. There were no efforts to connect survey responses to participation in the rewards program.

Data Analytic Strategy

The current study used path analysis to test patterns of causation among the independent, mediating, and dependent variables in the specified model (Hoyle, 2011; Kline, 2011; Pedhazur, 1982). Path analysis uses hierarchical multiple regression analyses to estimate the magnitude and direction of the effects specified in the model (Baron & Kenny, 1986; Hoyle, 2011; Kline, 2011). Path analysis assumes the estimated relationships are linear, additive, and causal. A unidirectional causal flow is assumed. Measured variables are on an interval scale; Likert, summative, and ratio scales satisfy this assumption, however, in psychological research ratio scores are frequently positively skewed (Selby et al., 2009).

Path diagrams are graphical depictions of the specified pattern of relationships among a set of variables; the path diagram is a formal statement (i.e., a hypothesis) about the statistical relationships between variables. Each path leading to the dependent variable contributes to the causal explanation of that dependent variable (Baron & Kenny, 1986). When the relationship between an independent and a dependent variable is no longer significant after accounting for the relationship between the independent and an intervening variable, full mediation has occurred.

Variables can be simultaneously independent and dependent (i.e., mediating). In the following causal chain, $A > B > C$, B is an independent and dependent variable. Variable B is theoretically caused by independent variable A, and subsequently a cause of dependent variable C through the mediating variable B. Mediation analyses attempt to explain the processes underlying the relationship between two (or more) variables (MacKinnon, 2011). Figure 3 is an example of a simple mediation model (MacKinnon, 2011).

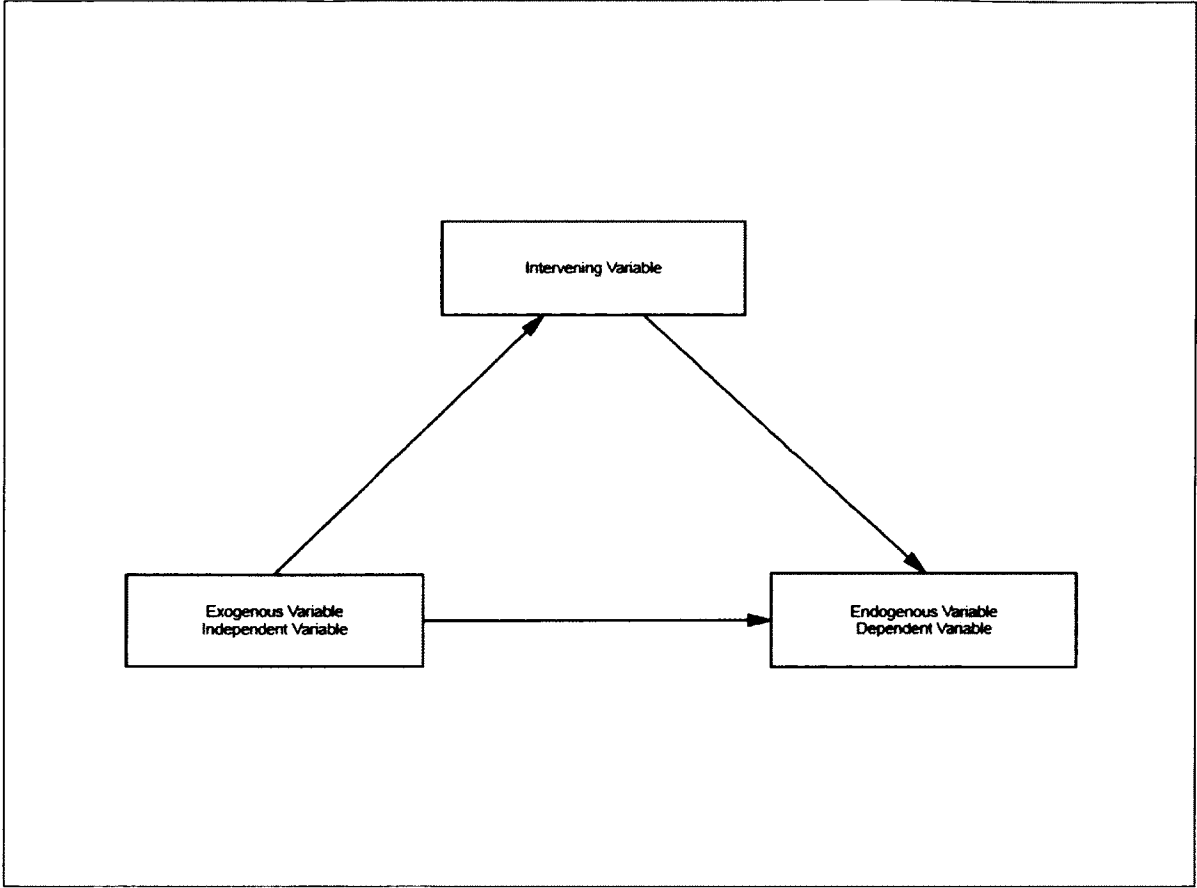


Figure 3 *Simple Mediation Model*

CHAPTER 3

RESULTS

The following chapter presents the results of the data analyses and hypotheses tested. First, means, standard deviations, internal consistencies, and scale (subscale) correlations are presented. Second, item total correlations, inter-item correlations, alpha if item deleted, and alpha with item included are presented for appropriate. Third, individual path analyses are discussed. Finally, estimation procedures for goodness of fit and comparative fit are reported.

Participants

In the current study, 80% (n = 172) of participants identified as female; 18% (n = 39) identified as male; and < 2% (n = 2) identified as “other.” Participants ranged in age from 18 to 73 years, average age was 36.83 years, with a standard deviation of 12.58. Age was significantly negatively correlated with all 4 variables in the specified model, at the .01 level of significance; State Orientation ($r = -.28$), emotion dysregulation ($r = -.32$), BPD symptoms ($r = -.32$), and NSSI behaviors ($r = -.34$). In the current study, 75.1% (n = 160) of participants identified as heterosexual; 5.6% (n = 12) identified as homosexual; 12.7% (n = 27) identified as bisexual; 3.8% (n = 8) identified as pansexual; < 1% (n = 1) identified as asexual; and 2.3% (n = 5) of participants did not reply to the sexual orientation question. In response to the level of education question, 7.5% (n = 16)

of participants reported having a high school diploma or equivalent: 3.3% (n = 7) reported a vocational or technical degree; 21.1% (n = 45) reported some college; 20.7% (n = 44) reported having a 4-year degree; 26.8% (n = 57) reported having a master's degree; 16.4% reported having a doctoral degree, <1% reported a professional degree; and 3.3% (n = 7) reported "other" (e.g., multiple licenses, grammar school, associate's degree).

The categorical income question, is a demographic item generated by SurveyMonkey® that includes, "I'd rather not say," as a valid response. Thirteen participants selected, "I'd rather not say," regarding income. Income was divided into six categories: \leq \$29,999 (n = 51); \$30,000 - \$49,999 (n = 33); \$50,000-\$74,999 (n = 46); \$75,000-\$99,999 (n = 27); \$100,000-\$150,000 (n = 25); \geq \$150,000 (n = 18). Fifty-one percent of participants identified as Christian (n = 105), thirty-seven percent of participants identified as Not Religious (n = 78), five percent of participants identified as Jewish (n = 10), three percent identified as Buddhist (n = 7), and less than one percent identified as Muslim (n = 1).

Psychometric Properties for Measured Variables

ACS-24

The ACS-24 was used in this study because it assesses a construct not represented in the self-injury literature. No illogical scores (i.e., values outside the range of the scale) were detected, either statistically, or through visual examination of the item total and crosstab matrices. Mean scale and subscale scores for the ACS-24 are presented in Table 1.

Table 1

ACS-24 Descriptive Statistics

Scale	Mean	Std. Deviation
State Orientation	11.70	5.338
Hesitation	5.52	3.139
Premeditation	6.18	3.126

n = 213

Review of the ACS-24 item statistics indicate that item frequencies ranged from .78 (Item 1) to .23 (Item 11). In other words, 78% of participants endorsed Item 1 and 23% of participants endorsed Item 11. All other items on the ACS-24 indicative of State Orientation were endorsed by between 26% and 76% of participants. These rates of endorsement are similar to those observed by Kuhl (1994) in the initial validation study (26 to 74%). These findings suggest the ACS-24 items assess a dispositional tendency, not a pathological construct.

Examination of Cronbach's alpha if item deleted indicates the preoccupation subscale's internal consistency ($\alpha = .79, p < .05$) would not be improved by deletion of any of the items on the subscale, as shown in Table 2. Corrected item-total coefficients were improved by evaluating the preoccupation subscale items separately from the hesitation subscale. Corrected item-total correlations for the preoccupation subscale ranged from .27 (ACS7) to .57 (ACS3).

Table 2

Preoccupation Item-Total Statistics

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ACS1	5.71	8.388	.423	.775
ACS3	6.14	7.834	.566	.760
ACS5	6.08	8.356	.341	.783
ACS7	5.72	8.727	.265	.788
ACS9	5.87	8.217	.401	.777
ACS11	6.26	8.381	.411	.776
ACS13	5.82	8.106	.463	.770
ACS15	5.94	7.963	.481	.768
ACS17	5.79	8.402	.359	.781
ACS19	5.92	7.938	.495	.767
ACS21	6.12	8.159	.424	.774
ACS23	6.01	7.877	.513	.765

Examination of Cronbach's alpha if item deleted indicates the hesitation subscale's internal consistency ($\alpha = .78, p < .05$) would not be improved by deletion of any of the items on the subscale, as shown in Table 3. Corrected item-total coefficients were improved by evaluating the hesitation subscale items separately from the preoccupation subscale. Corrected item-total correlations for the hesitation subscale ranged from .21 (ACS16) to .60 (ACS14).

Table 3

Hesitation Item-Total Statistics

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ACS2	5.00	8.603	.363	.766
ACS4	5.18	8.557	.384	.764
ACS6	5.33	8.586	.449	.758
ACS8	5.05	8.605	.356	.767
ACS10	5.28	8.898	.291	.773
ACS12	4.99	8.333	.465	.755
ACS14	5.14	7.975	.599	.740
ACS16	5.15	9.027	.211	.782
ACS18	5.09	8.545	.378	.765
ACS20	5.02	8.166	.523	.749
ACS22	4.98	8.426	.433	.759
ACS24	5.14	8.158	.527	.748

As noted in Table 3, corrected item total correlations for the individual subscales indicate that these values are impacted by items not on the subscale associated with the specific item. In other words, items on the preoccupation subscale were not, and are not expected to be, highly correlated with items on the hesitation subscale. No items on the ACS-24 appeared to significantly influence the full-scale mean. Corrected item total correlations are discussed above in the inter-item analyses of the ACS-24 subscales. As shown in Table 4, item-total statistics indicate that the observed internal consistency of

ACS-24 ($\alpha = .84, p < .05$) would not be improved by the exclusion of any items included in the scale. Corrected item total correlations for the individual items range from .24 (ACS2) to .50 (ACS14).

Table 4

ACS-24 Item-Total Statistics

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ACS1	11.44	26.420	.374	.833
ACS2	11.64	26.734	.235	.839
ACS3	11.89	25.678	.472	.829
ACS4	11.78	25.736	.434	.831
ACS5	11.82	26.287	.326	.835
ACS6	11.97	25.873	.471	.830
ACS7	11.47	26.947	.236	.838
ACS8	11.70	26.280	.321	.835
ACS9	11.60	26.069	.377	.833
ACS10	11.90	26.088	.390	.832
ACS11	11.99	26.280	.395	.832
ACS12	11.62	25.963	.396	.832
ACS13	11.56	26.168	.370	.833
ACS14	11.78	25.419	.499	.828
ACS15	11.68	25.772	.425	.831
ACS16	11.80	26.149	.351	.834
ACS17	11.53	26.262	.359	.834
ACS18	11.71	26.516	.273	.837
ACS19	11.66	25.516	.480	.829
ACS20	11.66	25.872	.407	.832
ACS21	11.86	25.803	.435	.831
ACS22	11.63	26.064	.373	.833
ACS23	11.76	25.454	.489	.828
ACS24	11.78	26.071	.365	.833

Examination of the ACS-24 subscales and full-scale correlation matrix indicates both subscales, hesitation ($r = .85$) and preoccupation ($r = .85$), are significantly correlated with the full-scale at the .01 level, as seen in Table 5. The subscales are moderately correlated with one another ($r = .45$).

Table 5

ACS-24 Scale Correlations

Scale		State Orientation	Hesitation	Premeditation
State Orientation	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	213		
Hesitation	Pearson Correlation	.853**	1	
	Sig. (2-tailed)	.000		
	N	213	213	
Premeditation	Pearson Correlation	.851**	.452**	1
	Sig. (2-tailed)	.000	.000	
	N	213	213	213

**Correlation is significant at the 0.01 level (2-tailed).

DERS

The full-scale DERS scores were used to operationalize emotion dysregulation in the current study. Means and standard deviations for the full-scale DERS and subscales are reported in Table 6.

Table 6

DERS Descriptive Statistics

Scale	Mean	Std. Deviation
Emotion Dysregulation	75.61	25.614
Awareness	13.71	5.436
Clarity	7.69	3.315
Goals	13.92	5.274
Impulse	10.83	5.112
Nonacceptance	12.95	6.258
Strategies	16.49	7.511

n = 213

Examination of the DERS inter-item correlation matrices for the subscales, Nonacceptance, Goals, Clarity, Strategies, Awareness, and Impulse, indicate that, as noted in the associated psychometric literature, the six subscales are unique. As a result, inter-item correlations for the subscales are discussed separately. Review of the Nonacceptance subscale item statistics indicates that item means ranged from 2.05 (Items 21) to 2.33 (Item 23). Inter-item correlation coefficients indicate inter-item correlations ranged from .65 to .80, suggesting that the individual items on the Nonacceptance subscale are significantly correlated with one another. The mean for the Nonacceptance subscale in the current sample was 12.95 with a standard deviation of 6.27.

The Goals subscale item statistics indicates that item means ranged from 2.54 (Item 33) to 3.05 (Item 18). Inter-item correlation coefficients indicate inter-item

correlations ranged from .55 to .75, suggesting that the individual items on the Goals subscale are significantly correlated with one another. The mean for the Goals subscale in the current sample was 13.97 with a standard deviation of 5.27.

Examination of the Impulse subscale item statistics indicates that item means ranged from 1.55 (Item 14) to 2.17 (Item 24). Inter-item correlation coefficients indicate inter-item correlations ranged from .37 to .80, suggesting that the individual items on the Impulse subscale are significantly correlated with one another. The mean for the Impulse subscale in the current sample was 10.80 with a standard deviation of 5.12.

Interpretation of the Awareness subscale item statistics indicates that item means ranged from 2.02 (Item 8) to 2.79 (Item 34). Inter-item correlation coefficients indicate inter-item correlations ranged from .33 to .68, suggesting that the individual items on the Awareness subscale are significantly correlated with one another. The mean for the Awareness subscale in the current sample was 13.73 with a standard deviation of 5.39.

