Psychic Collapse and Traumatic Defense: How the Mind Mediates Trauma Living in the Body

Patricia Kim Yoon

10-2014

Follow this and additional works at: https://academicworks.cuny.edu/gc_etds

Part of the Behavioral Neurobiology Commons, and the Clinical Psychology Commons

Recommended Citation


https://academicworks.cuny.edu/gc_etds/398

This Dissertation is brought to you by CUNY Academic Works. It has been accepted for inclusion in All Dissertations, Theses, and Capstone Projects by an authorized administrator of CUNY Academic Works. For more information, please contact deposit@gc.cuny.edu.
PSYCHIC COLLAPSE AND TRAUMATIC DEFENSE: 
HOW THE MIND MEDIATES TRAUMA LIVING IN THE BODY

by

Patricia Kim Yoon

A dissertation submitted to the Graduate Faculty in Psychology 
in partial fulfillment of the requirements for the degree of Doctor of Philosophy 
The City University of New York

2014
This manuscript has been read and accepted by the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Date

Denise Hien, Ph.D.
Chair of Examining Committee

Date

Maureen O’Connor, Ph.D.
Executive Officer, Psychology

Supervisory Committee:

Steven Tuber, Ph.D.

Robert Melara, Ph.D.

Lesia Ruglass, Ph.D.

Eric Fertuck, Ph.D.

THE CITY UNIVERSITY OF NEW YORK
Abstract

PSYCHIC COLLAPSE AND TRAUMATIC DEFENSE:
HOW THE MIND MEDIATES TRAUMA LIVING IN THE BODY

by

Patricia Kim Yoon

Advisor: Denise Hien, Ph.D.

The aim of this exploratory study was to link psychoanalytic theories of trauma and its impact on the mind with psychobiological research of how trauma lives in the body. The study has expanded on prior research (Cramer, 2003) to evidence that defense mechanisms do in fact moderate the relationship between stress and physiological response, and that there are likely individual differences in physiological response to traumatic stress. This study goes further to identify the psychological concomitants of these individual differences within an adult population exposed to potentially traumatic events (PTEs), and their proclivity for using different defense mechanisms. Defense use was measured simultaneously with autonomic reactivity during a stress-response task for adults with no onset of PTEs ($n=14$), early onset of PTEs ($n=14$), and late onset of PTEs ($n=15$). Findings suggest that there may be distinct, dissociative-like processes that differentiate the use of Projection and Identification for individuals who endorse early onset of PTEs.

**Results:** Hierarchical regression analyses revealed that symptomatic adults who had been exposed to PTEs prior to age 14 (early onset), and who tended to use Projection as their main defense (over Denial and Identification), demonstrated significantly lower physiological arousal than adults with late onset of PTEs. Those with early onset PTEs that used Identification as their main defense, evidenced higher physiological arousal. These findings support the idea that
working with trauma populations warrants careful attention to patients’ often variable, subjective experiences of stress, their own active/passive coping strategies, as well as baseline physiological reactivity, as potentially impacted by early exposure to PTEs. Altogether, this study further evidenced the multi-determined nature of posttraumatic response. Early exposure to PTEs may recalibrate defense use and bodily stress response systems, and thus must be viewed within a developmental psychopathology framework.

*Keywords:* posttraumatic stress disorder, complex trauma, skin conductance, defense mechanisms, TAT, dissociation
Acknowledgements

I want to thank my advisor and dissertation chair, Denise Hien, for her enduring support and unwavering humanity through this long, transformative journey. I feel extraordinarily fortunate to have had her mentorship, wisdom and always grounding perspective while she provided constant inspiration as a guiding force from day one, and consistently through to the end. Her positive impact on my graduate career and identity as a psychologist is immeasurable. I want to thank Steve Tuber, whose unparalleled exuberance and rare gift for teaching crucially informed and inspired my own clinical passions. I am eternally grateful for his abiding faith and support, and for steadily nurturing the development of my own voice, and knowing that it’s precisely what I needed. I also want to thank my committee members and readers, Bob Melara, Lesia Ruglass, and Eric Fertuck, who contributed to rekindling and expanding my research interests; each in their own way modeling thoughtful, generative, exciting discussions that helped shape and challenge my thinking. It was an honor and pleasure to work alongside them. Not least, I want to thank my exceptional fellow colleagues in training – the collective talent, warmth, inspiration, solace, humor and unconditional respect that comprised the home base of learning, from which I know has made me a better, more well-adjusted clinician. A special thanks to Kahlila R. and Laurie S. for their thoughtful contributions and dedicated hours of reliability training with the DMM and especially to Santiago Papini, whose unwavering faith and inextinguishable curiosity for learning astounded me, all the while gifting me with invaluable and desperately needed statistical support. Finally, I want to thank my exceptional friends and family whose tireless support, patience, and love I most certainly could not have traveled this far without. My deepest gratitude to Ben, who waited out the long days, weathered the storms, and remained always willing to put his selfless, gigantic faith and love into this journey with me;
always challenging me to consider what I desired. I could not be standing here without him by my side. And to my parents, Kim Seung Ae and Yoon Dong Jin, who taught me a few things about working hard and how sweetly it can pay off. I dedicate this dissertation to them.
TABLE OF CONTENTS

List of Figures ............................................................................................................ x

List of Tables ............................................................................................................... xi

CHAPTER 1 : INTRODUCTION

Introduction .................................................................................................................. 1

Synopsis of Literature Review ..................................................................................... 2

CHAPTER 2 : REVIEW OF THE LITERATURE

Defining Trauma – A Brief History .............................................................................. 5

Psychoanalytic Theories of Trauma ........................................................................... 7

Defining Defenses – An Ego Psychology Perspective .............................................. 12

Contemporary Research on Defense Mechanisms .................................................. 16

Developmental Model of Defense, The DMM .......................................................... 19

Impact of Trauma ...................................................................................................... 22

Psychobiological Impact ........................................................................................... 23

On Cognition ................................................................................................................ 26

The Present Study: A Paradigm to Study Defense Use and Physiological Reactivity 27

Study Hypotheses ....................................................................................................... 30

CHAPTER 3: METHODS

Sample ......................................................................................................................... 33

Procedures .................................................................................................................. 34

Measures ..................................................................................................................... 34

Plan for Data Analysis ............................................................................................... 37
CHAPTER 4: RESULTS

Sample Characteristics  40
Hypothesis 1  52
Hyposthesis 2  55
Hypothesis 3  55
Post-Hoc Analysis  64

CHAPTER 5: DISCUSSION

Summary of Main Findings  67
High Projection Use and Low Arousal in Individuals with Early Onset of Potentially Traumatic Events  67
High Identification Use and High Arousal in Individuals with Early Onset of Potentially Traumatic Events  71
Dissociation Subscales and Defense Use  75
Case Studies  76
High Projection Users  77
High Identification Users  82
Clinical Implications of the Current Findings  88
Limitations and Directions for Future Research  89
Conclusion  92

APPENDICES

A : Diagnostic Criteria for DESNOS  94
B : Summary of Defense Mechanism Manual Scoring Categories  95

REFERENCES  96
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Group Comparisons of Defense Use on High vs. Low Arousal Cards</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>Interaction Effect between use of Projection and PTE onset predicting SCR rate</td>
<td>59</td>
</tr>
<tr>
<td>3</td>
<td>Interaction Effect between use of Identification and PTE onset predicting SCR rate</td>
<td>61</td>
</tr>
<tr>
<td>4</td>
<td>Physiological Profiles of Case Studies: High Projection &amp; High Identification Users with Early and Late Onset of PTEs</td>
<td>87</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Participant Demographics</td>
<td>41</td>
</tr>
<tr>
<td>2</td>
<td>Trauma Type and Symptom Severity between Trauma Onset Groups</td>
<td>42</td>
</tr>
<tr>
<td>3</td>
<td>Descriptive Statistics</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Defense Use of Entire Sample and across Trauma Onset Groups</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>Correlations between Defense Use across Sample</td>
<td>46</td>
</tr>
<tr>
<td>6</td>
<td>Comparison of Defense Use between Low Arousal and High Arousal Cards</td>
<td>47</td>
</tr>
<tr>
<td>7</td>
<td>Physiological characteristics of Entire Sample and by Onset of PTEs</td>
<td>48</td>
</tr>
<tr>
<td>8</td>
<td>Correlations between Skin Conductance Variables</td>
<td>49</td>
</tr>
<tr>
<td>9</td>
<td>Gender differences and Defense Use; Gender differences and Physiological Reactivity</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>Correlation Analysis between Age and IQ on Defense Use and Physiological Reactivity</td>
<td>51</td>
</tr>
<tr>
<td>11</td>
<td>Differences in Proportional Defense Use between groups for Low Anxiety vs. High Anxiety Cards</td>
<td>53</td>
</tr>
<tr>
<td>12</td>
<td>Hierarchical Multiple Regression Analysis Summary for Symptom Severity, Onset of PTE, Use of Projection, Predicting Physiological Arousal</td>
<td>57</td>
</tr>
<tr>
<td>13</td>
<td>Hierarchical Multiple Regression Analysis Summary for Symptom Severity, Onset of PTE, Use of Identification, Predicting Physiological Arousal</td>
<td>60</td>
</tr>
<tr>
<td>14</td>
<td>Hierarchical Multiple Regression Analysis Summary for Symptom Severity, Onset of PTE, Use of Denial, Predicting Physiological Arousal</td>
<td>63</td>
</tr>
<tr>
<td>15</td>
<td>Correlations between Defense Use, Skin Conductance and MDI Subscales</td>
<td>66</td>
</tr>
</tbody>
</table>
CHAPTER 1: INTRODUCTION

Introduction

It is well established that trauma has an overwhelming impact on the mind and body. Early psychoanalytic theories of trauma have laid down a bedrock of understanding of how the mind and psychic structure develops. Trauma has been a vital concept to understand through a psychoanalytic lens, as much as it has been at the genesis of fundamental psychoanalytic theory itself. Currently, psychoanalytic literature is inundated with compelling models explicating the etiology, complex sequelae and experiences of trauma. The concept itself has recaptured our popular attention with a kind of fury, due largely in part to the sociopolitical climate of our times. However, it has only been in the last 30 years that the clinical description of PTSD has emerged as a psychiatric category.