Item statistics for the Strategies subscale indicate that item means ranged from 1.74 (Item 31) to 2.48 (Item 36). Inter-item correlation coefficients indicate inter-item correlations ranged from .55 to .77, suggesting that the individual items on the Strategies subscale are significantly correlated with one another. The mean for the Strategies subscale in the current sample was 16.50 with a standard deviation of 7.56.

The Clarity subscale item statistics indicates that item means ranged from 1.61 (Item 4) to 2.30 (Item 7). Inter-item correlation coefficients indicate inter-item correlations ranged from .37 to .74, suggesting that the individual items on the Clarity subscale are significantly correlated with one another. The mean for the Clarity subscale in the current sample was 10.01 with a standard deviation of 3.96.

Examination of the item-total correlation matrix indicates that the internal consistency of the DERS would not be improved by the removal of any of the items included in the scale. Given that the DERS is composed of six subscales, the corrected item-total correlations were not interpreted in the full-scale analysis. Corrected item-total correlations for individual subscales are available upon request. The DERS exhibited exceptional internal consistency ($\alpha = .96, p < .05$) in the current study. The mean for the full-scale DERS in the current sample was 78.05 with a standard deviation of 26.24.

Given that the DERS is a multi-dimensional measure of emotion dysregulation, inter-correlations between the full-scale and subscales are presented in Table 7. Inter-correlations between the scales ranged from .36 to .74. With the exclusion of Goals and Awareness ($\alpha = .33, p = .099$) subscales, all inter-scale correlations were significant at the .01 level.

Table 7

DERS Scale and Subscale Correlations

Scale		Awareness	Clarity	Goals	Impulse	Nonacceptance	Strategies	Emotion Dysregulation
Awareness	Pearson Correlation	1						
	N	213						
Clarity	Pearson Correlation	.677	1					
	Sig. (2-tailed)	.000						
	N	213	213					
Goals	Pearson Correlation	.113	.353	1				
	Sig. (2-tailed)	.099	.000					
	N	213	213	213				
Impulse	Pearson Correlation	.328	.574	.604	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	213	213	213	213			
Nonacceptance	Pearson Correlation	.379	.513	.528	.559	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	213	213	213	213	213		
Strategies	Pearson Correlation	.359	.543	.741	.735	.673	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	213	213	213	213	213	213	
Emotion Dysregulation	Pearson Correlation	.587	.745	.742	.820	.809	.903	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	213	213	213	213	213	213	213

MSI-BPD

Review of the MSI-BPD item statistics indicate that item frequencies ranged from .20 (Item 7) to .58 (Item 6), suggesting Item 7 was endorsed less frequently than Item 6. In other words, 20% of participants endorsed Item 7 and 58% of participants endorsed Item 6. All other items on the MSI-BPD were endorsed by between 24% and 52% of participants. These findings shown in Table 8 suggest the MSI-BPD items assess symptoms more frequently observed in the general population than specific self-injurious behaviors but less frequently than items on the ACS-24. The overall mean for the MSI-BPD was 3.70 with a standard deviation of 2.92. Internal consistency was moderate ($\alpha = .78, p < .05$). Cronbach's alpha indicate no items should be eliminated from the scale to improve internal consistency. Corrected item-total correlation coefficients indicate that the items are moderately associated with the overall scale.

Table 8

MSI-BPD Item-Total Statistics

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
MSI1	3.18	7.089	.349	.781
MSI2	3.42	7.061	.520	.758
MSI3	3.26	6.925	.508	.759
MSI4	3.22	6.446	.663	.737
MSI5	3.33	6.990	.461	.764
MSI6	3.13	7.363	.305	.784
MSI7	3.50	7.398	.435	.769
MSI8	3.36	6.943	.425	.770
MSI9	3.45	6.959	.494	.760
MSI10	3.46	7.359	.414	.770

ISAS

Binary item means represent the participant endorsement rate. Review of the ISAS descriptive statistics, presented in Table 9, indicates that the most frequently reported NSSI behaviors include banging/hitting, cutting, and interfering with wound healing (15%), with severe scratching reported relatively frequently (10%) as well.

Table 9

ISAS Descriptive Statistics

Behavior	Mean	Std. Deviation
Banging/Hitting Self	.15	.363
Biting	.04	.191
Burning	.05	.212
Carving	.02	.136
Cutting	.15	.363
Interfering w/ Wound	.15	.358
Other	.05	.212
Pinching	.08	.272
Pulling Hair	.09	.286
Rubbing Rough	.02	.152
Severe Scratching	.10	.299
Sticking w/ Needles	.01	.118
Swallowing Substances	.04	.191
Valid N (listwise)		

n = 213

All other behaviors were reported by fewer than ten percent of participants, suggesting endorsement of self-injurious behaviors is a relatively infrequently observed phenomena in the general population. It should be noted that measures assessing

psychopathological characteristics are frequently positively skewed with non-endorsement of items common among individuals within the general populations. In other words, means of .15 on the ISAS in contrast to means of .78 on the ACS-24 are not indicative of problems with the scale's internal consistency.

Preliminary Data Analysis

Data were visually screened for outliers, missing values, illogical values, and violations of assumptions. Following preliminary data screening, threats to statistical assumptions including univariate and multivariate outliers, problematic skewness (i.e., skew index > 3) and kurtosis (i.e., kurtosis index > 10 ; Kline, 2011) were evaluated. A recent study employed square-root transformation to remediate significantly skewed NSSI scores (Selby et al., 2009) resulting in an acceptable distribution of transformed scores. In the current study, NSSI scores were square-root transformed to adjust for problematic skewness. Data were evaluated pre and post transformation, and judiciously transformed, in order to minimally impact score resolution. As expected, NSSI scores were positively skewed (skew = 2.32) prior to transformation and (skew = 1.66) post-transformation. Although skew statistics equal to 2.3 do not exceed the threshold (skew > 3), transformation of the NSSI behaviors scale resulted in improved inter-correlation coefficients among scales, suggesting the scale's deviation from normality negatively affected correlations among scales. No other univariate variable scores significantly deviated from normality (i.e., no other extreme skewness or kurtosis). No multivariate violations of assumptions were detected.

Given that path analysis assumes inter-correlations between measured variables, a correlation matrix was generated in order to confirm the anticipated relationships among

the constructs measured in the study. Examination of the inter-scale correlation matrix between State Orientation, emotion dysregulation, BPD symptoms, and NSSI behaviors indicates significant bivariate correlations between each pair of measures. The inter-correlation between the ISAS and the ISAS transformed ($r = .99$) indicates that the transformation of the ISAS did not significantly impact the resolution of the scale. The inter-correlation between the MSI-BPD (including Item 2) and MSI-BPD (excluding Item 2; $r = .99$) suggests that the scale is measuring the same construct with and without Item 2. Both scales are included in Table 12 in order to examine the impact exclusion of Item 2 has on the inter-correlations of the MSI-BPD and the other scales included in the study. As noted, the exclusion of Item 2 did not significantly impact the scale's relationship with the other scales.

All of the inter-scale correlations were significant at the .01 level, with correlation coefficients ranging from $r = .27$, between the ACS-24 and the ISAS, to $r = .67$, between the DERS and the MSI-BPD (including Item 2). It is noteworthy that the second largest inter-correlation between scale scores was exhibited between the MSI-BPD (excluding Item 2) and the DERS. However, the next largest relationship observed is between the DERS and the ISAS ($r = .56$). These findings suggest emotion dysregulation (as measured by the DERS) has a significant and strong association with both ISAS scale scores and MSI-BPD scale scores. Furthermore, the weakest relationship observed in the table is between the ISAS and the ACS-24.

Table 10

Scale Inter-Correlations

Scale		DERS	ACS-24	MSI-BPD Scale (Item 2 Included)	MSI-BPD (Item 2 excluded)	ISAS	ISAS Transformed
DERS	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	213					
ACS-24	Pearson Correlation	.594**	1				
	Sig. (2-tailed)	.000					
	N	213	213				
MSI-BPD Scale Score (Item 2 Included)	Pearson Correlation	.671**	.454**	1			
	Sig. (2-tailed)	.000	.000				
	N	212	212	212			
MSI-BPD (Item 2 excluded)	Pearson Correlation	.640**	.441**	.991**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	212	212	212	212		
ISAS	Pearson Correlation	.550**	.274**	.475**	.408**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	213	213	212	212	213	
ISAS Transformed	Pearson Correlation	.552**	.295**	.507**	.435**	.986**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	213	213	212	212	213	213

Note: **Correlation is significant at the 0.01 level (2-tailed); DERS = Difficulty in Emotion Regulation Scale; ACS-24 = Action Control Scale; MSI-BPD = McLean Screening Instrument for BPD; ISAS = Inventory of Statements About Self-Injury.

Model Testing

Path analysis is used to identify a theoretically meaningful, and optimally parsimonious, causal model that demonstrates adequate model-data correspondence; however, path analysis does not disconfirm other models (Kline, 2011). In the current study, path analysis was performed using maximum likelihood estimation (MLE) to test the proposed causal model. As illustrated in Figure 3, State Orientation, emotion dysregulation, BPD symptoms, and NSSI behaviors were entered into the path model as observed (i.e., manifest) variables. State Orientation was an exogenous variable and emotion dysregulation, BPD symptoms, and NSSI behaviors were endogenous variables. Regression analyses were used to generate path coefficients (i.e., standardized beta weights, which were evaluated for significance and effect size. Goodness of model fit (i.e., model-data correspondence) was systematically evaluated with model chi-square (χ^2) analyses, the Bentler Comparative Fit Index (CFI; Bentler, 1990), and the Root Mean Square Error Approximation (RMSEA; Steiger, 1990). Chi-square analyses are badness of fit suggesting that higher chi-square values indicate poorer model-data correspondence and significant chi-square analyses indicate inadequate model-data correspondence. The CFI is a goodness of fit index that compares the specified model to an independent model (all path coefficients equal zero); scores range from 0 to 1 with values closer to 1 being preferred. The RMSEA is an incremental estimate of the specified model's fitness to the data compared to the saturated (just-identified) model's fitness; scores of .05 are indicators of good fit and scores of .08 indicate adequate fit (Kline, 2011).

The specified model depicts theoretical cause-and-effect relationships among State Orientation, emotion dysregulation, BPD symptoms, and NSSI behavior. According

to the model, State Orientation is a biosocial predisposition to emotion dysregulation which, in turn, leads to BPD symptoms and NSSI, independently. Additionally, the specified model depicts an indirect effect of State Orientation on BPD symptoms and NSSI behaviors. In the specified model, the path coefficient between BPD symptoms and NSSI behaviors endorsed is fixed at zero, as depicted by the absence of a path between the two variables. Each hypothesis is restated below as originally proposed, followed by the results.

Hypothesis A1

There is a direct effect of State Orientation on emotion dysregulation. According to the model, as State Orientation (as measured by the ACS-24) increases, emotion dysregulation (as measured by the full-scale DERS) increases, that is, higher scores on the ACS are associated with higher scores on the full-scale DERS. Specifically, State Orientation is an exogenous variable that, according to the model, directly positively affects emotion dysregulation (greater State Orientation, greater emotion dysregulation).

Hypothesis A1 Results

Examination of the standardized parameter coefficient indicates State Orientation had a direct positive effect on emotion dysregulation (standardized coefficient = .59, $p < .01$). As depicted in Figure 3, as State Orientation increased, emotion dysregulation increased. Hypothesis A was supported.

Hypothesis A2

There is a direct effect of State Orientation on Borderline Personality Disorder symptoms. According to the model, as State Orientation (as measured by the ACS-24) increases, the number of Borderline Personality Disorder symptoms endorsed on the

MSI-BPD increases, that is, higher scores on the ACS-24 are positively associated with a greater number of Borderline Personality Disorder symptoms endorsed on the MSI-BPD. Specifically, State Orientation is an exogenous variable that, according to the model, directly positively affects Borderline Personality Disorder symptoms (greater State Orientation, greater number of BPD symptoms).

Hypothesis A2 Results

Examination of the relevant standardized parameter coefficient indicates that State Orientation did not have a direct effect on BPD symptoms reported (standardized coefficient = .09, $p = .15$). Specifically, the bivariate relationship observed between State Orientation and BPD symptoms ($r = .44$, $p < .01$) in Table 10 was mediated by the effects specified in the model. Hypothesis A2 was not supported.

Hypothesis A3

There is a direct effect of State Orientation on Nonsuicidal Self-injury. According to the model, as State Orientation (as measured by the ACS-24) increases, the number of Nonsuicidal Self-injurious behaviors endorsed on the Inventory of Statements about Self-injury Scale (ISAS) increases, that is, higher scores on the ACS-24 are positively associated with a greater number of self-injurious behaviors endorsed on the ISAS. Specifically, State Orientation is an exogenous variable that, according to the model, directly positively affects self-injurious behavior (greater State Orientation, greater number of NSSI behaviors).

Hypothesis A3 Results

Examination of the relevant standardized parameter coefficient indicates State Orientation did not have a direct effect on the number of NSSI behaviors endorsed

(standardized coefficient = $-.05$, $p = .47$). These findings suggest the bivariate relationship between State Orientation and NSSI behaviors ($r = .30$, $p < .01$) observed in Table 10 was mediated by the effects specified in the model. Hypothesis A3 was not supported.

Hypothesis B1

There is an indirect effect of State Orientation on Borderline Personality Disorder via emotion dysregulation. Emotion dysregulation is the mediator that, according to the model, is affected by State Orientation (greater State Orientation, greater emotion dysregulation); in turn, emotion dysregulation affects Borderline Personality Disorder symptoms (greater emotion dysregulation, greater number of BPD symptoms). Specifically, emotion dysregulation mediates the relationship between State Orientation and Borderline Personality Disorder symptoms.

Hypothesis B1 Results

Examination of the relevant standardized parameter coefficient indicates State Orientation had an indirect effect on BPD symptoms reported through emotion dysregulation (standardized coefficient = $.34$, $p < .01$). These findings suggest that the bivariate relationship between State Orientation and reported BPD symptoms observed in the correlation matrix above (Table 10) was mediated by emotion dysregulation.

Hypothesis B1 was supported.

Hypothesis B2

There is an indirect effect of State Orientation on Nonsuicidal Self-injury via emotion dysregulation. Emotion dysregulation is the mediator that, according to the model, is affected by State Orientation (greater State Orientation, greater emotion

dysregulation); in turn, emotion dysregulation affects self-injurious behavior (greater emotion dysregulation, greater number of NSSI behaviors endorsed). Specifically, emotion dysregulation mediates the relationship between State Orientation and Nonsuicidal Self-injury.

Hypothesis B2 Results

Examination of the relevant standardized parameter coefficient indicates State Orientation had an indirect effect on the number of NSSI behaviors endorsed through emotion dysregulation (standardized coefficient = .34, $p < .01$). These findings suggest that the bivariate relationship between State Orientation and NSSI behaviors observed in Table 10 was mediated by emotion dysregulation. Hypothesis B2 was supported.