Despite the abundance of research on trauma, defining trauma has remained elusive. What makes a trauma, traumatic? Moreover, recent epidemiological studies (Breslau, 2009; Kessler et al., 2005; Brewin et al., 2000) show that PTSD is present in a significant minority of the populations studied following exposure to trauma. According to Lee & Young (2001), up to 93% of the general population report exposure to traumatic events, but only 5-12% develop PTSD. Certain types of trauma, pre-trauma vulnerability factors, as well as post-trauma environments, have been found to be important in determining whether someone develops PTSD after a traumatic event (Brewin et al., 2000). In the last decade, PTSD research has significantly expanded due to an avalanche of research by modeling from bio-behavioral science, cognitive psychology, and neuroscience. We can understand PTSD not only as an anxiety disorder from a psychological perspective, but as a physical illness that impacts the body, compromising multiple
systems including the immune, endocrine, and limbic systems. Qualitatively different from stress, we know that trauma results in long-lasting biological change (van der Kolk & Saporta, 1991).

Yet, there is still inadequate knowledge about the etiology and vulnerability factors of PTSD (Lee & Young, 2001). Moreover, the integration of research models has been limited. Few have empirically investigated trauma from a multi-disciplinary perspective. The current study is a response to this gap of integrated knowledge, about the mechanisms mediating the etiology of a traumatic response. Specifically, the study’s primary interest is to expand the phenomenology of psychic collapse that is so well documented in the psychoanalytic literature by connecting it with the rich psycho-biological evidence of how trauma impacts the body. As an attempt to explore the idea that trauma lives in the body and is mediated by the mind, this study will investigate this link empirically. It proposes to do so by examining the psychological variable of defense use with a physiological variable of autonomic reactivity, in a population of adults who have had exposure to potentially traumatic events.

This systematic integration of psychoanalytic theory with psychobiological models can help deepen our understanding of varied traumatic responses and appropriately consider how to expand and modify treatment approaches. A core assumption of this study is that understanding the unconscious meaning that an individual attaches to their trauma is an integral part of recovery. This can help unlock individuals from the grips of traumatic organization.

**Synopsis of Literature Review**

The relevant literature will be reviewed in the following section. To begin, a brief history of the concept of trauma will follow. A definition for the term trauma as it will be used in this study will be delineated. Next, an overview of the current diagnostic categories of PTSD and the
more discriminating features defining Complex Trauma or DESNOS (Disorders of Extreme Distress, Not Otherwise Specified) will be discussed. These diagnostic categories will help organize a discussion around some of the hallmark experiences of numbing, dissociation, hyperarousal and hypervigilance that is so central to a traumatic response. They will also help differentiate the experience of adults with an early, and more chronic history of trauma from those with an adult onset of potentially traumatic experiences.

Next, the phenomenological experience of “psychic collapse” that is well elaborated in psychoanalytic clinical writings will be reviewed. This section attempts to bring to life the experiential aspects of traumatic response and suffering. Contemporary psychoanalytic theories and paradigmatic models of trauma (Bonomi, 2003; Bromberg, 2003; Levy & Lemma, 2004; Laub & Lee, 2003; Mills, 2008; Tarantelli, 2003; Verhaeghe & Vanheule, 2005) provide rich clinical descriptions of some of the characteristic impairments of traumatized adults who tend to defensively avoid symbolization and have lost the capacity to “think.” How might these dynamic, unconscious processes also be investigated through current psychobiological and information processing research models? The hypotheses of this study aim to address this challenge.

The next section will define and review the concept of defense and defense mechanisms. A brief and selective review of key ideas from an ego-psychological perspective will follow. This perspective articulates a model of how psychic structure is formed and how the mind develops. Ego psychology theory emphasizes the biological basis of psychoanalytic theory and provides a useful framework with which to link current psychobiological findings as reviewed in this study. This will tie in to a review of more contemporary theories of defense, specifically covering a developmental model and manual (The Defense Mechanism Manual (DMM)) for
measuring defenses as outlined by Phebe Cramer. The DMM will be used to measure defense use for the participants in this study. This measure will help elucidate possible evidence of any pre-existing structural deficits that result from, or may be a precursor to traumatic experiences.

The final section will survey the psychobiological impact of trauma and review recent information processing theories. Psychoanalytic concepts will be tied to these current research findings and conclude the present study’s rationale for how a study of defense mechanisms contributes important information about the impact of trauma on mental operations, bodily responses to threat and the development of psychic structure.
CHAPTER 2: REVIEW OF THE LITERATURE

Defining Trauma - A Brief History

"After I was rescued and taken to the Grenoble hospital, I was told repeatedly how ‘lucky’ I was to be alive, and for a short while I even believed this myself. At the time I did not yet know how trauma not only haunts the conscious and unconscious mind, but also remains in the body, in each of the senses, ready to resurface whenever something triggers a reliving on the traumatic event. I didn’t know that the worst – the unimaginably painful aftermath of violence – was yet to come” (Brison, 2002, p. x)

The aftermath of traumatic events to an individual’s life is complex and multidimensional. The consequences can run far and deep, and are steeped in an essential paradox: that the experience of selfhood is shattered, but that it must survive perforce, by virtue that time and life carries on.

The introduction of posttraumatic stress disorder as a diagnosis in 1981 was a milestone in recognizing the far-reaching implications of traumatic experiences into adulthood. It was first introduced into the DSM-III as a response to the combat reactions experienced by Vietnam veterans. It was derived from conceptualizations of early researchers of war trauma and included the symptoms of re-experiencing, numbing/avoidance, and hyperarousal (DSM-III, 1980). The diagnosis spoke to a real need at the time, when researchers were also beginning to investigate other types of trauma from rape, domestic abuse/neglect, and childhood sexual abuse in particular (Courtois, 2004). Though this newly available PTSD diagnosis emerged to a real need, it began to cover a far wider range of traumatic experiences, well beyond those of combat soldiers (Courtois, 2004). In response to this not-so-perfect fit, as well as to the numerous studies indicating PTSD’s high rate of comorbidity with other disorders, researchers began to reconsider what such co-occurrence meant about the diagnosis. Judith Herman termed “complex trauma” after reviewing the clinical picture of survivors of prolonged, repeated trauma who presented
with more differentiated symptoms (1992). These individuals exposed to trauma over
developmental time periods suffered from a multitude of psychological problems including
“depression, anxiety, self-hatred, dissociation, substance abuse, self-destructive and risk-taking
behaviors, revictimization, problems with interpersonal and intimate relationships (including
parenting), medical and somatic concerns, and despair” (Courtois, 2004, p. 413). In addition,
these experiences were categorized as comorbid conditions rather than essential elements of a
complicated reaction to trauma. Under a similar mission, Bessel van der Kolk led a field trial
study for PTSD, delineating a syndrome named DESNOS (Disorders of Extreme Stress Not
Otherwise Specified), based on findings that some individuals also consistently presented with
features not captured in the PTSD criteria. There has been strong empirical support for these
observations (Gold, 2004; Courtois, 2004; van der Kolk, 2005).

The diagnostic criteria for DESNOS covers three broad areas of disturbance. (Appendix
A includes a listing of current diagnostic criteria). These include: (1) a symptomatic picture that
is more complex, diffuse, and tenacious than in simple PTSD- including a combination of
somatic, affective and dissociative symptoms; (2) characteristic personality changes, including
deformations of relatedness and identity, disturbances in relationships, and alterations in self-
perception; (3) the survivor’s vulnerability to repeated harm, both self-inflicted and at the hands
of others (Herman, 1992b).

These complex reactions were found difficult to treat and varied according to a number of
differentiating factors including the age and developmental period when trauma occurred, the
kind of trauma itself – including the severity and duration of experience, the support received at
the time of trauma and factors around disclosure of the trauma. Van der Kolk emphasizes the
importance of developmental factors in particular, reiterating that long-term adaptations to
trauma vary greatly depending on the victim’s developmental stage, the relationship of victim to perpetrator, and individual factors like temperament:

“Naïve one-to-one notions about the causal relationships between trauma and these disorders would oversimplify the very complex interrelationships among specific trauma, secondary adversities, environmental chaos and neglect, nature of preexisting and subsequent attachment patterns, temperament, special competencies, and other contributions to the genesis of these problems. However, if clinicians fail to pay attention to the contribution of past trauma to the current problems in patients with these diagnoses, they may fail to see that they seem to organize much of their lives around repetitive patterns of reliving and warding off traumatic memories, reminders, and affects” (1996, p. 183).

Despite the continued advancement and delineation of varying traumatized responses, the construct of PTSD continues to be a source of scientific controversy and debate. The complex trauma concept and DESNOS category help to highlight important differentiating factors of the effects of assaults on victims’ sense of safety, trust, self-worth and most importantly, their loss of a coherent sense of self (van der Kolk et al, 2005). In addition to the hyperarousal and hypervigilance in relation to external dangers that PTSD sufferers experience, complex trauma poses an internal threat of being unable to “self-regulate, self-organize, or draw upon relationships to regain self-integrity” (Courtois & Ford, 2009, p. 17). Understanding this characteristic shattering of selfhood experience is essential to a study of traumatic response. It is this defining feature of trauma which is under investigation in this study.