In summary, there is a direct effect of State Orientation on emotion dysregulation, and an indirect effect of State Orientation on NSSI behavior and BPD symptoms. Alternately, the hypothesized direct effect of State Orientation on NSSI behavior and BPD symptoms was not observed in the current study. Results indicate the bivariate correlations between State Orientation, and NSSI behaviors and BPD symptoms is mediated by the other effects specified in the model.

Model Hypothesis

The specified model fits the data as well or better than a just-identified model. Furthermore, we anticipate that the increased parsimony of the over-identified model compensates for the decrease in model fitness. The overall fitness of the specified model does not significantly differ from an exact fit. The overall fitness of the specified model significantly differs from the just-identified model (saturated model) as indicated by a non-significant chi-square difference test. Specifically, when the previously free

parameter (i.e., the path coefficient between BPD symptoms and NSSI methods) is fixed at zero, the overall fit of the model does not decrease significantly.

Model Hypothesis Results

In the current study, goodness of model fit was evaluated with the model chi-square (χ^2), the Bentler Comparative Fit Index (CFI; Bentler, 1990), and the Root Mean Square Error Approximation (RMSEA; (Steiger, 1990). The specified model, shown in Figure 4, demonstrated marginal model-data correspondence $\chi^2(1, n = 213) = 3.70, p = .05$, CFI = .99, RMSEA = .11. As anticipated, the saturated model (i.e., just-identified model) demonstrated significantly better model-data correspondence $\chi^2(0, n = 213) = .00$ than the specified model. Despite the fact that the model demonstrated adequate model-data correspondence, not all paths depicted in the model were statistically significant (see Hypotheses A2 and A3). Therefore, the specified model was rejected.

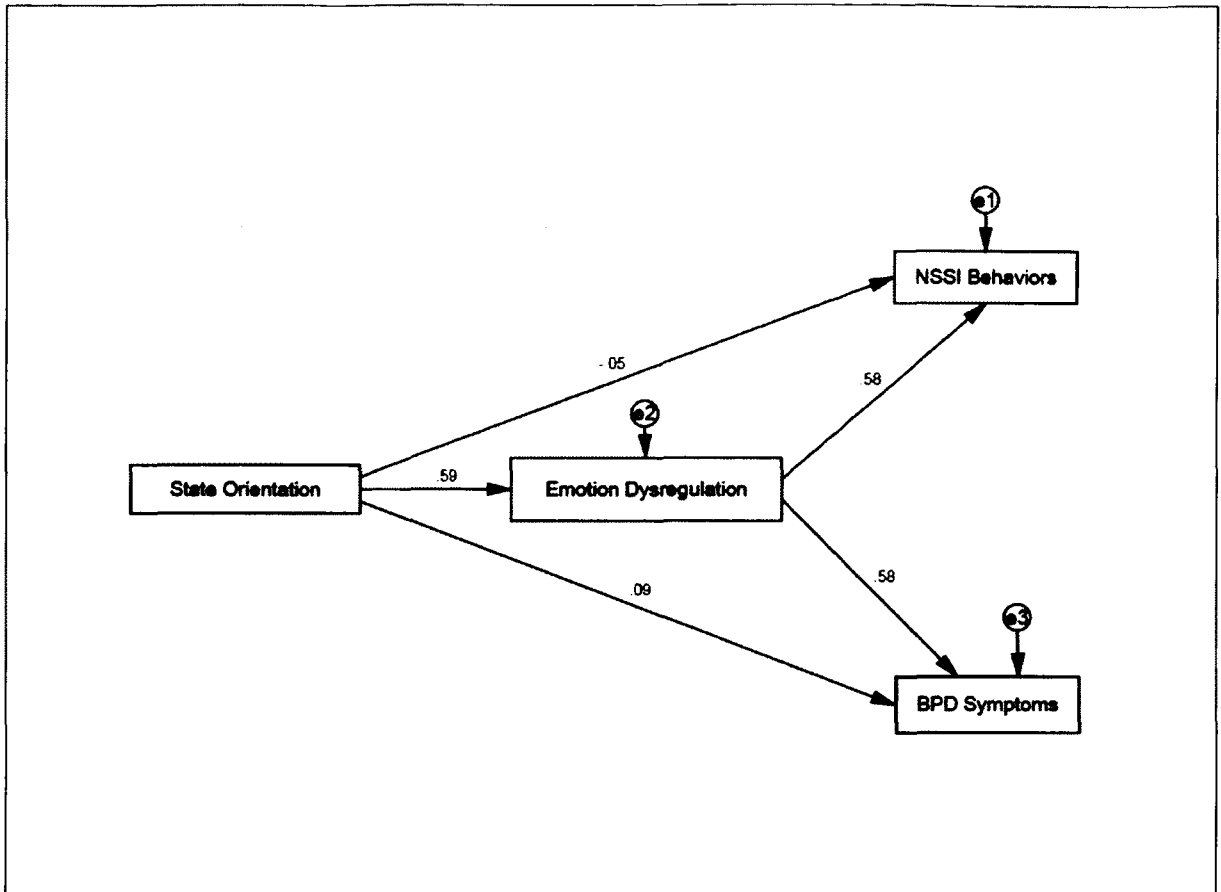


Figure 4 *Specified Model*

According to Kline (2011), equivalent model comparison is necessary in order to demonstrate that a proposed model is a better explanation of the underlying causes of the relationships depicted than a model with an equivalent number of degrees of freedom. That is, equivalent models are tested to assure that the observed fitness of the model is due to the theoretical explanation provided by the model rather than as a result of chance. Recall that all significance testing is based on chance (Kline, 2011). Therefore, when a model that is consistent with the proposed theory fits the data as well or better than its equivalent models, the causal theory underlying the specified model is supported.

In the current study, the equivalent models include seven variables: four observed variables (State Orientation, emotion dysregulation, NSSI behaviors, BPD symptoms), three unobserved variables (three error variances associated with the exogenous variables, respectively), four exogenous variables (State Orientation), and three endogenous variables (emotion dysregulation, NSSI behaviors, BPD symptoms).

Model A, shown in Figure 5, is a recursive over-identified model. Model A demonstrated good model-data correspondence $\chi^2(1, n = 213) = .53, p = .47, CFI = 1, RMSEA = 0$. Examination of the standardized parameter coefficient indicates State Orientation had a direct effect on emotion dysregulation (standardized coefficient = .59, $p < .01$). However, the direct effect of State Orientation on BPD symptoms was mediated by the total effects specified in the model (standardized coefficient = .10, $p = .12$), and the direct effect of NSSI behaviors on BPD symptoms was mediated by the total effects specified in the model (standardized coefficient = .12, $p = .05$). However, an indirect effect of State Orientation on NSSI behaviors and BPD symptoms was observed (standardized coefficient = .32, $p < .01$; standardized coefficient = .30, $p < .01$). Although Model A demonstrates an adequate model-data correspondence (i.e., non-significant chi-square analysis), the direct effect of State Orientation on BPD symptoms was not significant. As a result, Model A was rejected.

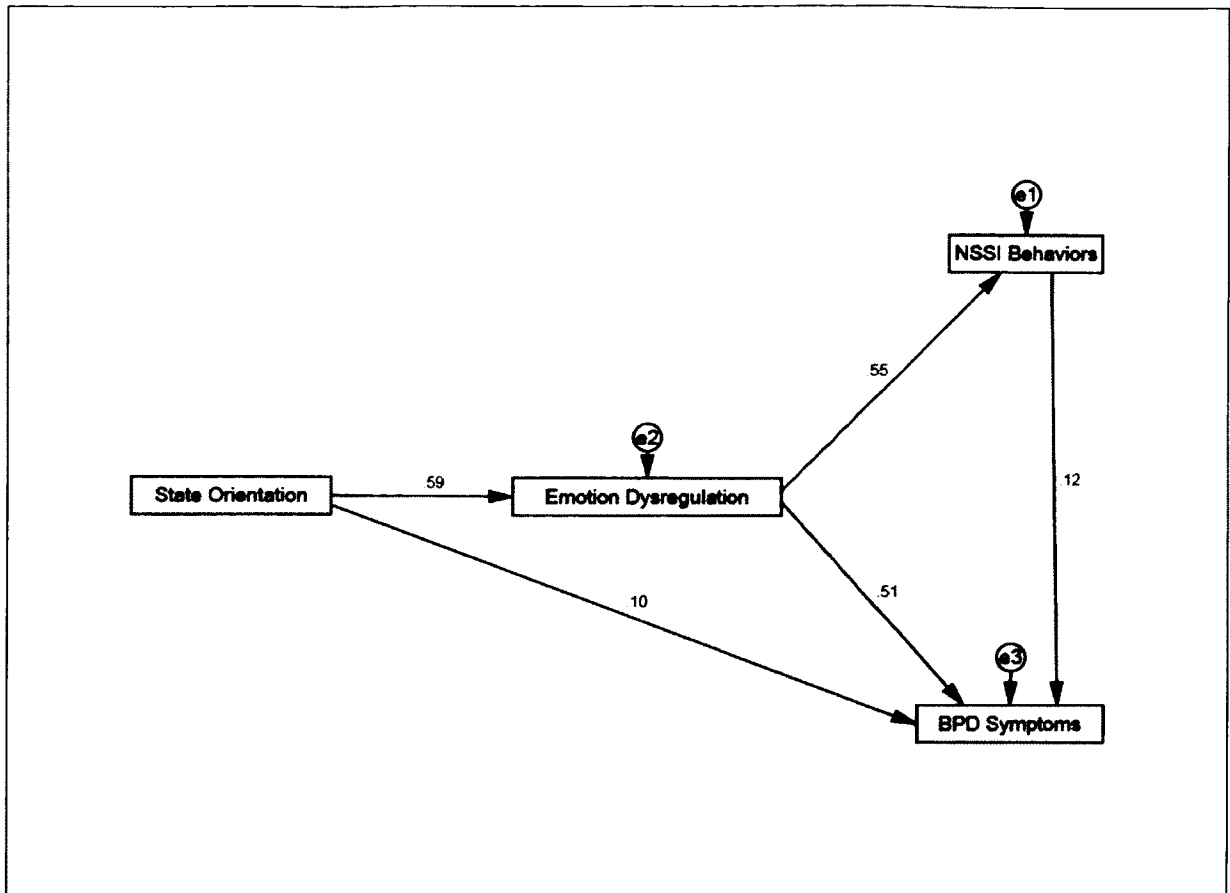


Figure 5 Model A

Model B, shown in Figure 6, is a recursive over-identified model. Model-data correspondence was poor $\chi^2(1, n = 213) = 92.30, p < .00, CFI = .67, RMSEA = .66$. Examination of the standardized path coefficient indicates State Orientation did not have a direct effect on either NSSI behaviors or BPD symptoms (standardized coefficient = $-.05, p = .37$; standardized coefficient = $.10, p = .06$). Furthermore, there is no direct effect of NSSI behaviors on BPD symptoms (standardized coefficient = $.13, p = .05$). There was a direct effect of emotion dysregulation on NSSI behaviors (standardized coefficient = $.57, p < .01$) and on BPD symptoms (standardized coefficient = $.53, p < .01$). Model B was rejected.

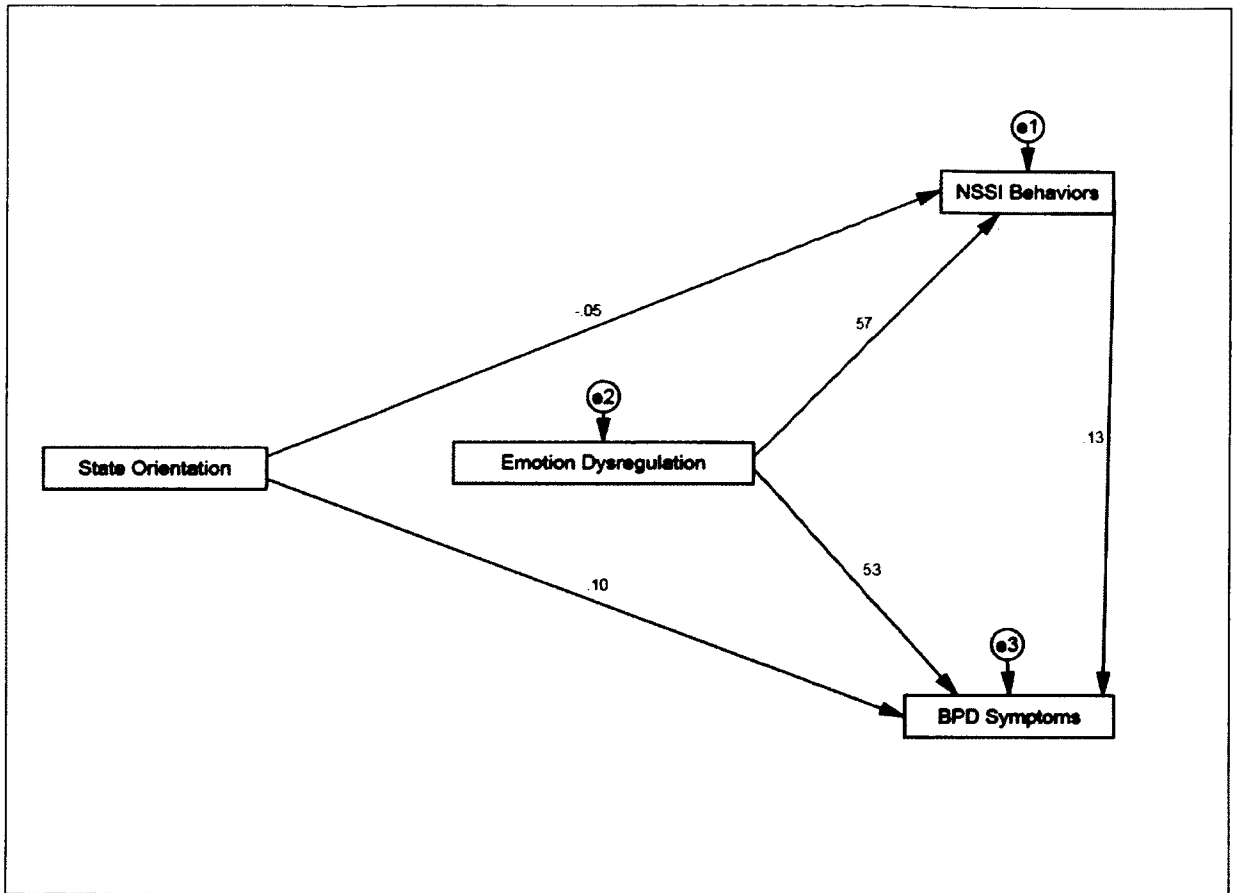


Figure 6 Model B

Model C, shown in Figure 7, is a recursive over-identified model. Model C demonstrated good model-data correspondence $\chi^2(1, n = 213) = 2.36, p = .13, CFI = .99, RMSEA = .08$. Examination of the standardized parameter coefficient indicates State Orientation had a direct effect on emotion dysregulation (standardized coefficient = .59, $p < .01$). However, the direct effect of State Orientation on NSSI behaviors was mediated by the total effects specified in the model (standardized coefficient = -.05, $p = .47$), and the direct effect of NSSI behaviors on BPD symptoms was mediated by the total effects specified in the model (standardized coefficient = .12, $p = .07$). A direct effect of emotion dysregulation on NSSI behaviors and BPD symptoms was observed (standardized

coefficient = .58, $p < .01$; standardized coefficient = .58, $p < .01$). Although Model C demonstrates good model-data correspondence (CFI = .99), the insignificant paths depicted in the model indicate that Model C does not fit the data significantly better than the specified model. Model C was rejected.

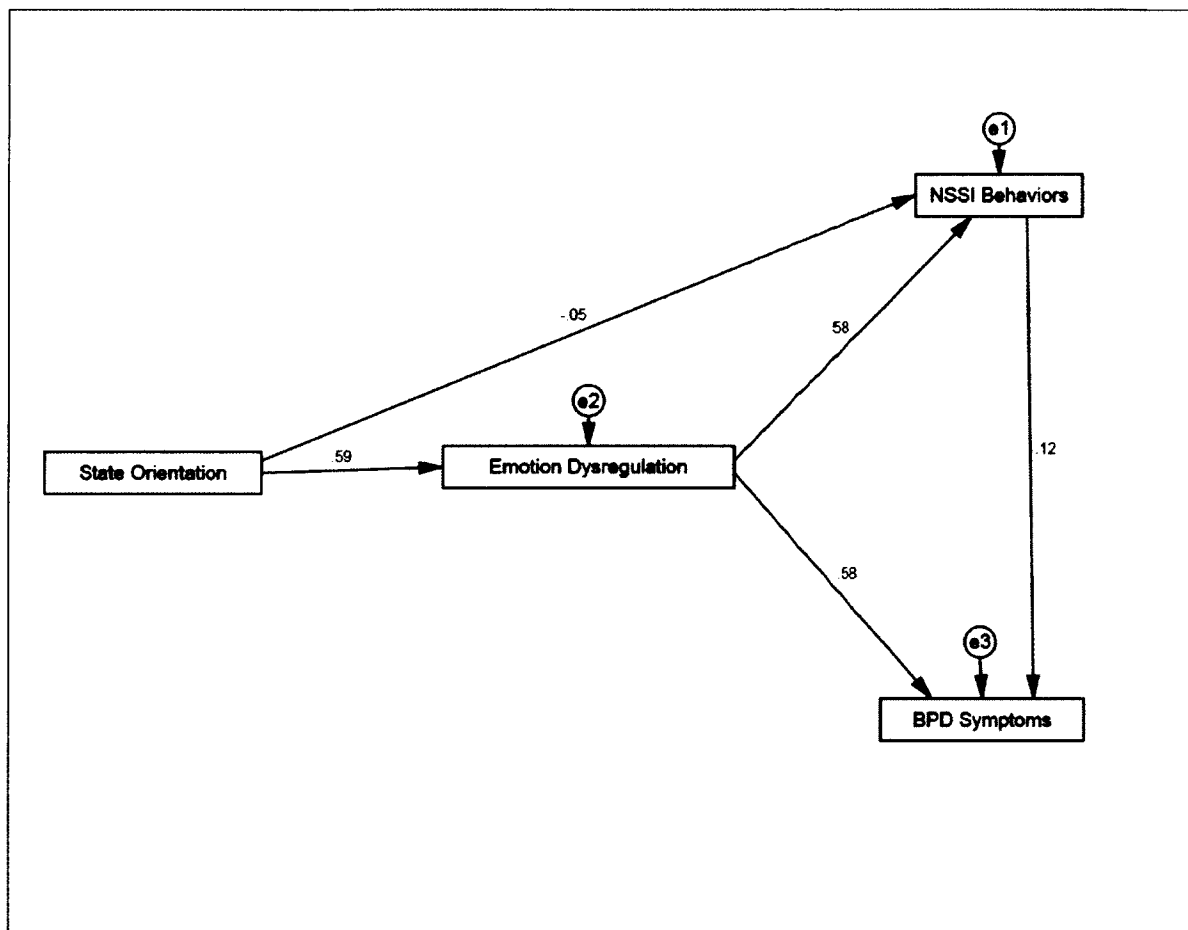


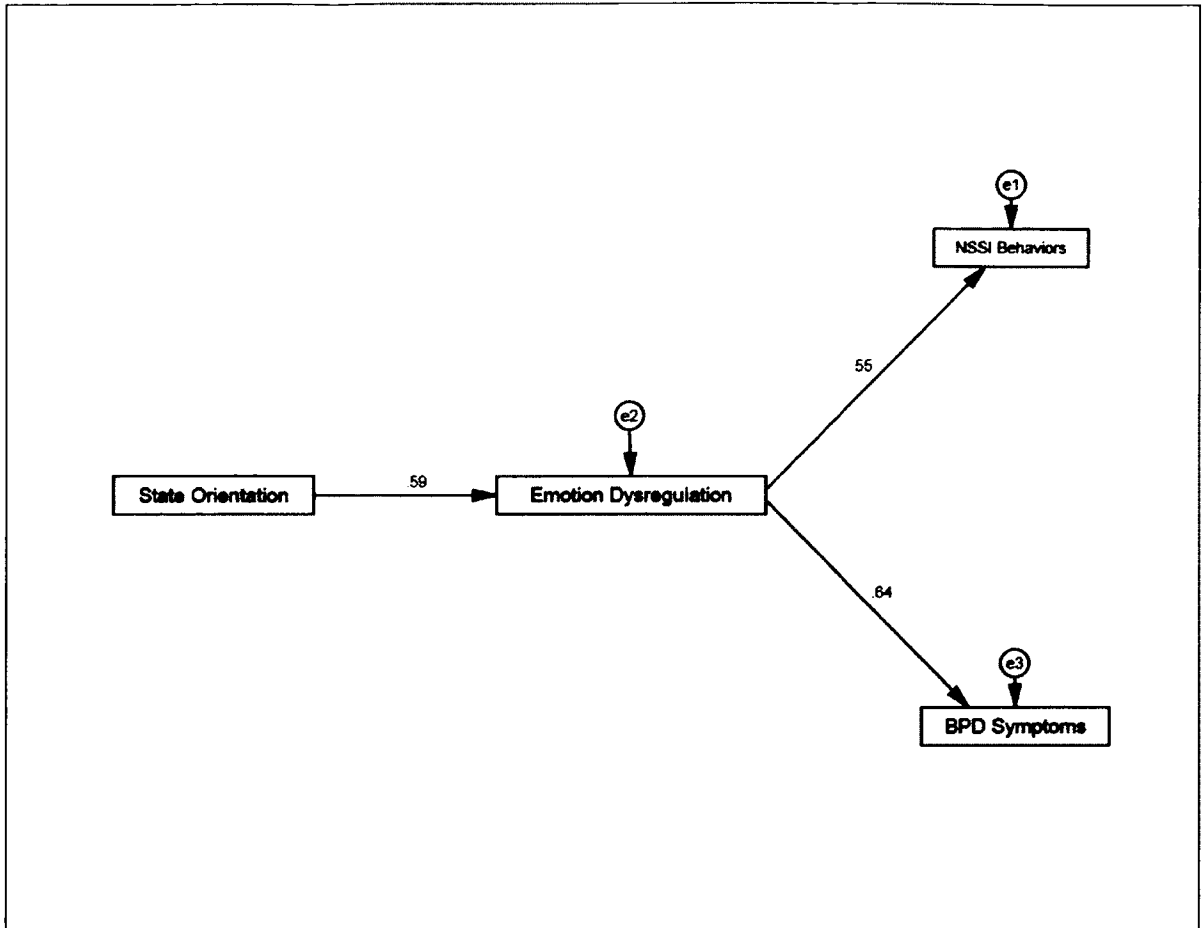
Figure 7 Model C

Given that equivalent Models A and C are rejected due to insignificant paths, and Model B was rejected due to poor model-data correspondence, the theory underlying the relationships depicted in the specified model is not disconfirmed. Specifically, although there are no direct effects of State Orientation on NSSI behaviors and BPD symptoms,

the direct effect of State Orientation on emotion dysregulation and the subsequent indirect effects of State Orientation on NSSI behaviors and BPD symptoms is consistent with the theory. In order to return the theory underlying the specified model while considering the results of the above analyses, a theory-consistent model that derived from the specified model including significant paths is tested. A model disconfirming the proposed theory was tested and compared to the theory-consistent model.

The model presented in Figure 8 is a theory-consistent model in which the relationship between NSSI behaviors and BPD symptoms is mediated by the direct and indirect effects of State Orientation on the two phenomena through emotion dysregulation. Alternately, the model presented in Figure 9 indicates a direct effect of NSSI behaviors on BPD symptoms in addition to the direct and indirect effects depicted in the theory-consistent model.

The theory-consistent model is a recursive over-identified model in which State Orientation has a direct effect on emotion dysregulation and indirect effects on NSSI behaviors and BPD symptoms. The theory-consistent model demonstrated moderate model-data correspondence $\chi^2(3, n = 213) = 6.26, p = .10, CFI = .99, RMSEA = .07$. Examination of the standardized parameter coefficient indicates an indirect effect of State Orientation on NSSI behaviors and BPD symptoms (standardized coefficient = .32, $p < .01$; standardized coefficient = .38, $p < .01$). A direct effect of State Orientation on emotion dysregulation was observed (standardized coefficient = .59, $p < .01$). The theory-consistent model is retained because all paths in the model depict significant relationships and the model demonstrates good model-data correspondence.

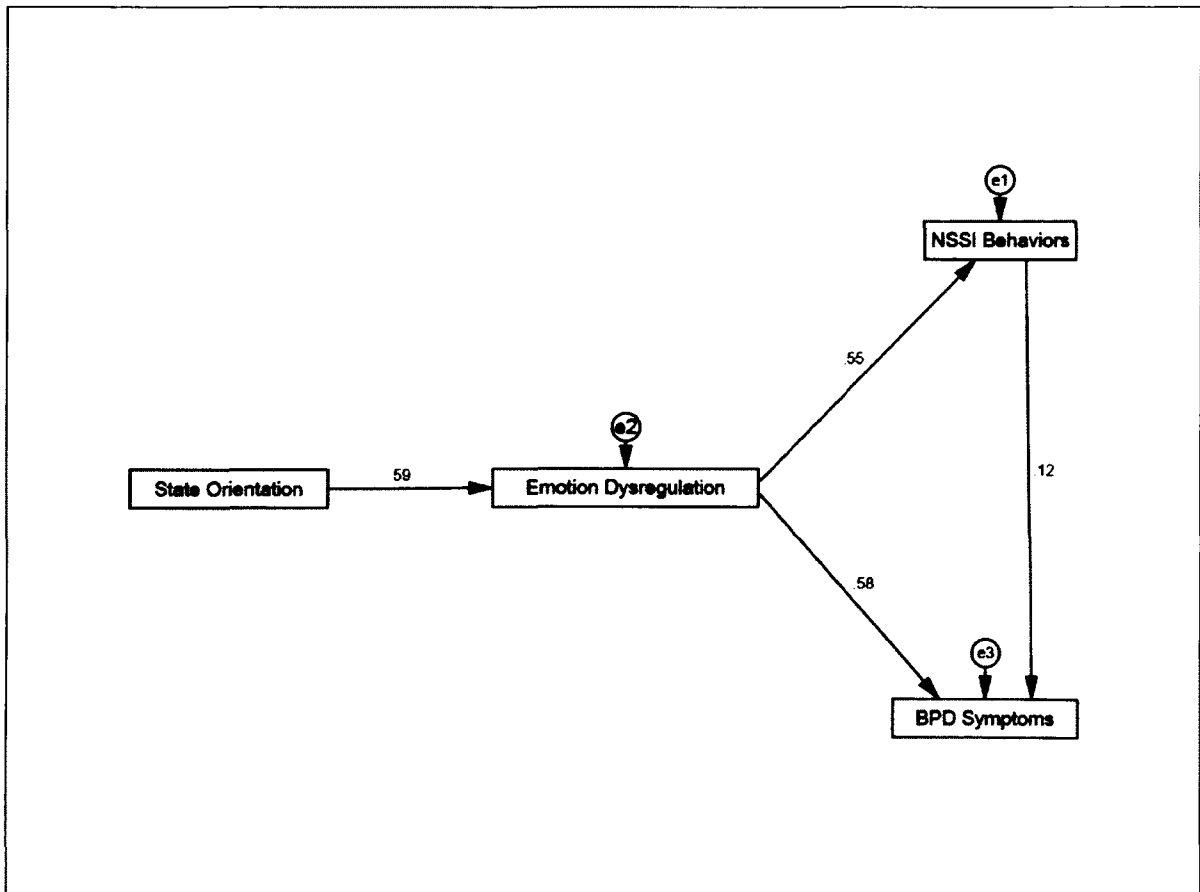


Note: Path coefficients depicted in Figure 8 represent direct effects between variables. The indirect effects discussed below are represented by the path coefficients discussed in the text.

Figure 8 *Theory-Consistent Model*

The theory-inconsistent model, shown in Figure 9, is a recursive over-identified model in which State Orientation has a direct effect on emotion dysregulation and indirect effects on NSSI behaviors and BPD symptoms and NSSI behaviors have a direct effect on BPD symptoms. The theory-inconsistent model demonstrated good model-data correspondence $\chi^2(2, n = 213) = 2.89, p = .24, CFI = .99, RMSEA = .05$. Examination of the standardized parameter coefficient indicates a direct effect of State Orientation on emotion dysregulation (standardized coefficient = .59, $p < .01$), and an indirect effect of

State Orientation on NSSI behaviors and BPD symptoms (standardized coefficient = .32, $p < .01$; standardized coefficient = .34, $p < .01$). The direct effect of NSSI behaviors on BPD symptoms (standardized coefficient = .12, $p = .07$) was not significant, suggesting that the other effects depicted in the model mediated the relationship between the two phenomena. Thus, after accounting for the direct effects of State Orientation on emotion dysregulation and the indirect effects of State Orientation on NSSI behaviors and BPD symptoms, the causal relationship depicted in the theory-inconsistent model is no longer significant. The theory-inconsistent model was rejected.



Note: Path coefficients depicted in Figure 8 represent direct effects between variables. The indirect effects discussed below are represented by the path coefficients discussed in the text.

Figure 9 Theory-Inconsistent Model

None of the models that demonstrated adequate model-data correspondence had significant path coefficients that depicted a direct effect of State Orientation on NSSI behaviors or BPD symptoms, or a direct effect of NSSI behaviors on BPD symptoms. Of the models that demonstrated adequate model-data correspondence, the model most consistent with the proposed theory is a mediation model in which the relationship between BPD symptoms and NSSI behaviors is fully mediated by the indirect effects of State Orientation on the two phenomena.