Psychoanalytic Theories of Trauma

“Traumatic experiences are initially imprinted sensations and feeling states and are not collated and transcribed into personal narratives...our interviews with traumatized people as well as our brain imaging studies with them seem to confirm that traumatic memories come back as emotional and sensory states with little capacity for verbal representation...they may be encoded differently from memories for ordinary events...perhaps because
extreme emotional arousal interferes with hippocampal memory functions...This failure to process information on a symbolic level, which is essential for proper categorization and integration with other experiences, is at the very core of the pathology of PTSD” (van der Kolk, 1996, p. 296).

Contemporary psychoanalytic theories and clinical writings have attempted to address the pervasive and overwhelming impact of trauma, leading to a severance of the mind, or inability to think, in traumatized adults. The implications of this severance are not only relegated to a deficit in mental operations but also refer to a severance between mind and body experiences as well – the mechanisms of which will be explored in this study. The contributions from psychoanalytic writings will be reviewed in order to ground a subsequent discussion of unconscious processes, in the form of defense mechanisms and their relation to traumatic response.

*Time and space, interrupted.*

- “*Time is the brain's glue*” (Modell, 2005, p. 556).

Clinical discussions of traumatic experience commonly include a phenomenon of repetitive timelessness. That is, trauma is described as occurring “out there,” and not as an event related to an experiencing subject, the “I” (Laub & Lee, 2003). The event is dissociated as an external event from the survivor’s life so that their traumatic memories, which are self-contained and ongoing, exists in a separate world, apart from the world of their present lives. Survivors are unable to, and often do not *want* to reconcile these different worlds. Thus the memory is timeless. Caruth writes: "traumatic experience...suggests a certain paradox: that the most direct seeing of a violent event may occur as an absolute inability to know it (1996, pp. 91-92). She continues to describe that what can be so persistently damaging about traumatic experiences is "the fact that threat is recognized as such by the mind *one moment* too late. The shock of the mind's relation to the threat of death is not the direct experience of the threat, but precisely the
missing of this experience, the fact that, not being experienced in time, it has not yet been fully known” (p. 62). It is an experience therefore, which cannot be experienced.

Carole Tarantelli (2003) reiterates the utterly external experience of trauma when she likens the effects of catastrophic psychic trauma to an explosion of the mind: “in so far as an explosion disintegrates whatever is in its epicenter, it cannot be perceived or experienced or thought for there is nothing left to do so” (p. 916). Even though trauma is described temporally, Tarantelli reminds us that it is not a process, but “an absolute sudden absence,” where the mind’s defenses cannot divert the proliferation of non-stop anguish, where the mind is in an absolute absence of defense, in an archaic, primitive state of mind (p. 920). The action of the explosion on the mind as she describes it, is to disintegrate it: “psychic structure is disarticulated so that the parts are no longer in relation to each other and functioning as a whole” (p. 920).

Losing the mind: The inability to think.

- “It is in the nature of trauma to evade our knowing of it” (Laub & Lee, 2003, p. 449).

Many psychoanalytic writings capture the experience of psychic collapse as a state of mindlessness or as the mind losing its capacity for symbolization (Bonomi, 2003; Boulanger, 2005; Bromberg, 2003; Bucci, 2003). The individual enters a state where thought and action collapse, so the psychic space where reflection could take place is shut down. Meanings become too threatening to entertain so that thinking and perception are replaced by “concrete mental entities that cannot be explored” (Caper, 1998, p. 145). These ideas are similar to the writings of Bion, whose theories were predicated on the fundamental role that thinking played in structuring psychic experience. Bion himself was influenced by his own traumatic experiences of war and loss. He described how constricted his own thinking became as he prepared for battle:
“In desperation I stopped thinking about past or future: I began taking compass bearings of every object within my limited view. To my relief my fear began to ebb away. This scene was to be repeated over and over again in this new horrid shape throughout the war until at last it began to lose its horror by force of repetition (Bion, 1982, p. 201).

Bion’s theories brought a relational meaning to the term “thinking,” emphasizing that its goal is the emotional awareness of self and others. Billow, eloquently summarizing Bion’s ideas, writes that

“To satisfy the ‘need for awareness of an emotional experience,’ the developing individual must first depend on others to make sense of experience. Early in development, reality cannot be apprehended and constructed without others. Even for those whose reality sense has matured, frequent social validation remains necessary. [...] Thinking necessarily activates primitive, turbulent emotions, and reinstates powerful early anxieties involving separation and loss, and fear of new and unknown experience. Absence of needed objects (including objects of knowledge such as the complexities of one’s feelings, or another’s) stimulates thinking to the extent to which one tolerates frustration {...}” (Billow, 2003, p. 72).

Most importantly, Billow continues: “Thinking hurts. The human being suffers from needing something painful. But fearful of pain, even the strongest sometimes evades what he or she needs, and often chooses instead ways of avoiding thinking” (2003, p. 72).

Self-coherence: Affective disruption and going-on being.

Winnicott’s writings also capture the complex paradox of traumatic experience, linking the experience of time with an emergent concept of self. As he writes about the experience of self-continuity, he describes how the experience of being self-conscious can imply a kind of split-off experience. That is, being so self-conscious compromises the sense of “going on being” and becomes too far removed from the experience of being within the body and living in the present (1949). His writings on how to view pathology in the context of where mind and body
lose integration are especially useful to an understanding of relational trauma. In addition, he
describes a model of psychic structuring; how the failures of having our essential needs met
bring about an awareness of space and time within the first six months of life.

Winnicott describes how an infant’s incipient capacity to endure a moment when her
needs aren’t immediately met, exposes a sense of time. That is of course, if the need is met
within a “good enough” timeframe. If that experience of delay for the infant exceeds a tolerable
limit, then that is when a disrupted self-experience is created; when the mind becomes an entity
outside the infant’s once seamless existence of early psyche-soma. The mind then becomes over-
active and attends reactively to the mother’s absence or inconsistency. Winnicott depicts a model
of health whereby an infant’s mind is developed in a way that helps the infant tolerate failures in
mothering, to use her mental capacity for delay and to experience time in order to sustain an
image of her “good enough” mother. In contrast, a more pathological mind creates discontinuity
in the experience of “going on being” as the infant spends excessive mental energy trying to
connect back with mom. This deprives the infant of a crucial experience of self-cohesion and
agency. Thus, the emergent “me” and “not me” experiences are formed through reconciliation of
the loss of the idea that the world is not actually just an extension of the mind-body experience of
early infancy.

Winnicott’s ideas are in sync with Bion’s writings on the significance and “painful
nature” of thinking (Billow, 2003, p. 73). Bion, as aforementioned, also contended that “thinking
inherently involves an exchange of painful, primitive feelings” (Billow, 2003, p. 73) The ideas of
Bion and Winnicott will reverberate in the ensuing discussion of the structuring of defenses, as
they inform Cramer’s developmental defense mechanism model. The relationship between
psyche-soma is integral to understanding how psychic structure develops and thus how a break in this continuity of development might lead to traumatic failures.

**Defining Defenses – An Ego Psychology Perspective**

“Defenses not only keep thoughts, images, and drive-impulses out of consciousness, but also prevent their assimilation by the thought-organization” (Hartmann, 1965, p. 56).

When Freud revised his topographic model of the mind, he was driven primarily by his clinical observations that there existed parts of the ego, namely the defenses, that were operating unconsciously (Freud, 1926). His revised structural model included a more complex view of how the ego managed both conscious perceptual capacities as well as unconscious responsibilities for other defensive operations.

Anna Freud further emphasized the role of defenses and the difficulty in distinguishing between defended and undefended communication (Mitchell, 1995). She was less interested in repressed content than she was in understanding how it was that the ego kept things out of conscious awareness. She also brought an important developmental perspective to the theory of defenses which placed emphasis on early childhood experiences.

Heinz Hartmann further defined the ego as a substructure of personality, defined by its functions. Specifically, he stressed the importance of understanding unconscious process from the point of view of adaptation to the external world. “I want to stress…that defense-processes may simultaneously serve both drive-control and adjustment to the external world…The ego serves adaptation, inhibition and synthesis…” (1965, p. 385). The ego’s relation to reality was seen as a central function (Hartmann, 1965). Also, the notion of autonomous ego functions became explicated. He countered Freud’s idea that all mental functions were born out of intrapsychic conflict. Instead, he viewed the ego to have important independent functions. For
instance, the ego organizes and controls motility and perception – of the outer world and perception of the self. The ego also acts as a protective barrier against external and internal stimuli. The ego tests reality by action (not necessarily motorically) and by thinking, which can be thought of as a kind of trial action. The ego can inhibit and delay discharge to allow for a safer adjustment to the outside world as well as lessen the impact of internal stimuli. And importantly, the ego is the signal of danger from which defense is initiated (Hartman, 1965).

In delineating these autonomous ego functions, Hartman made an important contribution to understanding the mutual influences of ego and id development and how the structure is differentiated. Hartman begins acknowledging Freud’s theory: “In ontogenesis, the id-ego differentiation follows the leads of outer and inner perception, of motility, and of the systems of preconscious memory traces, of experience and learning. The replacement of hallucination by thinking, of direct motor discharge by action, is an essential element in Freud’s theory of ego development” (1952, p. 166). He outlines several forces as constituting ego development including the impact of reality, the instinctual drives, and inborn characteristics of the ego and their maturation. Some defense mechanisms, he argues from this perspective, have a hereditary core. An important part of this theory is understanding that there are intrinsic physiological processes underlying activities of the ego and which influence the timing, intensity, and direction of ego development (Hartman, 1952). He outlines the apparatuses of perception, memory and motility as being inborn and part of the biology of an individual before they become expressive of conflict and experience. Thus, these have been in existence and functioning before conflict occurs in a “conflict-free” sphere of functioning (1952).

“It may be that very early processes in the autonomous area—cathetic organizations, but also physiological mechanisms that develop in interdependence with them, factors like postponement of discharge and also what Freud calls the protective barrier against
stimuli and even reflectory defenses against unpleasant stimuli—are genetically speaking precursors of what at a later stage we call defense mechanisms” (Hartman, 1952, p. 170).

Rappaport further detailed the specifics of the ego’s autonomy from the drives and from the external environment, stressing that the ability to stay independent from the drives allowed one to have a solid relationship to the outside world (1951). He helped answer questions of how psychic structure is formed and how the ego maintains its independence from the environment as he investigated how the ego’s autonomy, in the face of its inevitable relationship to conflict - is destroyed. How does it adapt to reality? And what is conflicted with the drives?

“We must remember that the motor, perceptual, and memory apparatuses, as well as other inborn apparatuses such as those of affect expression, stimulus barrier, etc. have definite thresholds which are their structural characteristic. These structural characteristics will set limits to the discharge of drive tension, that is, to the pleasure principle, even when the need-satisfying object is present, and even before drive discharge is prevented by the absence of the need-satisfying object. The very nature of structure will always prevent total discharge of tension. The existence of inborn structural elements in the undifferentiated phase may be what precipitates developmentally the differentiation of it into the ego and the id. The developing ego then integrates these structural apparatuses and re-represents their discharge-limiting and regulating function in forms usually described as defenses. These are the foundations of the primary autonomy of the ego” (Rappaport, 1967, p. 363).

Rappaport stresses that the ego’s independence from the environment is guaranteed by the ego’s relationship to the drives. The drives guarantee that behavior that may not be permitted by the environment, will continue. Rappaport investigated instances when the ego’s autonomy from the id was broken down; he noted it in periods of intensified drives, such as adolescence, during stimulus deprivation, and in hypnotic states when someone is reducing their attention to the environment and the hypnotist tries to interfere with reality oriented thinking. The drive controlling structures depend on the environment to function effectively against the drives. He
then investigated what interfered with the ego’s autonomy from the environment and noted that massive intrapsychic blocking of the instinctual drives as well as danger and fear is what enlist the drives to prompt surrender of autonomy.

The importance of the drives in Rappaport’s theory is particularly relevant to the rationale of the present study. When drives aren’t satisfied, it creates an experience of delay. And it’s this delay in time that builds psychic structure. It’s the experience of frustration that leads to thought and structure – and to the building of a complex set of memories that can make a sustainable object. He writes:

“Delay of discharge may be due to structural as well as environmental conditions: either structural limitations or absence of the need-satisfying object may bring it about. One consequence of delay is that experiences preceding, surrounding, and perhaps even following gratification, accumulate in the form of memory-traces. The organization of these memory-traces is of primary interest for the theory of thinking. Evidence seems to be available to show that such memories are organized around those drives, in the delay and/or discharge of which they emerge first as hallucinatory images and later as ideas – that is, around the drives of which they are representations” (1951, p. 693).

The disequilibrium of drive states – or displeasure, is seen as the motivator for the first thought. Freud, as mentioned above by Hartman, pointed to hallucinatory wish fulfillment as the first thought. If the object is unavailable, the infant will try to cathect some “memory-trace” or representation of it that can be brought back. This representation can be partial or whole and invariably will be conjured from some physiological experience, as stated earlier in Hartmann’s writings. Using Freud’s terms, the image will be hallucinated, but it is some kind of evoking of the memory. This is what Rappaport calls the first thought and thus, it is crucial that it is in the delay of gratification that generates it. Memory will always be part of thought – as one evokes the memory of the object. The model is such that one is never really perceiving anything fully
apart from memory. Memory exists in the body, even before ideation. The memory of a mother for instance, might come with feelings of satisfaction – the warmth, pleasure, and smell of this experience underwrites a kind of procedural memory.

To summarize, it is this delay of gratification in time that motivates and structures an emergent thought. This thought, at its earliest phase for an infant, can be thought of as a memory trace originating from the body. The significance of a caretaking other as an essential component of this memory trace, reiterates the aforementioned theories of Bion and Winnicott, who stress how early relationships powerfully impact developing psychic mechanisms. This theoretical model stresses the significance of physiological drive delay, the importance of time, and the essential role of an ‘other’ in shaping how the mind comes into being. It also lays down a framework to understand how an experience that is too overwhelming – in time or intensity can traumatize one’s capacity to think, to relate, to connect back to the body. These early theoretical models provide a useful lens to think about the impact of trauma, and particularly early, developmental trauma, on a cohesive self-experience.

**Contemporary Research on Defense Mechanisms**

The ego then, is responsible for a host of related abilities and executive processing functions involving cognition and affect, including information processing, reality testing, memory and perception (Beosky, 1995). George Vaillant describes the ego as “the integrated brain,” which bridges the emotional limbic system with the executive functioning of the frontal cortex, and which “conveys the mind’s capacity to integrate inner and outer reality, to blend past and present, and to synthesize ideas with feelings” (1993, p. 7).

In terms of defense mechanisms, modern psychodynamic theorists and researchers have continued in the tradition of Anna Freud, viewing defense mechanisms as essential elements of
adaptive ego-functioning and self-concept formation (Cramer, 1991, 2006; Vaillant, 1992, 2000). Vaillant (1993) described defense mechanisms as “regulatory self-deceptions” that function like the ego’s version of the body’s immune system, protecting the mind from vulnerabilities to potentially overwhelming negative emotional states, the way white blood cells act to stave off infections. This view of defenses as normative and adaptive also implies that the adaptiveness of defense use is context relevant (Cramer, 1991, 2006; Vaillant, 1993). In situations in which a person has no control over a difficult situation, use of a defense mechanism would serve to alleviate the anxiety and distress that could distract from problem-solving. However, when faced with a situation in which real-world solutions exist, utilizing defense mechanisms could be detrimental to functioning. Overusing defenses may lead to distorting an individual’s perception to the point of ignoring threat.

From an object relations point of view, the role of defenses is integral in terms of how individuals moderate their emotions in order to maintain their relationships and ties to important others. Tuber (2012) writes about the “holy trinity” of “self-affect-other” as a paradigm for depicting personality formation and thus, understanding the formation of defenses (p. 37). This paradigm stresses how “the very nature of our experience of our selves and others in interaction is always bathed in an affective mileu” (2012, p. 37). Thus, as individuals begin to manage their emotions as a way to organize and expand their experiences of self, they need also to manage arising emotions to maintain their ties to others. How much they need to modulate their emotions depends in part on how these others respond to them. As a helpless infant, the impact of others is essential to survival and the more they would need to rely on others to contain them. Caretakers provide a kind of stimulus barrier to protect against dangerous external factors as well as overwhelming inner sensations. Tuber reiterates that the role of defenses early in life depends
more on caretaking others. As individuals develop cognitively and mature affectively, they become more able to contain and self-regulate their emotional experiences. These viewpoints are not at all dissimilar to the ego psychology theories previously reviewed in terms of the emergence of defenses arising from bodily, affective states.

Using Tuber’s paradigm of self-affect-other, the development of defenses is explained as arising from a maturation along a broad continuum of experiences within this paradigm. The range from primitive to mature defenses can generally be mapped onto a developmental line, where primitive defenses like denial are generally developed earlier in life as opposed to a defense like intellectualization. The cognitive maturation that is required between denial and intellectualization is apparent. However, Tuber (2012) reminds us that a simplistic, hierarchical view of defenses will fail to account for defenses that can continue to develop with a level a complexity throughout development:

“If we acknowledge the simple statement that defenses are cognitive strategies, it seems reasonable to posit that certain defenses, if they emerge in early life, can have a range of sophistication from primitive to more nuanced as we mature. Other defenses, however, take a certain degree of cognitive maturity for them to arise in the first place, but they too can become more nuanced and differentiated over time. This model would allow for a broader, and temporally longer, continuum for a defense mechanism such as denial or avoidance, defenses that typically arise in the first months of life but continue in an often more subtle manner throughout the course of life” (p. 39).

This is an important point for the purpose of this study and its focus on three main defenses of denial, projection, and identification. Though they may originate early in the course of development, these defenses can be seen in more nuanced and sophisticated ways throughout adult life.
Developmental Model Of Defense – The DMM

Longitudinal research on defense usage has lent support to the categorization of defenses along developmentally based hierarchical lines (Cramer, 1991, 2003, 2006, 2008). Cramer’s approach, in line with Tuber’s model, assumes not only a developmental nature of defense mechanisms, but also describes the life course of defense use itself, as part of normative cognitive development in childhood and adolescence. Cramer (2006) proposed that the Piagetian (1952) stages of cognitive development implied the existence of developmental periods during childhood and adolescence for which certain defense mechanisms would be more prominent than others. As a child passed through these stages of increasing cognitive complexity, the use of certain defenses would increase, while use of more simple, immature forms of defense would typically decline. She points out however, that although the use of immature forms of defense decline, they still remain part of an individual’s repertoire. At any given point in an individual’s developmental history, they have access to currently predominating as well as previous forms of defense.

Cramer developed the Defense Mechanism Manual – a scoring system (DMM; Cramer, 2000) to identify and classify defense mechanisms in narratives derived from the story-telling projective test, the Thematic Apperception Test (TAT; Murray, 1943). Cramer identified three major defensive categories—Denial, Projection, and Identification, which encapsulated several variations of defense according to core defensive themes. Each of the three defensive categories required different degrees of ego complexity and represented a different developmental period. Denial was the most immature of the three defenses and reflective of the cognitive capacities of early childhood. Projection was moderately immature and reflective of the cognitive abilities of older children and early adolescence. Identification was relatively mature and reflective of the
improved cognitive capacities of late adolescence and early adulthood compared to earlier developmental periods. Cramer drew on psychoanalytic theory to further conceptualize each defensive category as having developmental roots in the sensorimotor reflexes of infancy.