CHAPTER 4

DISCUSSION

The purpose of this study was to determine whether NSSI should be considered a unique disorder (as defined in the *DSM-5*, Section III). This is a relevant topic given the recent call for the continued examination of NSSI as a unique disorder, separate from BPD (American Psychiatric Association, 2013; Muehlenkamp, 2005; Selby et al., 2012; Shaffer & Jacobson, 2010). The current study is grounded in PSI theory, and contends that State Orientation is a dispositional characteristic directly associated with emotion dysregulation and indirectly associated with NSSI. Path analysis was employed to test a model in which the direct and indirect effects of State Orientation would mediate the relationship between NSSI and BPD. The results of this study supports the contention of Shaffer and Jacobson (2010) that NSSI be considered a unique disorder as well as the recent research of Selby and colleagues (2012) which indicated that NSSI was a distinct clinical condition, separate from BPD.

Findings

Model Hypothesis

The hypothesized causal model suggested that State Orientation is a dispositional characteristic (Kuhl, 1994) that leads to emotion dysregulation, BPD symptoms,

and Nonsuicidal Self-injury. The current study examined the overall model-data correspondence of the specified model, and compared it to three equivalent models (i.e., Model A, Model B, Model C). Given that the specified model and the equivalent models did not exhibit adequate model-data correspondence (including fit index and/or significant path coefficients), ad-hoc models were tested. The model most consistent with the theoretical argument of the specified model was retained. The theory-consistent model demonstrated a direct relationship between State Orientation and emotion dysregulation, and indirect effects on NSSI behaviors and BPD symptoms.

Hypothesis A1

Based on the assumption that State Orientation (Kuhl, 2000a, 2011) is a construct similar to rumination (Kuhl & Baumann, 2000; Selby et al., 2009; Selby & Joiner, 2009), which leads to dysregulated emotion (Hilt et al., 2008; Selby et al., 2009; Selby & Joiner, 2009), it was hypothesized that there is a direct effect of State Orientation on emotion dysregulation. The direct effect of State Orientation on emotion dysregulation explained the most variance depicted in the model. Statistical results support the theoretical argument that a dispositional characteristic (e.g., State Orientation) can be a risk factor for difficulty regulating one's emotions.

Hypothesis A2

Given that recent research indicates rumination is positively associated with BPD (Kuhl, 2000a; Selby et al., 2009; Selby & Joiner, 2009), it was hypothesized that State Orientation is positively associated with BPD symptoms. Results showed that after the direct effect of State Orientation on emotion dysregulation was accounted for, there was no longer a significant relationship between State Orientation and BPD symptoms. This

suggests that State Orientation does not directly lead to BPD symptoms; rather, State Orientation is a risk factor for BPD symptoms through emotion dysregulation.

Hypothesis A3

Recent research indicates rumination (i.e., State Orientation; Kuhl & Baumann, 2000; Kuhl, 2000b) leads to NSSI (Hilt et al., 2008; Selby et al., 2012). Therefore, a direct effect of State Orientation on NSSI behaviors was hypothesized. Results showed that after the direct effect of State Orientation on emotion dysregulation is statistically controlled, the bivariate relationship observed between State Orientation and NSSI symptoms was no longer significant, indicating mediation effects. This suggests that after the variance between State Orientation and emotion dysregulation is accounted for, the shared variance between State Orientation and the other variables specified in the model is reduced.

Hypothesis B1

Recent research suggests that rumination (i.e., State Orientation) leads to emotion dysregulation (i.e., an emotional cascade), which in turn, results in the emergence of BPD symptoms (Selby et al., 2009, 2012; Selby & Joiner, 2009). It was hypothesized that State Orientation would have an indirect effect on BPD symptoms through emotion dysregulation. This hypothesis was supported, suggesting that although State Orientation does not cause BPD symptoms, it indirectly leads to BPD symptoms through emotion dysregulation.

Hypothesis B2

Recent research suggests that rumination (i.e., State Orientation) leads to emotion dysregulation (i.e., an emotional cascade), which in turn, leads to dysregulated behavior,

including NSSI (Selby et al., 2012; Selby & Joiner, 2009). It was hypothesized that State Orientation would have an indirect effect on NSSI behaviors through emotion dysregulation. This hypothesis was supported, suggesting that although State Orientation does not cause NSSI behaviors, it indirectly leads to self-injury through emotion dysregulation.

Implications

Currently, criterion 5 of BPD is the only diagnostic criterion in the *DSM-5* that speaks to intentional non-suicidal, self-inflicted injury that is non-repetitive and non-stereotypical (e.g., as present in various forms of mental retardation or pervasive developmental disorders or stereotypic movement disorders). According to the *DSM-5*, self-injury is commonly considered a pathogenic marker for BPD, and is accompanied by conscious functional mechanisms and impulsivity associated with disinhibition. Under the diagnostic criteria outlined in Section III of *DSM-5*, criterion A for NSSI disorder would include five or more instances of self-injury in the past 12 months, motivated by a desire to alter a negative affective or cognitive state. Results of this study suggest NSSI is distinct from BPD. The relationship between NSSI behaviors and BPD symptoms was mediated by the effects in all models. This suggests that rather than NSSI leading to BPD, there are underlying causes that are shared by the two phenomena.

State Orientation alone does not predispose one to engagement in NSSI. Rather, State Orientation predisposes one to emotion dysregulation, which in turn leads to NSSI. Similarly, State Orientation does not have a direct effect on BPD symptoms, but is a risk factor for emotion dysregulation, which in turn leads to BPD symptoms. In other words, State Orientation is a dispositional characteristic that predisposes one to emotion

dysregulation, a risk factor for both NSSI and BPD. Individuals who are state-oriented, that is, unable to access the holistic self under duress, are more likely to experience emotion dysregulation. Therefore, these individuals have an increased risk of engagement in NSSI behaviors or to experience BPD symptoms.

State Orientation is a dispositional trait developed through the interaction of temperamental characteristics and environmental influences (Kuhl, 2000a). Dispositional traits combine to form characteristic adaptations (McAdams, 2006), which are behavioral representations of personality. According to the retained model, dysregulated behavior (e.g., NSSI) can result from emotion dysregulation in the absence of a personality disorder (i.e., BPD). Thus, these findings suggest State Orientation may in fact interfere with executive functioning, including behavioral inhibition and activation of the holistic self (Kuhl, 2011). Future research should examine the interaction effects noted in Baumann and colleagues (2007) in order to more fully explore NSSI within the context of PSI Theory and the modulation assumptions.

The retained model (i.e., the theory-consistent model) suggests that NSSI behaviors and BPD symptoms may be indicative of an underlying emotion regulation deficit that leads to emotional lability, interpersonal deficits, inadequate problem solving, and dysregulated behavior motivated by impulsive urgency. These findings are especially important given that recent research suggests State Orientation can be reduced (Kuhl et al., 2006) and emotion regulation skills can be developed (Gratz, Chapman, & Walsh, 2009). If self-injury and BPD were conceptualized as both being caused by emotion dysregulation, then treatments emphasizing the development of emotion regulation skills would ameliorate both the presentation of NSSI behaviors and BPD symptoms.

Continued examination of the causal trajectory leading to NSSI behavior and BPD symptoms via emotion dysregulation is warranted.

Limitations

A limitation of the current study is sampling bias. As noted above, the current sample was recruited from the researcher's personal social network using a snowball technique. Participants were primarily recruited via internet-based social networking venues including Facebook, LinkedIn, Twitter, and various other social media. Given that the study was distributed via social media venues, participants with an interest in the study's subject matter were more likely to respond to the study. Additionally, there was a large proportion of female respondents, as well as older, more highly educated, and financially advantaged participants. As is typical of survey research, the results are limited by the use of self-report measures. Also, given that the sample was collected from the researcher's personal contacts and social media network, the generalizability of the study is tentative. Future research should compare the current sample to samples from other populations, such as college students, children and/or adolescents, or clinical samples.

The findings of this study are limited by the research design and statistical analyses. Because path analysis is limited to continuous measured variables and assumes that there are no interaction effects depicted in the model, undetected interaction effects may be present. Given that research examining PSI theory has observed interaction effects, a limitation of the current study was that the variables were conceptualized as continuous measures.

Directions for Future Research

Future research should examine whether categorical variables based on presence and/or thresholds better explain the theory underlying the relationships among the variables of interest. For example, the threshold for BPD symptoms greater than or equal to five could be used to conceptualize BPD as a diagnostic category rather than a degree of symptomology. Future research should test the retained model with different samples. The current sample had a mean age of 37 years which is substantially older than other samples examining NSSI. Further, age was significantly negatively correlated with all of the measured variables included in the path model. This suggests that as individuals mature, State Orientation, emotion dysregulation, BPD symptoms, and NSSI behaviors decrease. This is consistent with earlier research that found self-injury begins in childhood (Muehlenkamp & Gutierrez, 2004; Whitlock et al., 2006), that NSSI is most prevalent in youth, with average age of onset between 12 and 16 years (Klonsky, 2011), and that NSSI is common among young adults with median rates of 17% reported (Klonsky et al., 2011). However, there has been little population-level assessment of NSSI behaviors. Comparative studies should use a college sample and/or have respondents complete the compiled survey in a paper format. Additionally, a clinical sample could be obtained to explore the model-data correspondence of the retained model and any other acceptable models that adequately explain underlying relationships represented.

Future research could employ confirmatory factor analysis (CFA) to generate a measurement model in which the measured variables are latent variables. Latent variable analysis regresses items onto their respective subscales, and subscales are regressed onto a latent overall construct. The advantage of incorporating CFA into the data is that it

allows for the deletion or exclusion of scales or items not adequately related to the construct of interest. For example, if four items from a scale adequately predicted a latent construct, additional items for the scale could be excluded, thereby creating variables that can be measured with fewer items. Additionally, items or scales, with significant inter-item (scale) correlations (e.g., $>$ or $= .80$) would be eliminated due to redundancy. The development and employment of concise measures increases the internal validity of a model. Path analysis relies on scale scores, whereas SEM techniques such as latent class analysis allow for mixture modeling which may have superior utility with low frequency variables, pathological constructs, violations of assumptions of normality, and diagnostic utility. Analysis using SEM techniques would allow for differential diagnosis and clinical conceptualization. As noted in Arney & Crowther (2008), infrequently occurring phenomena (often those associated with pathology) may be better conceptualized in nonlinear terms, or according to thresholds. Alternately, items may be weighted depending on their discriminate and/or predictive validity.

Interestingly, several individuals in the study who endorsed at least one of the NSSI behaviors did not endorse item 2 of the MSI-BPD. Item 2 of the MSI-BPD states, "Have you deliberately hurt yourself physically (e.g., punched yourself, cut yourself, burned yourself)? How about made a suicide attempt?" In other words, does the inclusion of the statement, "How about made a suicide attempt?" alter participant responses to the question? It's possible the inclusion of the statement regarding a suicide attempt may lead participants to not endorse this item, which would support the argument that NSSI is not a suicidal gesture but a coping mechanism. Future research should examine how the

wording of this item affects participant responses, specifically, whether item 2 of the MSI-BPD should be two separate items rather than a single item.

Conclusion

The results of this study support the recent findings of Selby, Bender, Gordon, Nock, and Joiner (2012) in which logistic regression analyses suggested NSSI was a distinct clinical condition, distinct from BPD specifically. Although NSSI Disorder is currently categorized as *a condition in need of further research* in the *DSM-5* (American Psychiatric Association, 2013), these findings are consistent with the contention that NSSI should be a distinct disorder. In the same way that exhibiting one diagnostic criterion is not indicative of having the disorder, engagement in self-injurious behavior is not sufficient for a diagnosis of BPD. Similar to the emotional cascade model (Selby & Joiner, 2009), these findings suggest emotion dysregulation and its accompanying behavioral dysregulation are critical indicators of self-injurious behavior and BPD symptoms, potentially explaining much of the disturbance and distress associated with the behavior and disorder. Research should examine risk factors associated with emotion dysregulation (e.g., childhood maltreatment; Gratz & Roemer, 2008); preventative factors associated with adequate emotion regulation (Koole & Fockenberg, 2011; Koole, Kuhl, Jostmann, & Finkenauer, 2006), and ameliorative interventions (Kuhl, 2011).

According to the retained model (i.e., the theory-consistent model presented in Figure 8), State Orientation is a dispositional risk factor for emotion dysregulation which leads to engagement in NSSI behavior and/or BPD symptoms. Emotion dysregulation is a multidimensional risk factor for behavioral dysregulation, intrapersonal turmoil, and

interpersonal conflict. Future research will replicate and extend the current study, examining the functional components of NSSI behavior across various demographic categories.

REFERENCES

- Adrian, M., Zeman, J., Erdley, C., Lisa, L., & Sim, L. (2011). Emotional dysregulation and interpersonal difficulties as risk factors for nonsuicidal self-injury in adolescent girls. *Journal of Abnormal Child Psychology*, *39*(3), 389–400. doi:10.1007/s10802-010-9465-3.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, DC: Author.
- Arney, M. F., & Crowther, J. H. (2008). A comparison of linear versus non-linear models of aversive self-awareness, dissociation, and non-suicidal self-injury among young adults. *Journal of Consulting and Clinical Psychology*, *76*(1), 9–14. doi:10.1037/0022-006X.76.1.9.
- Bagge, C., Nickell, A., Stepp, S., Durrett, C., Jackson, K., & Trull, T. J. (2004). Borderline Personality Disorder features predict negative outcomes 2 years later. *Journal of Abnormal Psychology*, *113*(2), 279–288. doi:10.1037/0021-843X.113.2.279.

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. Retrieved from <http://search.proquest.com/docview/614307043?accountid=14522>.
- Baumann, N., Kaschel, R., & Kuhl, J. (2007). Affect sensitivity and affect regulation in dealing with positive and negative affect. *Journal of Research in Personality*, *41*(1), 239–248. doi:10.1016/j.jrp.2006.05.002.
- Baumeister, R. F. (1991). *Escaping the self: Alcoholism, spiritualism, masochism, and other flights from the burden of selfhood*. New York, NY: Basic Books.
- Belsky, J., & Pluess, M. (2009). The nature (and nurture?) of plasticity in early human development. *Perspectives on Psychological Science*, *4*(4), 345–351. doi:10.1111/j.1745-6924.2009.01136.x.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238–46. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/2320703>.
- Bornovalova, M. A., Hicks, B. M., Patrick, C. J., Iacono, W. G., & McGue, M. (2011). Development and validation of the Minnesota borderline personality disorder scale. *Assessment*, *18*(2), 234–52. doi:10.1177/1073191111398320.
- Bornovalova, M. A., Levy, R., Gratz, K. L., & Lejuez, C. W. (2010). Understanding the heterogeneity of BPD symptoms through latent class analysis: Initial results and clinical correlates among inner-city substance users. *Psychological Assessment*, *22*(2), 233–45. doi:10.1037/a0018493.