According to Cramer, Denial described mental maneuvers that were based on wholesale negation of reality, which could involve such phenomena as a person literally blocking out, withdrawing from, or misperceiving outward events or internal experiences. As explained by Cramer: “Denial is a simple defense, accomplished by the single operation of negating a thought, feeling, or perception, as in, ‘It didn’t happen’ (2006, p. 23). The essence of Denial was distorting or “not seeing” reality, which Cramer proposed was developmentally rooted to the earliest of self-protective sensorimotor reflexes—the ability of the infant to close its eyes to shut off stimulation from the outside world. Denial was thought to be the defense predominantly used in young childhood.

Projection encompassed mental maneuvers which involve misattribution of hostile or otherwise threatening feelings, attitudes and impulses to other people or the outside world. While still an immature defense, Projection is considered more cognitively complex than Denial, since it requires that the ego has the capacity to unconsciously differentiate the self from the outside world, as well as uphold a moral judgment about what is acceptable and what is not. Cramer proposed that the origination of this defense was the infant’s reflex to “spit out” noxious food or unwanted objects placed in its mouth. Projection was thought to become the predominant form of defense in early adolescence.

The category of Identification was tied to the ideas of self, identity and affiliation and thus required increased cognitive complexity to achieve. According to Cramer: “Identification is the process of taking on as one’s own (internalizing) the attitudes, beliefs, values, or behaviors of
another, so as to protect oneself from feelings of weakness or helplessness” (2006, p. 23). An example would be when a person tries to copy the tone of voice, words and gestures of an authority figure to get through a difficult situation. Cramer conceptually linked Identification to the infant reflex to take in food and other good things by mouth (i.e., incorporation). Cramer points out that use of the defense of Identification involves evoking internalized representations of other people, and not only reduces anxiety but bolsters the sense of self without distorting reality. It is the defense most frequently used during late adolescence, during the period of identity formation. Freud’s concept of hallucinatory wish fulfillment is paralleled here.

Cramer’s research with child and adolescent populations lent empirical support to the developmental sequence of these defenses in human development (Cramer, 1997, 1998). She found that use of denial normatively peaks in early childhood at approximately age 3, then slowly declines in use, while use of projection slowly increases until peaking at age 10 before declining, while identification emerges later in middle childhood and does not peak until adolescence. Therefore, Cramer’s categorization of defenses follows a hierarchy from Immature (Denial) to Moderately Mature (Projection) to Mature (Identification), as based on observable developmental sequences.

Since its repeated validation of studies with children, the DMM has also been utilized with samples of adults to assess defensive functioning. Studies utilizing the DMM in adult populations indicate that these defensive categories can be found in all ages even if they are not found to the same frequency as in child populations (Cramer, 2006). The utility of this scale is its shared foundation in a developmental model of psychic structuring; one that inheres the psyche-soma inter-relationship.
Impact of Trauma

“What becomes disorganized is the whole series of action systems that carry out the intentions of the ego: cognitive, coordinative, executive (sensory motor) and autonomic” (Kardiner, 1969, p. 177)

In 1941, Kardiner coined the term “physioneurosis” to describe posttraumatic stress. He explained that while people with PTSD reacted to their environment with emotional constriction, their bodies continued to react to certain physical and emotional stimuli as if there was a constant sense of threat (van der Kolk & Saporta, 1991). The individual’s tolerance for intense affects is lowered and their stress sympathetic response system is triggered more frequently. Perry and colleagues (1995) explain that “everyday stressors that previously may not have elicited any response now elicit an exaggerated reactivity” (p. 278). In other words, there is a loss of neuromodulation so central to PTSD leading to an increase in emotional reactively in general: traumatized people go immediately from stimulus to response without being able to make intermediate psychological assessments of the cause of their arousal, which causes them to overact (van der Kolk & Saporta, 1991). This emotional responsiveness, is often an unconscious response. It is this unconscious response, and perhaps the resulting or accompanying inability to think, which is under investigation in this study. When the stress response has been triggered, the less advanced systems in the brain, such as the brainstem and limbic areas (rather than frontal cortex systems) can become dominant. As a result, abstract thought, concentration, and access to language seems to become impaired (Perry et al., 1995). This is a concept previously reviewed in terms of a breakdown of symbolic functioning. Here, it is discussed from a physiological perspective.
Psychobiological Impact

The autonomic nervous system, mediated by the amygdala is supposed to alert the individual to the presence of a threat (Yehuda, 2002). The brain is able to communicate the magnitude of the threat by releasing excitatory neurotransmitters and firing neurons that correspond to the perceived level of threat (Siegel, 1999). However, when the autonomic nervous system is constantly being set off by minor stimuli, the individual is no longer able to rely on her bodily cues to be an accurate alarm system (van der Kolk, 2007). According to Siegel, “repeated patterns of intense emotional experiences may engrain chronic alterations in the degree of sensitivity” (1999, p. 248).

Evidence suggests that the longer PTSD symptoms persist, the less important the role of the original trigger becomes when trying to understand the underlying symptomatology (McFarlane & Yehuda, 2007). Once neurophysiological alterations in the brain become established, the disorder seems to become entrenched. The “kindling model” suggests that affective destabilization leaves a “biological memory” that leaves the individual more vulnerable to future episodes of destabilization (McFarlane & Yehuda, 2007; Yehuda, 2002). The traumatic event sets off a domino effect of biological consequences that are difficult to modify once they have become ingrained. Van der Kolk & McFarlane explain, “This new organization of experience is thought to be the result of iterative learning patterns, in which trauma-related memories become kindled; that is, repetitive exposure etches them more and more powerfully into the brain” (2007, p. 8).

In a meta-analysis conducted by Pole (2007) studying the psychophysiology of PTSD, the general notion that PTSD is associated with persistent hyperarousal, exaggerated responses to startling sounds, and elevated responses to external and internal trauma reminders was supported.
In the PTSD literature, the psychophysiological processes commonly measured included facial (muscle) contractions, heart rate, skin conductance (sweat gland activity), and blood pressure. Typically, these measures were expected to show increase under conditions of distress. However, the meta-analysis usefully pointed out that each measure has its own biological underpinning as well as unique interpretation that could be informative about the pathophysiology of PTSD. For example, a dominant relationship in skin conductance as opposed to heart rate may imply a special role of the sympathetic nervous system (where skin conductance is primarily governed) as opposed to the implication of the parasympathetic nervous system, which is also implicated by heart-rate. Thus, it is important to understand the directionality and dominance of these psychobiological mechanisms of change.

Furthermore, research indicates the complexity of psychobiological responses to trauma. It has been reviewed thus far that trauma results in a myriad of split or dissociated experiences of mind and body. Traumatic memories are unintegrated sensorimotor experiences that are recurrent, involuntary, and mostly nonverbal. They can be charged with hyperaroused, intense affects involving fear and/or sadness. And they can also include intense bodily reactions. However, they can also involve hypo-arousal - with little affect including somatic and affective numbness. Nijenhuis & Boer’s (2009) review of the psychobiology of traumatization attests to the complexity of these responses and argues that many psychobiological researchers simply expect traumatized individuals to respond to reminders of trauma with fear. This may include elevated heart-rates and increased blood pressure, or a general dominance of the sympathetic nervous system during a fight-flight response. While there is certainly evidence of this, as has already been reviewed, Nijenhuis & Boer’s (2009) review reminds us that this perspective could easily ignore that the responses of survivors often have rather different responses to reminders of
trauma – including a total submission to the perceived threat or a kind of detachment that still allows for high functionality. It can also include a fluctuation between responses.

This dissociative response is well documented in the clinical literature, but not as easily evidenced empirically. Research has demonstrated that the most far-reaching disturbance of trauma revolves around the regulation of affective states. This affect dysregulation increases vulnerability to engage in a variety of pathological attempts at self-regulation, including dissociation.

Bromberg continues to describe the broadest purpose of a dissociative mental structure, as not just serving a protective insularity, but for regulation. He writes,

“It is above all else a dynamic mental organization designed for affective self-regulation – a mental structure tailored to anticipate trauma but sufficiently permeable to be a potential doorway to therapeutic growth. Its insularity reflects the necessity to remain ready for danger at all times so it can never – as with the original traumatic experiences – arrive unanticipated. Its permeability reflects a capacity for authentic but highly regulated exchange with the outside world and similarly regulated spontaneity of self-experience (2003, p. 904).

Alan Schore’s (2002) contemporary research linking attachment and the neurophysiology of the child’s brain offers further evidence of trauma’s impact on affect regulation. He writes, “the infant posttraumatic stress disorder of hyperarousal and dissociation sets the template for later childhood, adolescent, and adult posttraumatic disorders (PTSD), all of which show disturbances of autonomic arousal” (p. 19). Schore’s (2002) compelling research suggests that the disorganized/disoriented attachment pattern is most often seen in severely abused and neglected infants. These disorganized infants with traumatic attachment experiences negatively impact the early organization of the right brain, and thus produce deficits in its adaptive functions. Namely, this is the ability to emotionally understand and react to bodily and
environmental stimuli. The neurobiological evidence powerfully underscores the significance and impact of events in a child’s early history. Schore (2001) describes “early relational trauma” as “interactions that involve a strong activation of the attachment system that, although not obviously comprising maltreatment, can induce a failure in the integrative functions of consciousness at the beginning of life” (p. 478). This perspective underscores how the long-term effects of trauma are numerous and complicated. The intrapsychic, relational, and social factors are not the only issues that contribute to the long-term adjustment to trauma. There are biological consequences of traumatization that impact individuals at different stages of development as well. Hence, this provides the neurological basis for the vulnerability to dissociative reactions in response to traumatic stressors later in life.

**On Cognition**

The phenomenological experience of psychic collapse has been earlier reviewed from a clinical psychoanalytic perspective. These experiences should be considered alongside contemporary theory and research on cognition and information processing models of posttraumatic stress. Cognitive studies have indicated that individuals suffering from PTSD are highly sensitive to traumatic information and cues (Buckley, 2000; Weber, 2008). These findings are further supported by neuroimaging studies that identify brain activity during exposure to traumatic stimuli. The brain shows activity in affective networks including the amygdala, orbitofrontal and anterior cingulated cortex. The theory has generally proposed that PTSD sufferers demonstrate sensitivity to threat-related stimuli as well as abnormal processing of neutral information. Individuals with PTSD have demonstrated poor performance on a variety of neuropsychology tasks that involve attention and memory (Buckley, 2000). Also, they demonstrate a selective bias towards trauma cues which may inhibit their ability to attend to
other information or provide interference in processing other kinds of information (Litz & Keane, 1989). However, this evidence is not entirely consistent with research that also evidences a capacity for enhanced cognition for neutral information. Behavioral results from other studies hint that threat-sensitive individuals may react with a hyper-alertness that enhances attention performance (Dennis et al, 2007).

Traumatic experiences may disrupt cognitive processes not only by overwhelming the individual with memories and emotions, but also failing to integrate into general cognitive schemas (Dennis et al, 2007). The psychoanalytic literature depicted a shattering of the mind after trauma which rendered a traumatic memory that never integrated into the self-experience – by virtue of its lack of spatio-temporal coherence. From a cognitive perspective, an individual may need to be much more alert to cues, needing more time to evaluate and integrate current experiences. According to Chemtob et al (1988), “. . . threat arousal inhibits the operation of other information-processing modes or schemata, thereby preventing their operation and further narrowing the attentional focus on threat-related stimuli” (p. 266). This places the emphasis on traumatic cognitions that dominate the mind and lead also to temporal delays in the perception process. Individuals with PTSD may be more susceptible and sensitive to ambiguity or novelty as well.

The Present Study: A Paradigm to Study Defense Use and Physiological Reactivity

Constructs of the unconscious mind and dynamic processes from psychoanalysis, together with advances in psychobiology and cognitive science are ripe for constructing links through empirical methods. This study attempts to integrate selective, core concepts from each of these domains in order to lay down a model to empirically investigate the impact of trauma on psychic functioning.
Skin conductance activity has been one of the most widely used response systems in the history of psychophysiology due in large part to its ease of measurement and sensitivity to psychological states and processes (Dawson, Schell, & Filion, 2007). It has been previously reviewed that the psychological and physical impacts of a traumatic event frequently do not cease after the end of the immediate event. Research also suggests that the trigger or cue that provokes psychophysiological arousal may not necessarily be directly related to the original trauma (e.g. Pitman, Orr, & Shalev, 1993). Reminders of the event may lead to an acute autonomic nervous system arousal. Physiological reactivity to cued reminders has been thoroughly documented in autonomic nervous system research (Pitman et al, 1993; Pole, 2007). In a meta-analysis by Pole (2007), findings supported the idea that individuals have physical reactions to internal (thoughts and feelings) and external (sounds, sights) cues. Participants with PTSD had elevated heart rate and skin conductance, an indicator of sympathetic activity. The findings suggest that PTSD is related to exaggerated sympathetic nervous system activity in response to proximal or distal trauma cues.

In addition, it is important to note that individuals may be physiologically reactive to trauma cues without self-reports of emotional distress. A study by Lazarus & McCleary (1951) which has been replicated in studies of brain activity, demonstrated that reactivity to cues is persistent and may occur outside conscious awareness. Furthermore, it has been researched (Fowles, 1988) that skin conductance activity is influenced primarily by activation of a neurophysiological behavioral inhibition system that is involved in responding to punishment, passive avoidance, or to frustrative nonreward (Dawson et al, 2007). In other words, unlike measuring a variable such as heart-rate, which is influenced primarily by activation of a neurophysiological behavioral activation system, skin conductance can tell us something about
inhibitory response, and the anxiety system. Thus, for the purpose of this study, measuring skin conductance during an anxiety provoking task (such as responding to TAT cards), where there is no active avoidance response to make, the skin conductance system should be the physiological system that would be most responsive. In fact, we would be able to observe mental, unconscious maneuvers of avoidance through the use of defenses.

For the purpose of this study, trauma is defined by its impact – by the experience of psychic collapse that ensues and renders the mind unable to think and the body unable to live in real time. Chapter 1 began with literature from clinical psychoanalytic perspectives that bring this phenomenology to life. Next, relevant theoretical contributions from ego psychology were reviewed that conceptualize how the mind is structured and formed. This body of theory supports a model that links early physiological experiences - drives originating from bodily states – with developmental mental achievements. An integral link between psyche and soma is supported through this literature. This link continues to be supported in the next review of literature on defenses and defense development. This review supports a relationship between defense use and physiological processes, as well as a meaningful hierarchy of defense mechanisms that have a predictable course of development.

In sum, this study capitalizes on the biological basis of psychoanalytic theory to investigate the impact of trauma on the development of defenses and physiological arousal. Linking these domains theoretically provides a means to hypothesize about the empirical links detailed below.
Study Hypotheses

Rationale for Hypothesis 1

Literature from ego psychology describes the ego as a substructure of personality which is defined by its functions. A central function of the ego is its relation to reality. The ego acts as a protective barrier against external and internal stimuli. Thus the activities of the ego such as action (not necessarily motoric) and thinking (which can be considered a trial action) allow for a safer adjustment to the outside world, and lessen the impact of internal stimuli. The ego can detect danger and thus is the place where defense is initiated. Defenses, as unconscious operations, play an important role in psychic structure formation. It follows from this theoretical standpoint that trauma can have a significant impact on ego development, compromising the structuring of the mind and influencing the defenses employed. This study predicts a relationship between the onset of potentially traumatic experiences and level of defense use. Exposure to early, chronic traumas throughout a lifetime have led to the conceptualization of complex trauma, as a disorder that leads to the loss of a coherent sense of self. It is surmised that earlier exposure to potentially traumatic events disrupt a continuity of self experience that can be reflected in lower level defense use, based on the impact on psychic formation. Individuals who have had exposure to potentially traumatic events early in their lives, as compared to individuals who were exposed as adults, or never exposed, will demonstrate patterns of lower-level defense use. These early onset individuals will also show a significantly greater use of these defenses.

Hypothesis 1: Individuals who endorse early onset (EO) of potentially traumatic events (PTEs) will demonstrate an overall pattern of lower level defense use compared to individuals with No Onset (NO) or late onset (LO) of PTEs.
Rationale for Hypothesis 2

Research has indicated that the psychobiological response to trauma is complex. The development of a chronic trauma-based disorder is qualitatively different than a heightened stress response and carries a host of biobehavioral changes. Consistent with what we know about complex trauma reactions and symptomatology, traumatized individuals can experience states of hyperarousal and hyperreactivity as well as a traumatic re-experiencing that co-exists with numbing, avoidance, and states of dissociation. Some individuals may develop re-experiencing symptoms only, some may also develop avoidance and hyperarousal. The kindling process of persistent intrusive and repetitive thoughts can set up a chronically disordered pattern of arousal. To compensate for this chronic hyperarousal, individuals can demonstrate a biobehavioral response of avoidance and emotional numbing on an everyday basis. Thus, individuals can suffer both from a generalized hyperarousal that shuts down the sympathetic nervous system but also creates a more sensitive negative feedback inhibition and greater physiological response to specific threats or reminders. Arousal is regulated by the sympathetic branch of the autonomic nervous system and can be captured in physiological markers like changes in sweat gland activity.

Hypothesis 2: The early onset (EO) group will demonstrate greater physiological reactivity to a stress-response task (administration of TAT) as indicated by overall changes in measures of skin-conductance, as compared to the NO and LO group.

Rationale for Hypothesis 3

As stated, traumatic response is not limited to hyperarousal, but can include a deactivation and slowing of physiological response. Physiological reactivity represents one mediating mechanism in the hypervigilence towards threatening cues. Thus, the association
between low physiological arousal and symptoms of numbing and denial needs to be further explored. The pattern of defenses employed provide a way (as theoretical constructs) for us to understand unconscious, psychological process. Defenses inform us of the limits and of the strengths of anyone’s capacity to cope with stress. Defenses are also derived originally, from physical experiences. They have a relationship to mechanisms experienced from and in the body. Patterns of defense use will be measured simultaneously with physiological readings during the same stress-response task for individuals with no onset of PTEs, EO, and LO of potentially traumatic events in their lives. This provides an opportunity to investigate correlations between patterns of defense use with patterns of autonomic response.

**Hypothesis 3:** During the same stress-response task (TAT administration), patterns of lower-level defense use will correlate with arousal levels, moderated by the chronicity (age of onset and intensity) of PTEs in individual’s histories. Those individuals with early onset (EO) of PTEs will demonstrate a stronger correlation, regardless the direction of the relationship. (i.e. the correlation, direct or inverse, between defense level and arousal level will be stronger for this group than for the NO or LO group).
CHAPTER 3 : METHODS

Sample

The sample for the present study was derived from a pilot research project entitled “Social and Nonsocial Threat Appraisal in Posttraumatic Stress Disorder, (SOCIAL SCAN)” that took place at The City College of New York. It was funded by The City Seeds Grant from City College, an interdisciplinary initiative for scientific collaboration within the College. The project was led by Principal Investigator, Denise Hien, Ph.D and Co-PI’s, Robert Melara, Ph.D., Lesia Ruglass, Ph.D., and Eric Fertuck, Ph.D.

The sample for this study employed 43 participants. Participants were grouped by exposure to potentially traumatic events (PTEs), as endorsed by self-report on the Life Events Checklist: 14 who endorsed no onset of PTEs, 14 with early onset of PTEs, 15 with late onset of PTEs. This study utilized male and female participants between the ages of 18-65 from diverse racial/ethnic backgrounds who were recruited from IRB-approved newspaper and Internet advertisements in the metropolitan New York City area. Fliers were posted in targeted locations including community counseling centers, participating hospitals, rehabilitation centers and college campuses.