- Bornovalova, M. A., Tull, M. T., Gratz, K. L., Levy, R., & Lejuez, C. W. (2011). Extending models of deliberate self-harm and suicide attempts to substance users: Exploring the roles of childhood abuse, posttraumatic stress, and difficulties controlling impulsive behavior when distressed. *Psychological Trauma: Theory, Research, Practice, and Policy*, 3(4), 349–359. doi:10.1037/a0021579.
- Brausch, A. M., & Gutierrez, P. M. (2010). Differences in non-suicidal self-injury and suicide attempts in adolescents. *Journal of Youth and Adolescence*, 39(3), 233–42. doi:10.1007/s10964-009-9482-0.
- Brunner, R., Parzer, P., Haffner, J., Steen, R., Roos, J., Klett, M., & Resch, F. (2007). Prevalence and psychological correlates of occasional and repetitive deliberate self-harm in adolescents. *Archives of Pediatric and Adolescent Medicine*, 161(7), 641–649.
- Chanen, A. M., Jovev, M., Djaja, D., McDougall, E., Yuen, H. P., Rawlings, D., & Jackson, H. J. (2008). Screening for borderline personality disorder in outpatient youth. *Journal of Personality Disorders*, 22(4), 353–364. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/18684049>.
- Chapman, A. L., & Dixon-Gordon, K. L. (2007). Emotional antecedents and consequences of deliberate self-harm and suicide attempts. *Suicide & Life-Threatening Behavior*, 37(5), 543–52. doi:10.1521/suli.2007.37.5.543.
- Chapman, A. L., Gratz, K. L., & Brown, M. Z. (2006). Solving the puzzle of deliberate self-harm: The experiential avoidance model. *Behaviour Research and Therapy*, 44(3), 371–94. doi:10.1016/j.brat.2005.03.005.

- Chapman, A. L., Specht, M. W., & Cellucci, T. (2005). Borderline Personality Disorder and deliberate self-harm: Does experiential avoidance play a role? *Suicide and Life-Threatening Behavior*, *35*(4), 388–399.
- Cloutier, P., Martin, J., Kennedy, A., Nixon, M. K., & Muehlenkamp, J. J. (2010). Characteristics and co-occurrence of adolescent non-suicidal self-injury and suicidal behaviours in pediatric emergency crisis services. *Journal of Youth and Adolescence*, *39*(3), 259–69. doi:10.1007/s10964-009-9465-1.
- Corr, P. J. (2004). Reinforcement sensitivity theory and personality. *Neuroscience and Biobehavioral Reviews*, *28*(3), 317–32. doi:10.1016/j.neubiorev.2004.01.005.
- Davis, T. S. (2012, June). *How emotions turn into violence: An integrative model of emotional dysfunction in self-injurious behavior*. Paper or poster session presented at the 7th Annual Meeting of the International Society for the Study of Self-injury, Chapel Hill, NC.
- Dixon-Gordon, K. L., Chapman, A. L., Lovasz, N., & Walters, K. (2011). Too upset to think: The interplay of borderline personality features, negative emotions, and social problem solving in the laboratory. *Personality Disorders: Theory, Research, and Treatment*, *2*(4), 243–260. doi:10.1037/a0021799.
- Dubo, E. D., Zanarini, M. C., Lewis, R. E., & Williams, A. A. (1997). Childhood antecedents of self-destructiveness in borderline personality disorder. *The Canadian Journal of Psychiatry*, *42*(February), 63–68.

- Esposito-Smythers, C., Goldstein, T., Birmaher, B., Goldstein, B., Hunt, J., Ryan, N., ... Keller, M. (2010). Clinical and psychosocial correlates of non-suicidal self-injury within a sample of children and adolescents with bipolar disorder. *Journal of Affective Disorders, 125*(1-3), 89–97. doi:10.1016/j.jad.2009.12.029.
- Evans, E., Hawton, K., & Rodham, K. (2005). Suicidal phenomena and abuse in adolescents: a review of epidemiological studies. *Child Abuse & Neglect, 29*(1), 45–58. doi:10.1016/j.chiabu.2004.06.014.
- Evans, E., Hawton, K., Rodham, K., Psychol, C., & Deeks, J. (2005). The prevalence of suicidal phenomena in adolescents: A systematic review of population-based studies. *Suicide and Life-Threatening Behavior, 35*(June), 239–250.
- Farmer, R. F., & Goldberg, L. R. (2008). A psychometric evaluation of the revised Temperament and Character Inventory (TCI-R) and the TCI-140. *Psychological Assessment, 20*(3), 281–91. doi:10.1037/a0012934.
- Favazza, A. R. (1996). *Bodies Under Siege: Self-mutilation and Body Modification in Culture and Psychiatry* (2nd ed.). Baltimore, MD: The Johns Hopkins University.
- Favazza, A. R. (1998). The Coming of Age of Self-mutilation. *The Journal of Nervous and Mental Disease, 186*(5), 259–268.
- Franklin, J. C., Hessel, E. T., Aaron, R. V., Arthur, M. S., Heilbron, N., & Prinstein, M. J. (2010). The functions of nonsuicidal self-injury: Support for cognitive-affective regulation and opponent processes from a novel psychophysiological paradigm. *Journal of Abnormal Psychology, 119*(4), 850–62. doi:10.1037/a0020896.

- Glenn, C. R., Blumenthal, T. D., Klonsky, E. D., & Hajcak, G. (2011). Emotional reactivity in nonsuicidal self-injury: Divergence between self-report and startle measures. *International Journal of Psychophysiology*, *80*(2), 166–70. doi:10.1016/j.ijpsycho.2011.02.016.
- Glenn, C. R., & Klonsky, E. D. (2009). Social context during non-suicidal self-injury indicates suicide risk. *Personality and Individual Differences*, *46*(1), 25–29. doi:10.1016/j.paid.2008.08.020.
- Glenn, C. R., & Klonsky, E. D. (2010). A multimethod analysis of impulsivity in nonsuicidal self-injury. *Personality Disorders: Theory, Research, and Treatment*, *1*(1), 67–75. doi:10.1037/a0017427.
- Glenn, C. R., & Klonsky, E. D. (2011). One-year test-retest reliability of the Inventory of Statements about Self-Injury (ISAS). *Assessment*, *18*(3), 375–378. doi:10.1177/1073191111411669.
- Goschke, T., & Kuhl, J. J. (1993). Representation of intentions: Persisting activation in memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*(5), 1211–1226. doi:10.1037//0278-7393.19.5.1211.
- Gratz, K. L. (2001). Measurement of deliberate self-harm: Preliminary data on the deliberate self-harm inventory. *Journal of Psychopathology and Behavioral Assessment*, *23*(4).
- Gratz, K. L. (2003). Risk factors for and functions of deliberate self-harm: An empirical and conceptual review. *Clinical Psychology Science and Practice*, *10*(2), 192–205. doi:10.1093/clipsy/bpg022.

- Gratz, K. L., & Chapman, A. L. (2007). The role of emotional responding and childhood maltreatment in the development and maintenance of deliberate self-harm among male undergraduates. *Psychology of Men & Masculinity*, 8(1), 1–14.
doi:10.1037/1524-9220.8.1.1.
- Gratz, K. L., Paulson, A., Tull, M. T., & Jakupack, M. (2009). Exploring the relationship between childhood maltreatment and intimate partner abuse: Gender differences in the mediating role of emotion dysregulation. *Violence and Victims*, 24(1), 68–82.
doi:10.1891/0886-6708.24.1.68.
- Gratz, K. L., Latzman, R. D., Young, J., Heiden, L. J., Damon, J., Hight, T., & Tull, M. T. (2012). Deliberate Self-harm Among Underserved Adolescents: The Moderating Roles of Gender, Race, and School-level and Association with Borderline Personality Features. *Personality Disorders: Theory, Research, and Treatment*, 3(1), 39–54. doi:10.1037/a0022107.
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41–54. doi:10.1023/B:JOBA.0000007455.08539.94.
- Gratz, K. L., & Roemer, L. (2008). The relationship between emotion dysregulation and deliberate self-harm among female undergraduate students at an urban commuter university. *Cognitive Behaviour Therapy*, 37(1), 14–25.
doi:10.1080/16506070701819524.

- Gratz, K. L., Rosenthal, M. Z., Tull, M. T., Lejuez, C. W., & Gunderson, J. G. (2006). An experimental investigation of emotion dysregulation in borderline personality disorder. *Journal of Abnormal Psychology, 115*(4), 850–5. doi:10.1037/0021-843X.115.4.850.
- Gratz, K. L., Rosenthal, M. Z., Tull, M. T., Lejuez, C. W., & Gunderson, J. G. (2009). An experimental investigation of emotion dysregulation in borderline personality disorder. *Personality Disorders: Theory, Research, and Treatment, 5*(1), 18–26. doi:10.1037/1949-2715.S.1.18.
- Gratz, K., Chapman, A., Walsh, B. (2009). *Freedom from Selfharm: Overcoming Self-Injury with Skills from DBT and Other Treatments*. Oakland, CA: New Harbinger.
- Heath, N. L., Ross, S., Toste, J. R., Charlebois, A., & Nedecheva, T. (2009). Retrospective analysis of social factors and nonsuicidal self-injury among young adults. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement, 41*(3), 180–186. doi:10.1037/a0015732.
- Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin, 110*(1), 86–108. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/1891520>.
- Heckhausen, J., & Dweck, C. S. (1998). Introduction: A developmental and process-orientated approach to motivation and self-regulation. In J. Heckhausen & C. S. Dweck (Eds.), *Motivation and Self-regulation Across the Life Span* (pp. 1–11). New York, NY: Cambridge University.

- Hilt, L. M., Cha, C. B., & Nolen-Hoeksema, S. (2008). Nonsuicidal self-injury in young adolescent girls: moderators of the distress-function relationship. *Journal of Consulting and Clinical Psychology, 76*(1), 63–71. doi:10.1037/0022-006X.76.1.63.
- Hoyle, R. H. (2011). *Structural Equation Modeling for Social and Personality Psychology*. Thousand Oaks, CA: Sage.
- Iverson, K. M., Follette, V. M., Pistorello, J., & Fruzzetti, A. E. (2012). An investigation of experiential avoidance, emotion dysregulation, and distress tolerance in young adult outpatients with borderline personality disorder symptoms. *Personality Disorders, 3*(4), 415–22. doi:10.1037/a0023703.
- Jakupcak, M., Salters, K., Gratz, K. L., & Roemer, L. (2003). Masculinity and emotionality: An investigation of men's primary and secondary emotional responding. *Health Care, 49*(August).
- Janis, I. B., & Nock, M. K. (2008). Behavioral Forecasts Do Not Improve the Prediction of Future Behavior : A Prospective Study of Self-Injury. *Journal of Clinical Psychology, 64*(10), 1–11. doi:10.1002/jclp.
- Jernberg, A. M., & Booth, P. B. (2001). *Theraplay: Helping Parents and Children Build Better Relationships Through Attachment-Based Play* (2nd ed.). San Francisco, CA: Jossey-Bass Publishers.
- Jeter, A. M., Smith, N. B., & Meuret, A. E. (2012, June). *Experiential avoidance mediates the relationship between abuse and nonsuicidal self-injury*. Paper or poster session presented at the 7th Annual Meeting of the International Society for the Study of Self-injury, Chapel Hill, NC.

- Kendler, K., Kupfer, D., Narrow, W., Phillips, K., & Fawcett, J. (2009). *Guidelines for Making Changes to the DSM-V*.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford.
- Klonsky, E. D. (2007). The functions of deliberate self-injury: A review of the evidence. *Clinical Psychology Review, 27*(2), 226–39. doi:10.1016/j.cpr.2006.08.002.
- Klonsky, E. D. (2011). Non-suicidal self-injury in United States adults: Prevalence, sociodemographics, topography and functions. *Psychological Medicine, 41*(9), 1981–6. doi:10.1017/S0033291710002497.
- Klonsky, E. D., & Glenn, C. R. (2009). Assessing the functions of non-suicidal self-injury: Psychometric properties of the inventory of statements about self-injury (ISAS). *Journal of Psychopathology and Behavioral Assessment, 31*(3), 215–219. doi:10.1007/s10862-008-9107-z.
- Klonsky, E. D., & Moyer, A. (2008). Childhood sexual abuse and non-suicidal self-injury: Meta-analysis. *The British Journal of Psychiatry, 192*(3), 166–70. doi:10.1192/bjp.bp.106.030650.
- Klonsky, E. D., Muehlenkamp, J. J., Lewis, S. P., & Walsh, B. (2011). *Nonsuicidal self-injury*. Cambridge, MA: Hogrefe.
- Klonsky, E. D., & Olin, T. M. (2008). Identifying clinically distinct subgroups of self-injurers among young adults: A latent class analysis. *Journal of Consulting and Clinical Psychology, 76*(1), 22–7. doi:10.1037/0022-006X.76.1.22.

- Koole, S. L., & Fockenberg, D. A. (2011). Implicit emotion regulation under demanding conditions: the moderating role of action versus state orientation. *Cognition Emotion*, 25(3), 440–452. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/21432685>.
- Koole, S. L., Kuhl, J. J., Jostmann, N. B., & Finkenauer, C. (2006). Self-regulation in interpersonal relationships: the case of action versus State Orientation. In *Self and relationships: Connecting intrapersonal and interpersonal processes*. (pp. 360–383). New York, NY: Guilford. Retrieved from <http://search.proquest.com/docview/621152269?accountid=14522>.
- Kuhl, J. J. (1994). Action versus State Orientation: Psychometric properties of the Action Control Scale (ACS-90). In *Volition and personality: Action and State Orientation* (pp. 47–58). Seattle, WA: Hogrefe & Huber.
- Kuhl, J. J. (2000a). A theory of self-development: Affective fixation and the STAR model of personality disorders and related styles. In J. Heckhausen (Ed.), *Motivational Psychology of Human Development* (pp. 187–211). New York, NY: Cambridge University.
- Kuhl, J. J. (2000b). The volitional basis of personality systems interaction theory: Applications in learning and treatment contexts. In M. Boekaerts, M., Pintrick, P.R., & Zeidner (Eds.), *Handbook of Self-Regulation* 2nd ed., Vol. 33, pp. 111–169). San Diego, CA: Academic. doi:<http://dx.doi.org/10.1016/B978-012109890-2/50034-2>.

- Kuhl, J. J. (2001). A functional approach to motivation: The role of goal-enactment and self-regulation in current research on approach and avoidance. In *Trends and prospects in motivation research*. (pp. 239–268). Dordrecht, Netherlands: Kluwer Academic Publishers, Dordrecht. Retrieved from <http://search.proquest.com/docview/621497214?accountid=14522>.
- Kuhl, J. J. (2011). Adaptive and maladaptive pathways of self-development: Mental health and interactions among personality systems. *Psychologia Rozwojowa*, 16(4), 9–31.
- Kuhl, J. J., & Baumann, N. (2000). Self-regulation and rumination: Negative affect and impaired self-accessibility. In *Control of Human Behavior, Mental Processes, and Consciousness: Essays in honor of the 60th birthday of August Flammer*. (pp. 283–305). Mahwah, NJ: Lawrence Erlbaum. Retrieved from <http://search.proquest.com/docview/619494462?accountid=14522>.
- Kuhl, J. J., & Fuhrmann, A. (1998). Decomposing self-regulation and self-control: The Volitional Components Inventory. In *Motivation and Self-regulation Across the Life Span* (pp. 15–49). New York, NY: Cambridge University.
doi:10.1017/CBO9780511527869.003.
- Kuhl, J. J., Kazén, M., & Koole, S. L. (2006). Putting self-regulation theory into practice: A user's manual. *Applied Psychology: An International Review*, 55(3), 408–418.
doi:10.1111/j.1464-0597.2006.00260.x.

- Kuhl, J. J., & Koole, S. L. (2008). *The functional architecture of approach and avoidance motivation. Handbook of approach and avoidance motivation.* (pp. 535–553). New York, NY: Psychology. Retrieved from <http://search.proquest.com/docview/622103692?accountid=14522>.
- Latimer, S., Meade, T., & Tennant, A. (2013). Measuring engagement in deliberate self-harm behaviours: Psychometric evaluation of six scales. *BioMed Central Psychiatry, 13*(1), 4. doi:10.1186/1471-244X-13-4.
- Laye-Gindhu, A., & Schonert-Reichl, K. A. (2005). Nonsuicidal self-harm among community adolescents: Understanding the “whats” and “whys” of self-harm. *Journal of Youth and Adolescence, 34*(5), 447–457. doi:10.1007/s10964-005-7262-z.
- LeBoeuf-Davis, D. A., & Mitchell, D. R. (2012). Predicting self-harm with NEO-PI-R facets. *Counseling and Wellness: A Professional Counseling Journal, 3*, 30–56.
- LeDoux, J. E. (1995). Emotion: Clues from the brain. *Annual Review of Psychology, 46*, 209–235. doi:10.1146/annurev.ps.46.020195.001233.
- Leible, T. L., & Snell Jr., W. E. (2004). Borderline personality disorder and multiple aspects of emotional intelligence. *Personality and Individual Differences, 37*, 393–404. doi:10.1016/j.paid.2003.09.011.
- Linehan, M. M. (1993). *Cognitive-Behavioral Treatment of Borderline Personality Disorder.* New York, NY: The Guilford.
- Lloyd-Richardson, E. E., Perrine, N., Dierker, L., & Kelley, M. L. (2007). Characteristics and functions of non-suicidal self-injury in a community sample of adolescents. *Psychological Medicine, 37*(8), 1183–92. doi:10.1017/S003329170700027X.

- Luyten, P., & Blatt, S. J. (2013). Interpersonal relatedness and self-definition in normal and disrupted personality development. *American Psychologist, 68*(3), 172–183. doi:10.1037/a0032243.
- Lynam, D. R., Miller, J. D., Miller, D. J., Bornovalova, M. A., & Lejuez, C. W. (2011). Testing the relations between impulsivity-related traits, suicidality, and nonsuicidal self-injury: A test of the incremental validity of the UPPS model. *Personality Disorders, 2*(2), 151–160. doi:10.1037/a0019978.
- MacKinnon, D. P. (2011). Integrating mediators and moderators in research design. *Research on Social Work Practice, 21*(6), 675–681. doi:10.1177/1049731511414148.
- McAdams, D. P. (2006). *The Person: A new introduction to personality psychology* (4th ed.). Hoboken, NJ: John Wiley & Sons.
- Melvin, C., Weinstock, L., Andover, M., Spirito, A., & Yen, S. (2012, June). *Self-mutilation: Demographic and Clinical Characteristics in a High-risk Inpatient Adolescent Sample*. Paper or poster presented at the 7th Annual Meeting of the International Society for the Study of Self-injury. Chapel Hill, NC.
- Mennin, D. S., Holaway, R. M., Fresco, D. M., Moore, M. T., & Heimberg, R. G. (2007). Delineating components of emotion and its dysregulation in anxiety and mood psychopathology. *Behavior Therapy, 38*, 284–302. Retrieved from www.elsevier.com/locate/bt.
- Miskey, H. M. (2012). Big five traits and perfectionism are risk factors for nonsuicidal cutting. *Psychology and Behavioral Sciences, 1*(1), 1–7. doi:10.11648/j.pbs.20120101.11.

- Muehlenkamp, J. J. (2005). Self-injurious behavior as a separate clinical syndrome. *American Journal of Orthopsychiatry*, 75(2), 324–333.
- Muehlenkamp, J. J., & Gutierrez, P. M. (2004). An investigation of differences between self-injurious behavior and suicide attempts in a sample of adolescents. *Suicide & Life-Threatening Behavior*, 34(1), 12–23. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15106884>.
- Muehlenkamp, J. J., Kerr, P. L., Bradley, A. R., & Adams Larsen, M. (2010). Abuse subtypes and nonsuicidal self-injury: Preliminary evidence of complex emotion regulation patterns. *The Journal of Nervous and Mental Disease*, 198(4), 258–63. doi:10.1097/NMD.0b013e3181d612ab.
- Najmi, S., Wegner, D. M., & Nock, M. K. (2007). Thought suppression and self-injurious thoughts and behaviors. *Behaviour Research and Therapy*, 45(8), 1957–65. doi:10.1016/j.brat.2006.09.014.
- Nock, M. K., & Banaji, M. R. (2007). Prediction of suicide ideation and attempts among adolescents using a brief performance-based test. *Journal of Consulting and Clinical Psychology*, 75(5), 707–15. doi:10.1037/0022-006X.75.5.707.
- Nock, M. K., & Favazza, A. R. (2009). Nonsuicidal Self-injury: Definition and classification. In M. K. Nock (Eds.), *Understanding Nonsuicidal Self-injury: Origins, Assessment, and Treatment* (1st ed., pp. 9–18). Washington, DC: American Psychological Association. Retrieved from www.apa.org.

- Nock, M. K., Holmberg, E. B., Photos, V. I., & Michel, B. D. (2007). Self-injurious thoughts and behaviors interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment, 19*(3), 309–17. doi:10.1037/1040-3590.19.3.309.
- Nock, M. K., Joiner, T. E., Gordon, K. H., Lloyd-Richardson, E. E., & Prinstein, M. J. (2006). Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. *Psychiatry Research, 144*(1), 65–72. doi:10.1016/j.psychres.2006.05.010.
- Nock, M. K., & Mendes, W. B. (2008). Physiological arousal, distress tolerance, and social problem-solving deficits among adolescent self-injurers. *Journal of Consulting and Clinical Psychology, 76*(1), 28–38. doi:10.1037/0022-006X.76.1.28.
- Nock, M. K., & Prinstein, M. J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology, 72*(5), 885–90. doi:10.1037/0022-006X.72.5.885.
- Nock, M. K., & Prinstein, M. J. (2005). Contextual features and behavioral functions of self-mutilation among adolescents. *Journal of Abnormal Psychology, 114*(1), 140–6. doi:10.1037/0021-843X.114.1.140.
- Nock, M. K., Prinstein, M. J., & Sterba, S. K. (2009). Revealing the form and function of self-injurious thoughts and behaviors: A real-time ecological assessment study among adolescents and young adults. *Journal of Abnormal Psychology, 118*(4), 816–27. doi:10.1037/a0016948.
- Pedhazur, E. J. (1982). *Multiple Regression in Behavioral Research* (2nd ed.). New York, NY: CBS College.

- Quirin, M., Kaze, M., Kuhl, J., & Kazén, M. (2009). When nonsense sounds happy or helpless: The Implicit Positive and Negative Affect Test (IPANAT). *Journal of Personality and Social Psychology*, *97*(3), 500–516. doi:10.1037/a0016063.
- Robertson, C. D., Miskey, H. M., Mitchell, J. T., & Nelson-Gray, R. R. O. (2012). Variety of self-injury: Is the number of different methods of nonsuicidal self-injury related to personaity, psychopathology, or functions of self-injury? *Archives of Suicide Research*, *17*, pp. 33–40). Chapel Hill, NC. doi:10.1080/13811118.2013.748410.
- Ross, S., & Heath, N. (2002). A Study of the Frequency of Self-Mutilation in a Community Sample of Adolescents, *31*(1), 67–77.
- Sansone, R. A., Wiederman, M. W., Sansone, L. A., & Monteith, D. (2000). Patterns of self-harm behavior among women with borderline personality symptomatology: Psychiatric versus primary care samples. *General Hospital Psychiatry*, *22*, 174–178.
- Schuppert, H. M., Giesen-bloo, J., van Gemert, T. G., Wiersema, H. M., Minderaa, R. B., Emmelkamp, P. M. G., & Nauta, M. H. (2009). Effectiveness of an emotion regulation group training for adolescents — A randomized controlled pilot study. *Clinical Psychology*, *478*(July), 467–478. doi:10.1002/cpp.
- Selby, E. A., Anestis, M. D., Bender, T. W., & Joiner, T. E. (2009). An exploration of the emotional cascade model in borderline personality disorder. *Journal of Abnormal Psychology*, *118*(2), 375–87. doi:10.1037/a0015711.
- Selby, E. A., Bender, T. W., Gordon, K. H., Nock, M. K., & Joiner, T. E. (2012). Non-suicidal self-injury (NSSI) disorder: A preliminary study. *Personality Disorders*, *3*(2), 167–75. doi:10.1037/a0024405.

- Selby, E. A., Bulik, C. M., Thornton, L., Brandt, H. A., Crawford, S., Fichter, M. M., Halma, K.A., Jacoby, G.E., Johnson, C.L., Jones, I., Kaplan, A.S., Mitchell, J.E., Nutzinger, D.O., Strober, M., Treasure, J., Woodside, D.B., Kaye, W.H., Joiner, T. E. (2010). Refining behavioral dysregulation in Borderline Personality Disorder using a sample of women with anorexia nervosa. *Personality Disorders: Theory, Research, and Treatment, 1*(4), 250–257. doi:10.1037/a0019313.
- Selby, E. A., & Joiner, T. E. (2009). Cascades of emotion: The emergence of Borderline Personality Disorder from emotional and behavioral dysregulation. *Review of General Psychology, 13*(3), 219–229. doi:10.1037/a0015687.
- Shaffer, D., & Jacobson, C. (2010). *Proposal to the DSM-V childhood disorder and mood disorder work groups to include non-suicidal self-injury (NSSI) as a DSM-V disorder.*
- Smith, G., Cox, D., & Saradjian, J. (1999). *Women and Self-Harm; Understanding, Coping, and Healing from Self-Mutilation.* New York, NY: Routledge.
- Steiger, J. . (1990). Structural model evaluation and modification. *Multivariate Behavioral Research, 25*, 214–312.
- Todd, E., & Abwender, D. (2012). *Reduced Pain Response Predicts Non-suicidal Self Injury.* Paper or poster presented at the 7th Annual Meeting of the International Society for the Study of Self-injury, Chapel Hill, NC.
- Tull, M. T., Gratz, K. L., Latzman, R. D., Kimbrel, N. A., & Lejuez, C. W. (2010). Reinforcement sensitivity theory and emotion regulation difficulties: A multimodal investigation. *Personality and Individual Differences, 49*(8), 989–994. doi:10.1016/j.paid.2010.08.010.

- Tull, M. T., Jakupcak, M., Paulson, A., & Gratz, K. L. (2007). The role of emotional inexpressivity and experiential avoidance in the relationship between posttraumatic stress disorder symptom severity and aggressive behavior among men exposed to interpersonal violence. *Anxiety, Stress, and Coping, 20*(4), 337–51. doi:10.1080/10615800701379249.
- Turner, B. J., Layden, B. K., & Chapman, A. L. (2012). *The unique role of experiential avoidance in predicting non-suicidal self-injury outcomes over six months*. Paper or poster session presented at the 7th Annual Meeting of the International Society for the Study of Self-injury. Chapel Hill, NC.
- Vasilev, C. A., Crowell, S. E., Beauchaine, T. P., Mead, H. K., & Gatzke-Kopp, L. M. (2009). Correspondence between physiological and self-report measures of emotion dysregulation: A longitudinal investigation of youth with and without psychopathology. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 50*(11), 1357–64. doi:10.1111/j.1469-7610.2009.02172.x.
- Weierich, M. R., & Nock, M. K. (2008). Posttraumatic stress symptoms mediate the relation between childhood sexual abuse and nonsuicidal self-injury. *Journal of Consulting and Clinical Psychology, 76*(1), 39–44. doi:10.1037/0022-006X.76.1.39.
- Weinberg, A., & Klonsky, E. D. (2009). Measurement of emotion dysregulation in adolescents. *Psychological Assessment, 21*(4), 616–21. doi:10.1037/a0016669.
- Whitlock, J., Eckenrode, J., & Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics, 117*(6), 1939–48. doi:10.1542/peds.2005-2543.

Zanarini, M. C., Vujanovic, A. A., Parachini, E. A., Boulanger, J. L., Frankenburg, F. R., & Hennen, J. (2003). Screening of psychiatric outpatients for borderline personality disorder with the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD). *Nordic Journal of Psychiatry*, *17*(6), 475–479. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/14744082>.

Zlotnick, C., Shea, M. T., Recupero, P., Bidadi, K., Pearlstein, T., & Brown, P. (1997). Self-mutilation among substance abuse patients. *American Journal of Orthopsychiatry*, *67*(4), 650–654.

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

1. How old are you? _____

2. What is your gender?

Female Male Other (please specify)

4. Do you consider yourself to be heterosexual, homosexual, bisexual, asexual, pansexual, or something else?

Heterosexual Homosexual Bisexual

Asexual Pansexual Something else (please specify)

5. Please indicate your highest level of education completed.

Grammar School High School or equivalent Vocational/Technical School

(2 year) Some College College Graduate (4 year) Master's Degree (MS)

Doctoral Degree (PhD) Professional Degree (MD, JD, etc.) Other (please specify)

6. Please indicate your current household income in U.S. dollars

Rather not say

< \$10,000 \$10,000 - \$19,999 \$20,000 - \$29,999

\$30,000 - \$39,999 \$40,000 - \$49,999 \$50,000 - \$74,999

\$75,000 - \$99,999 \$100,000 - \$150,000 > \$150,000

7. Do you consider yourself Christian, Jewish, Buddhist, Muslim, Hindu, a follower of some other religion, or not religious?

Christian Jewish Buddhist Muslim Hindu

Not religious Other (please specify)

8. How did you learn about the study? _____

APPENDIX B

HAKEMP-24 (ACTION CONTROL SCALE - ACS)

HAKEMP-24 (Action Control Scale: ACS)

Identification #: _____

Date: _____

Age: _____ years

Sex: [] f [] m

The following questions have two different answers. Please choose the alternative (A or B) that applies best to you.

1. When I have lost something valuable and can't find it anywhere:
 - () A) I have a hard time concentrating on anything else.
 - () B) I don't dwell on it.

2. When I know I must finish something soon:
 - () A) I have to push myself to get started.
 - () B) I find it easy to get it done and over with.

3. When I've worked for weeks on one project and then everything goes completely wrong:
 - () A) It takes me a long time to get over it.
 - () B) It bothers me for a while, but then I don't think about it anymore.