Eligibility criteria included: 1) physically healthy; 2) normal or corrected normal visual acuity; 3) aged 18-65; 4) fluent in English; 5) able to provide informed consent; 6) meets DSM-IV criteria for Criterion A only of Posttraumatic Stress Disorder (exposure to a traumatic stressor) OR; meets criteria for sub-threshold PTSD (Cluster C or Cluster D); OR meets full criteria for Posttraumatic Stress Disorder. Individuals with no onset of PTEs met Criteria 1-5 only.

Exclusion Criteria included: 1) Past or present psychotic disorder or Bipolar Disorder;
current major mood disorder or anxiety disorder allowed in up to 50% of the sample due to high clinical comorbidity rates 2) Current alcohol/substance abuse or dependence (past abuse prior to 3 months before study permissible) 3) known history of seizures; 4) Participants with organic mental syndrome 5) poor vision acuity; 6) Participants at significant risk for suicide based on current mental state or history; 7) Participants refusing to be audio-taped. No onset PTE participants were excluded if they met Criteria 1) no past or current psychiatric illness including psychotic disorder, major mood disorder, anxiety disorder, personality disorder; along with Exclusion Criteria 2-7 from above.

**Procedures**

Trained research assistants and assessors conducted initial screening interviews. Responders to paper and online advertisements verbally consented to have an initial phone interview with a trained research assistant to determine eligibility. They were asked questions regarding demographics, basic medical and psychiatric history and substance use. Participants deemed eligible after the initial phone interview arrived for a baseline assessment where they were assessed using the following measures: Test of Nonverbal Intelligence (ToNI), The Life Events Checklist, Clinician Administered PTSD Scale for DSM-IV (CAPS), Multiscale Dissociation Inventory (MDI), Post Traumatic Symptom Scale Self-Report (PSS-SR), The Thematic Apperception Test (TAT), and Galvanized Skin Conductance Measure (GSR).

**Measures**

1. **Test of Nonverbal Intelligence** (ToNI) is a language and culture-free test administered in 15 minutes. It is a strong measure of general intelligence. Item content covers seven different abstract reasoning and problem-solving skills: generalization/classification,
discrimination, analogous reasoning, seriation, induction, deduction, and detail recognition (Brown et al, 1997).

2. **Life Events Checklist (LEC)** is the self-report trauma assessment portion of the Clinician-Administered PTSD Scale. It consists of 17 items, including lifetime exposure to specific categories of traumatic events (natural disasters, sexual assault). Participants are asked to indicate whether a given event happened to them, if they witnessed it occurring to others, or learned about it occurring to someone else.

3. **Clinician Administered PTSD Scale (CAPS)** is a structured, clinical interview for assessing the cardinal and hypothesized frequency and intensity of signs and symptoms of PTSD. The CAPS measures DSM-IV symptoms of PTSD, associated symptoms of PTSD (e.g., survivor guilt), validity of responses, impairments in social and occupational functioning, and overall symptom severity. The CAPS has also been found to have sound psychometric properties.

4. **Multiscale Dissociation Inventory (MDI)** is a fully standardized and normed 30-item self-report test of dissociative symptomatology. It measures six different type of dissociative response (disengagement, depersonalization, derealization, emotional constriction/numbing, memory disturbance, identity dissociation). The MDI conceptualizes dissociation as a multidimensional variety of phenomenologically distinct symptom clusters. Each symptom is rated according to its frequency of occurrence over the prior month on a scale of 1 (never) to 5 (very often). The scale provides a reliable and valid way to quantify and delineate specific types of dissociative symptoms.

5. **Post Traumatic Symptom Self-Report (PSSR)** is a 17-item self-report inventory, which
assesses the frequency and severity of PTSD symptoms corresponding to the diagnostic criteria listed in the DSM-III-R modified for the DSM-IV.

6. **Thematic Apperception Test**: (TAT; Murray, 1943; 20 minutes) is a widely used projective measure used in the study of personality, including defense use and style. The TAT consists of a series of cards with black and white scenes capturing a range of ambiguous and evocative scenes. 8 TAT cards were identified in the TAT literature as either most clinically useful or as generating the greatest amount of material (i.e., highest number of themes) across individual performances. These included cards that had been reviewed for scoring by Cramer’s Defense Mechanism Manual. The sequence of cards presented to participants were: 1, 2, 3BM, 8BM, 8GF, 10, 13MF, AND 18GF. At the presentation of each of the TAT cards, all participants were reminded to answer five questions within their responses: what’s happening in this scene, what led up to it, what’s going to happen, what are the characters thinking, and what are the characters feeling. The TAT has been utilized as a stress-response task in previous studies (Cramer, 2003), given the ambiguous and ominous content of the cards.

7. **Galvanized Skin Conductance**: This methodology measures electrical conductance in the skin through detecting variance in sweat gland activity. Since sweat glands become more active in association with the arousal of certain emotions (i.e. anxiety, anger), a higher number and amplitude of conductance fluctuations is correlated to heightened levels of stress. Utilizing this objective methodology to measure regulation of emotion greatly strengthens the validity of self-report findings from the study, as it removes both interviewer bias and placebo effect.
Plan for data analysis

*Aim 1: To assess defense mechanism use for all individuals in the Sample*

The Defense Mechanism Manual (DMM: Cramer, 1991) was used to measure the defense mechanisms of Denial, Projection, and Identification in participant’s responses to the TAT. The author trained to criterion in scoring TAT stories with the DMM through practice sessions using unrelated TAT response sets with 2 fellow clinical psychology doctoral candidates, under the supervision of an experienced trainer. The sessions focused on the operationalized scoring criterion of Cramer’s DMM. After training, all 3 coders independently coded 10 new TAT response sets (provided by the supervisor). When adequate ($r \geq .80$) reliability coefficients were achieved between these scores, it was assumed that the 3 raters were scoring response sets in a manner consistent with the DMM.

12 randomly selected TAT response sets from this study were then transcribed by the author and scored by the author and one other reliable rater. Both coders were blind to all participants’ demographic data, trauma history, and physiological profile. To test inter-rater reliability, a two way mixed model intraclass correlation coefficient (ICC) was computed using absolute agreement as the standard. Then, the Spearman-Brown correction for double coding ($2r/r+1$) was applied (Shrout & Fleiss, 1979). ICC values are all in the excellent range (0.94 for Denial, 0.97 for Projection, and 0.97 for Identification) indicating excellent (.80 to .99) reliability between raters. The remaining protocols were subsequently coded by the author.

Each of the 8 TAT stories provided by the 43 participants were rated and scored for each of the defense mechanisms of Denial, Projection, and Identification. DMM scores were then derived for each of these 3 defenses. A total defense score was calculated, representing the sum of all defenses used. For example, the sum of scores for Denial Total, Projection Total, and
Identification Total. In addition, the proportional use of each of the defense mechanisms was
determined. Denial Proportion, Projection Proportion, and Identification Proportion reflects the
proportional use of each defense mechanism relative to total defense use. For example, a Denial
Proportion score of .25 reflects the participant’s use of Denial relative to total defense usage, i.e.
25% of total defense use is Denial.

Aim 2: To collect and interpret physiological patterns of autonomic arousal through skin
conductance response (SCR) variables

This study utilized the ProComp2 multi-modality physiological recording equipment that
used sensors to recognize variances in salt and water from sweat glands during the TAT
administration. The detection of variances was possible because as the skin’s surface produces
more sweat, the electrical conductivity increases, reflecting a higher reading on the device
indicating higher levels of stress. (A normal range on a ProComp2 is between 0 to 30
microSiemens. One microSiemen is equivalent to 0.4 parts per million sodium chloride (salt) and
one meg ohm of electrical resistance.) The ProComp2 also provided both intrasession and
summary statistics at the end of each TAT administration session. Several variables of skin
conductance were determined for each participant.

Skin conductance level (SCL) is a measure of the average number of responses, or level
of arousal, a participant has throughout the entire TAT task. Individuals have a great degree of
variability in their baseline SCL so it is not as dependable a measure than other variables. SCL
can also be affected by environmental factors such as temperature and humidity in the room.
Skin conductance response (SCR) rate is a measure of frequency of SCR, or how many skin
conductance responses a participant has per minute. SCR amplitude is a measure of the strength
of the SCR. It is calculated by taking all of a participant’s SCR’s throughout the task and
averaging their amplitude. The standard threshold for SCR amplitude in the literature, and used for this study is 0.2. SCR rise and recovery time are highly correlated measures. SCR rise measures how quickly the SCR takes to reach its maximum level. A higher SCR rise time would take a longer time to reach maximum level, thus a lower SCR rise time should be related to sudden arousal, versus a higher SCR rise time indicating a slow, gradual arousal. SCR recovery measures the time it takes to return to the half-way point of arousal.

*Aim 3: Compare DMM scores and SCR responses for NO of potentially traumatic events, EO of PTEs, and individuals with LO PTEs.*

Descriptive statistical analyses will be used to compare these scores across groups in order to find correlations or significant relationships.
CHAPTER 4 : RESULTS

Sample Characteristics

Demographics

The total 43 participants enrolled in this pilot study spanned a broad demographic background. There were no significant differences between groups with No Onset (NO) of Potentially Traumatic Events (PTEs), Early Onset (EO) of PTEs and Late Onset (LO) of PTEs with respect to age, gender, IQ, education, and race or ethnicity as depicted in Table 1. The average age of participants reporting No Onset of PTEs was 35 years (SD = 9). The average age reported in the EO and LO groups was 32 years (SD = 12) and 36 years (SD = 10), respectively. Participants in all groups had an average of 14-15 years of education, indicating some college experience. The racial and ethnic composition of all groups was not significantly different. On average, the composition was comprised of 32% Black, 21% White, 23% Hispanic, 12% Asian, and 12% identifying as Other. All groups also had similar monthly incomes, the sample’s average being $1489 (SD = $1181). The majority from each group identified as being single. About three-quarters of the NO and LO group was fully or partially employed and about one-quarter of the EO group were fully or partially employed.