4. When I don't have anything in particular to do and I am getting bored:
 - () A) I have trouble getting up enough energy to do anything at all.
 - () B) I quickly find something to do.

5. When I'm in a competition and lose every time:
 - () A) I can soon put losing out of my mind.
 - () B) The thought that I lost keeps running through my mind.

6. When I am getting ready to tackle a difficult problem:
 - () A) It feels like I am facing a big mountain that I don't think I can climb.
 - () B) I look for a way that the problem can be approached in a suitable manner.

7. If I had just bought a new piece of equipment (for example, a laptop) and it accidentally fell on the floor and was damaged beyond repair:
- A) I would get over it quickly.
 - B) It would take me a while to get over it.
8. When I have to solve a difficult problem:
- A) I usually get on it right away.
 - B) Other things go through my mind before I can get down to working on the problem.
9. When I have to talk to someone about something important and, repeatedly, can't find her/him at home:
- A) I can't stop thinking about it, even while I'm doing something else.
 - B) I easily forget about it until I can see the person again.
10. When I have to make up my mind about what I am going to do when I get some unexpected free time:
- A) It takes me a while to decide what I should do.
 - B) I can usually decide on something to do without having to think it over very much.
11. When I've bought a lot of stuff at a store and realize when I get home that I paid too much - but I can't get my money back:
- A) I can't concentrate on anything else.
 - B) I easily forget about it.
12. When I have work to do at home:
- A) It is often hard for me to get started.
 - B) I usually get started right away.
13. When I am told that my work has been completely unsatisfactory:
- A) I don't let it bother me for too long.
 - B) I feel paralyzed.
14. When I have a lot of important things to do:
- A) I often don't know where to begin.
 - B) I find it easy to make a plan and stick with it.

15. When I'm stuck in traffic and miss an important appointment:
() A) At first, it's difficult for me to start doing anything else at all.
() B) I quickly forget about it and focus on something else.
16. When there are two things that I really want to do, but I can't do both of them:
A) I quickly begin one thing and forget about the other.
B) It's not easy for me to put the thing that I couldn't do out of my mind.
17. When something is very important to me, but I can't seem to get it right:
() A) I gradually lose heart.
() B) I just forget about it and go do something else.
18. When I have to carry out an important but unpleasant task:
() A) I do it and get it over with.
() B) It can take a while before I can bring myself to do it.
19. When something really gets me down:
() A) I have trouble doing anything at all.
() B) I find it easy to distract myself by doing other things.
20. When I am facing a big project that has to be done:
() A) I often spend too long thinking about where I should begin.
() B) I don't have any problems getting started.
21. When several things go wrong on the same day:
() A) I don't know how to deal with it.
() B) I just keep on going as though nothing had happened.
22. When I have a boring assignment:
() A) I usually don't have any problem getting through it.
() B) I sometimes just can't get moving on it.
23. When I have put all my effort into doing a really good job on something and the whole thing doesn't work out:
() A) I don't have too much difficulty starting something else.
() B) I have trouble doing anything else at all.

24. When I have an obligation to do something that is boring and uninteresting:
- () A) I do it and get it over with.
 - () B) It usually takes a while before I get around to doing it.

Action Control Scale (ACS-24)
(English version of the German HAKEMP-24)

Julius Kuhl, University of Osnabrück,
Seminarstraße 20, 49074 Osnabrück
Unit of "Differentielle Psychologie and Persönlichkeitsforschung"

The action control scale consists of three subscales:

1. Action orientation subsequent to failure vs. preoccupation (AOF)
2. Prospective and decision-related action orientation vs. hesitation (AOD)

Each scale consists of 12 items, which describe a particular situation. Each item has two alternative answers (A or B), one of which is indicative of action orientation and the other of state orientation.

For scoring the test values, using the action-oriented answers is recommended. The sum of the action-oriented answers for each scale is between 0 and 12.

The items are numbered from 1-24. Which items belong to which scale, and which choice alternative is indicative of *action orientation*, can be found in the following key:

1. Failure-related action orientation vs. preoccupation (AOF)

1B, 3B, 5A, 7A, 9B, 11B, 13A, 15B, 17B, 19B, 21B, 23A

2. Decision-related action orientation vs. hesitation (AOD)

2B, 4B, 6B, 8A, 10B, 12B, 14B, 16A, 18A, 20B, 22A, 24A

When scoring the questionnaire, the two scales should be scored separately, since each scale deals with a different behavioral aspect of action orientation. The scales AOF and AOD should always be administered together.

APPENDIX C

DIFFICULTIES IN EMOTION REGULATION SCALE (DERS)

Difficulties in Emotion Regulation Scale (DERS)

1: Nonacceptance of Emotional Responses (NONACCEPTANCE)

- 29) When I'm upset, I feel guilty for feeling that way.
- 25) When I'm upset, I feel ashamed with myself for feeling that way.
- 15) When I'm upset, I become embarrassed for feeling that way.
- 14) When I'm upset, I become angry with myself for feeling that way.
- 33) When I'm upset, I become irritated with myself for feeling that way.
- 27) When I'm upset, I feel like I am weak.

2: Difficulties Engaging in Goal-Directed Behavior (GOALS)

- 30) When I'm upset, I have difficulty concentrating.
- 22) When I'm upset, I have difficulty focusing on other things.
- 16) When I'm upset, I have difficulty getting work done.
- 38) When I'm upset, I have difficulty thinking about anything else.
- 24) When I'm upset, I can still get things done. (r)

3: Impulse Control Difficulties (IMPULSE)

- 37) When I'm upset, I lose control over my behaviors.
- 31) When I'm upset, I have difficulty controlling my behaviors.
- 17) When I'm upset, I become out of control.
- 23) When I'm upset, I feel out of control.
- 4) I experience my emotions as overwhelming and out of control.
- 28) When I'm upset, I feel like I can remain in control of my behaviors. (r)

4: Lack of Emotional Awareness (AWARENESS)

- 7) I am attentive to my feelings. (r)
- 3) I pay attention to how I feel. (r)
- 12) When I'm upset, I acknowledge my emotions. (r)
- 21) When I'm upset, I believe that my feelings are valid and important. (r)
- 9) I care about what I am feeling. (r)
- 39) When I'm upset, I take time to figure out what I'm really feeling. (r)

5: Limited Access to Emotion Regulation Strategies (STRATEGIES)

- 20) When I'm upset, I believe that I'll end up feeling very depressed.
- 19) When I'm upset, I believe that I will remain that way for a long time.
- 35) When I'm upset, I believe that wallowing in it is all I can do.
- 40) When I'm upset, it takes me a long time to feel better.
- 32) When I'm upset, I believe that there is nothing I can do to make myself feel better.
- 26) When I'm upset, I know that I can find a way to eventually feel better. (r)
- 41) When I'm upset, my emotions feel overwhelming.
- 34) When I'm upset, I start to feel very bad about myself.

6: Lack of Emotional Clarity (CLARITY)

- 6) I have difficulty making sense out of my feelings.
- 5) I have no idea how I am feeling.
- 10) I am confused about how I feel.

8) I know exactly how I am feeling. (r)

1) I am clear about my feelings. (r)

Note. (r) indicates reverse-scored item.

APPENDIX D

INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS)

**INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS)–
SECTION I. BEHAVIORS**

This questionnaire asks about a variety of self-harm behaviors. Please only endorse a behavior if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons).

1. Please estimate the number of times in your life you have intentionally (i.e., on purpose) performed each type of non-suicidal self-harm (e.g., 0, 10, 100, 500):

Cutting	_____	Severe Scratching	_____
Biting	_____	Banging or Hitting Self	_____
Burning	_____	Interfering w/ Wound Healing (e.g., picking scabs)	_____
Carving	_____	Rubbing Skin Against Rough Surface	_____
Pinching	_____	Sticking Self w/ Needles	_____
Pulling Hair	_____	Swallowing Dangerous Substances	_____
Other	_____, _____		

******* Important: If you have performed one or more of the behaviors listed above, please complete the final part of this questionnaire. If you have not performed any of the behaviors listed above, you are done with this particular questionnaire and should continue to the next.**

2. If you feel that you have a *main* form of self-harm, please circle the behavior(s) on the first page above that you consider to be your main form of self-harm.

3. At what age did you:

First harm yourself? _____ Most recently harm yourself? _____
(approximate date – month/date/year)

4. Do you experience physical pain during self-harm?

Please circle a choice: YES SOMETIMES NO

5. When you self-harm, are you alone?

Please circle a choice: YES SOMETIMES NO

6. Typically, how much time elapses from the time you have the urge to self-harm until you act on the urge?

Please circle a choice:

< 1 hour	1 - 3 hours	3 - 6 hours
6 - 12 hours	12 - 24 hours	> 1 day

7. Do/did you want to stop self-harming?

Please circle a choice: YES NO

**INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS) –
SECTION II. FUNCTIONS**

Name: _____

Date: _____

Instructions

This inventory was written to help us better understand the experience of non-suicidal self-harm. Below is a list of statements that may or may not be relevant to your experience of self-harm. Please identify the statements that are most relevant for you:

- Circle **0** if the statement **not relevant** for you at all
- Circle **1** if the statement is **somewhat relevant** for you
- Circle **2** if the statement is **very relevant** for you

“When I self-harm, I am ...

Response

1. ... calming myself down	0	1	2
2. ... creating a boundary between myself and others	0	1	2
3. ... punishing myself	0	1	2
4. ... giving myself a way to care for myself (by attending to the wound)	0	1	2
5. ... causing pain so I will stop feeling numb	0	1	2
6. ... avoiding the impulse to attempt suicide	0	1	2
7. ... doing something to generate excitement or exhilaration	0	1	2
8. ... bonding with peers	0	1	2
9. ... letting others know the extent of my emotional pain	0	1	2
10. ... seeing if I can stand the pain	0	1	2
11. ... creating a physical sign that I feel awful	0	1	2
12. ... getting back at someone	0	1	2
13. ... ensuring that I am self-sufficient	0	1	2
14. ... releasing emotional pressure that has built up inside of me	0	1	2
15. ... demonstrating that I am separate from other people	0	1	2
16. ... expressing anger towards myself for being worthless or stupid	0	1	2

“When I self-harm, I am ...

17. ... creating a physical injury that is easier to care for than my emotional distress	0	1	2
18. ... trying to feel something (as opposed to nothing) even if it is physical pain	0	1	2
19. ... responding to suicidal thoughts without actually attempting suicide	0	1	2
20. ... entertaining myself or others by doing something extreme	0	1	2
21. ... fitting in with others	0	1	2
22. ... seeking care or help from others	0	1	2
23. ... demonstrating I am tough or strong	0	1	2
24. ... proving to myself that my emotional pain is real	0	1	2
25. ... getting revenge against others	0	1	2
26. ... demonstrating that I do not need to rely on others for help	0	1	2
27. ... reducing anxiety, frustration, anger, or other overwhelming emotions	0	1	2
28. ... establishing a barrier between myself and others	0	1	2
29. ... reacting to feeling unhappy with myself or disgusted with myself	0	1	2
30. ... allowing myself to focus on treating the injury, which can be gratifying or satisfying	0	1	2
31. ... making sure I am still alive when I don't feel real	0	1	2
32. ... putting a stop to suicidal thoughts	0	1	2
33. ... pushing my limits in a manner akin to skydiving or other extreme activities	0	1	2
34. ... creating a sign of friendship or kinship with friends or loved ones	0	1	2
35. ... keeping a loved one from leaving or abandoning me	0	1	2
36. ... proving I can take the physical pain	0	1	2
37. ... signifying the emotional distress I'm experiencing	0	1	2
38. ... trying to hurt someone close to me	0	1	2
39. ... establishing that I am autonomous/independent	0	1	2

(Optional) In the space below, please list any statements that you feel would be more accurate for you than the ones listed above:

(Optional) In the space below, please list any statements you feel should be added to the above list, even if they do not necessarily apply to you:

ITEMS COMPRISING EACH OF 13 FUNCTIONS SCALES

Affect Regulation – 1, 14, 27

Interpersonal Boundaries – 2, 15, 28

Self-Punishment – 3, 16, 29

Self-Care – 4, 17, 30

Anti-Dissociation/Feeling-Generation – 5, 18, 31

Anti-Suicide – 6, 19, 32

Sensation-Seeking – 7, 20, 33

Peer-Bonding – 8, 21, 34

Interpersonal Influence – 9, 22, 35

Toughness – 10, 23, 36

Marking Distress – 11, 24, 37

Revenge – 12, 25, 38

Autonomy – 13, 26, 39

Scores for each of the 13 functions range from 0 to 6.

Psychometric properties of Section I (Behaviors) are reported in:

Klonsky, E.D. & Olino, T.M. (2008). Identifying clinically distinct subgroups of self-injurers among young adults: A latent class analysis. *Journal of Consulting and Clinical Psychology, 76*, 22-27.

Psychometric properties of Section II (Functions) are reported in:

Klonsky, E.D. & Glenn, C.G. (2009) Assessing the functions of non-suicidal self-injury: Psychometric properties of the Inventory of Statements About Self-injury (ISAS). *Journal of Psychopathology and Behavioral Assessment, 31*, 215-219.

APPENDIX E

**MCLEAN SCREENING INSTRUMENT FOR
BORDERLINE PERSONALITY DISORDER**

McLean Screening Instrument for Borderline Personality Disorder

1. Have any of your closest relationships been troubled by a lot of arguments or repeated breakups? 1 = yes 0 = no
2. Have you deliberately hurt yourself physically (e.g., punched yourself, cut yourself, burned yourself)? 1 = yes 0 = no
How about made a suicide attempt?
3. Have you had at least two other problems with impulsivity (e.g., eating binges and spending sprees, drinking too much and verbal outbursts)? 1 = yes 0 = no
4. Have you been extremely moody? 1 = yes 0 = no
5. Have you felt very angry a lot of the time? How about often acted in an angry or sarcastic manner? 1 = yes 0 = no
6. Have you often been distrustful of other people? 1 = yes 0 = no
7. Have you frequently felt unreal or as if things around you were unreal? 1 = yes 0 = no
8. Have you chronically felt empty? 1 = yes 0 = no
9. Have you often felt that you had no idea of who you are or that you have no identity? 1 = yes 0 = no
10. Have you made desperate efforts to avoid feeling abandoned or being abandoned (e.g., repeatedly called someone to reassure yourself that he or she still cared, begged them not to leave you, clung to them physically)? 1 = yes 0 = no

APPENDIX F

HUMAN USE COMMITTEE APPROVAL FORM



LOUISIANA TECH
UNIVERSITY

MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Mrs. Desiree' LeBoeuf-Davis and Dr. Donna Thomas
 FROM: Barbara Talbot, University Research
 SUBJECT: HUMAN USE COMMITTEE REVIEW
 DATE: December 16, 2013

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

“The Effects of State Orientation on Emotion and Behavior Regulation”

HUC 1162

The proposed study's revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on December 16, 2013 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond December 16, 2014.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Mary Livingston at 257-2292 or 257-5066.