Based on previous studies (Pelcovitz et al., 1997; van der Kolk et al., 2005), early onset interpersonal PTEs are defined as sexual or physical violence experienced before the age 14. Interpersonal PTEs are defined by inclusion of Life Events Checklist items endorsed for physical abuse/assault and sexual assault. Non-interpersonal PTEs include endorsements of natural disasters, transportation accidents, and exposure to toxic substances. Both the EO and LO groups endorsed multiple PTEs. To investigate how EO and LO groups differed on the kinds of potentially traumatic events they experienced, a chi-square statistic was conducted.
Table 1
Participant Demographics (N = 43)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Entire Sample N = 43</th>
<th>No Onset n=14</th>
<th>Early Onset n=14</th>
<th>Late Onset n=15</th>
<th>Test statistic and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>Min</td>
<td>Max</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>34 (10)</td>
<td>19</td>
<td>59</td>
<td>35 (9)</td>
<td>32 (12)</td>
</tr>
<tr>
<td>Education (years)</td>
<td>15 (2)</td>
<td>11</td>
<td>20</td>
<td>15 (2)</td>
<td>14 (2)</td>
</tr>
<tr>
<td>IQ</td>
<td>97 (10)</td>
<td>72</td>
<td>123</td>
<td>98 (9)</td>
<td>92 (10)</td>
</tr>
<tr>
<td>Monthly Income</td>
<td>$1489 ($1181)</td>
<td>0</td>
<td>$5000</td>
<td>$1529 ($794)</td>
<td>$890 ($1426)</td>
</tr>
<tr>
<td>Gender</td>
<td>n (%)</td>
<td></td>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Female</td>
<td>23 (53%)</td>
<td>-</td>
<td>-</td>
<td>10 (23%)</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>Male</td>
<td>20 (47%)</td>
<td>-</td>
<td>-</td>
<td>4 (9%)</td>
<td>9 (21%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (non-Hispanic)</td>
<td>14 (32%)</td>
<td>-</td>
<td>-</td>
<td>5 (12%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>White (non-Hispanic)</td>
<td>9 (21%)</td>
<td>-</td>
<td>-</td>
<td>3 (7%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10 (23%)</td>
<td>-</td>
<td>-</td>
<td>4 (9%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>Asian</td>
<td>5 (12%)</td>
<td>-</td>
<td>-</td>
<td>1 (2%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (12%)</td>
<td>-</td>
<td>-</td>
<td>1 (2%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>3 (7%)</td>
<td>-</td>
<td>-</td>
<td>2 (5%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Separated</td>
<td>1 (2%)</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Divorced</td>
<td>5 (12%)</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>Single</td>
<td>34 (79%)</td>
<td>-</td>
<td>-</td>
<td>11 (26%)</td>
<td>10 (24%)</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>16 (37%)</td>
<td>-</td>
<td>-</td>
<td>7 (16%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Part time</td>
<td>17 (40%)</td>
<td>-</td>
<td>-</td>
<td>5 (12%)</td>
<td>7 (16%)</td>
</tr>
<tr>
<td>Student</td>
<td>7 (16%)</td>
<td>-</td>
<td>-</td>
<td>2 (5%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>3 (7%)</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

Note. No Onset = no onset of potentially traumatic events. IQ Score from TONI-4 using Index Scores: 70-79 = Poor, 80-89 = Below average, 90-110=Average, 111-120=Above average, 121-130=Superior, >130=Very superior.
Table 2 shows the Pearson chi-square results and indicates that EO and LO groups were not significantly different on whether they reported an interpersonal PTE ($X^2 = 0.45, p = .50$) or non-interpersonal PTE ($X^2 = 0.17, p = .68$). In addition, using both self-report and clinician-administered measures, there were no significant group differences in symptom type or severity, as depicted in Table 2.

### Table 2
**Trauma type and symptom severity between trauma onset groups (n = 29)**

<table>
<thead>
<tr>
<th>Trauma Type</th>
<th>Early Onset (n = 14)</th>
<th>Late Onset (n = 15)</th>
<th>Test statistic and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>$X^2$</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>12 (85.7%)</td>
<td>14 (93.3%)</td>
<td>.45</td>
</tr>
<tr>
<td>Non-interpersonal</td>
<td>12 (85.7%)</td>
<td>12 (80.0%)</td>
<td>.17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symptom Severity</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-experiencing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS</td>
<td>9.93 (10.03)</td>
<td>8.73 (9.45)</td>
<td>-0.31 (27)</td>
<td>.74</td>
</tr>
<tr>
<td>PSS-SR</td>
<td>9.71 (8.12)</td>
<td>9.53 (9.80)</td>
<td>-0.05 (27)</td>
<td>.96</td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS</td>
<td>14.71 (14.93)</td>
<td>15.87 (13.86)</td>
<td>0.22 (27)</td>
<td>.83</td>
</tr>
<tr>
<td>PSS-SR</td>
<td>14.43 (12.36)</td>
<td>15.40 (16.12)</td>
<td>0.18 (27)</td>
<td>.86</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS</td>
<td>11.76 (10.80)</td>
<td>9.67 (9.04)</td>
<td>-0.58 (27)</td>
<td>.57</td>
</tr>
<tr>
<td>PSS-SR</td>
<td>9.93 (9.97)</td>
<td>10.53 (8.98)</td>
<td>0.17 (27)</td>
<td>.87</td>
</tr>
<tr>
<td>Total Severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS</td>
<td>36.43 (34.91)</td>
<td>34.27 (29.99)</td>
<td>-0.18 (27)</td>
<td>.86</td>
</tr>
<tr>
<td>PSS-SR</td>
<td>34.07 (27.43)</td>
<td>35.47 (31.15)</td>
<td>0.13 (27)</td>
<td>.90</td>
</tr>
</tbody>
</table>

*Note.* PTE = Potentially Traumatic Event. Early Onset is PTE < 14 years old. Late Onset is PTE $\geq$ 14 years old. Interpersonal traumas include sexual and physical assault and abuse; non-interpersonal traumas include natural disasters, transportation accidents, exposure to toxic substances. CAPS = Clinician administered PTSD Scale, PSS-SR = Posttraumatic Symptom Scale Self Report.
**Defense Use**

Defense variables were within acceptable limits for skewness and kurtosis, as indicated in Table 3. Table 4 depicts defense use for the entire sample as well as by PTE onset groups. The Total Defenses Used reflects the total sum of Denial, Projection, and Identification defenses used by the participant in their stories for all 8 TAT cards. The entire sample (N = 43) used an average of 31.88 (SD = 14.3) defenses during the TAT task. Of these, the most commonly used defense was Projection (M = 14.26, SD = 9.09), then Identification (M = 8.88, SD = 6.42), followed by Denial (M = 8.74, SD = 3.93). The Defense Ratio converts defense use into relative scores, with the use of each individual defense expressed as a proportion of total defense use. In this calculation, story length does not influence the defense scores. For the present study, proportional calculations will be used for analysis. When comparing ratio scores, the most commonly used defense was Projection (44%), followed by Denial (29%), then Identification (27%).

Because each of the defense variables was normally distributed and the assumption of linearity was not markedly violated, Pearson correlations were computed to examine the intercorrelations of the variables. Table 5 shows that one pair of defenses was significantly correlated. There is a medium to high, positive correlation between the use of Projection and Identification (r = .39, p < .01). This indicates that across the entire sample, the more individuals used Projection, the more likely they were to use Identification, and vice versa.

To investigate how defenses were used on Low Arousal cards as compared to High Arousal Cards for the whole sample (N = 43), a two-tailed matched pairs t-test was conducted and revealed significant results. Table 6 shows that there was more average use of Denial on High Arousal Cards compared to Low Arousal Cards, t(42) = -5.08, p < .001. There was also
more average use of Projection on High Arousal Cards, as compared to Low Arousal Cards,
t(42) = -8.64, p < .001. In contrast, there was more use of Identification on Low Arousal Cards,
compared to High Arousal Cards, t(42) = 2.80, p = .008.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Descriptive Statistics (N = 43)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Mean</td>
</tr>
<tr>
<td>Proportion Denial</td>
<td>.29</td>
</tr>
<tr>
<td>Proportion Projection</td>
<td>.44</td>
</tr>
<tr>
<td>Proportion Identification</td>
<td>.27</td>
</tr>
<tr>
<td>Proportion Denial in High Anx Cards</td>
<td>.29</td>
</tr>
<tr>
<td>Proportion Projection in High Anx Cards</td>
<td>.52</td>
</tr>
<tr>
<td>Proportion Identification in High Anx Cards</td>
<td>.19</td>
</tr>
<tr>
<td>Proportion Denial in Low Anx Cards</td>
<td>.31</td>
</tr>
<tr>
<td>Proportion Projection in Low Anx Cards</td>
<td>.29</td>
</tr>
<tr>
<td>Proportion Identification in Low Anx Cards</td>
<td>.40</td>
</tr>
<tr>
<td>SCR rate per minute (N = 38)*</td>
<td>6.73</td>
</tr>
<tr>
<td>Re-experiencing symptoms</td>
<td>6.28</td>
</tr>
<tr>
<td>Avoidance/numbing symptoms</td>
<td>10.33</td>
</tr>
<tr>
<td>Hyperarousal symptoms</td>
<td>7.21</td>
</tr>
<tr>
<td>Total symptom severity</td>
<td>23.81</td>
</tr>
</tbody>
</table>

Note. *Physiological data for 5 participants were not successfully obtained due to technical difficulties. Low Anxiety Cards: TAT 1, 2, 8GF, 10. High Anxiety Cards: TAT 3BM, 8BM, 13MF, 18GF.
### Table 4

**Defense use of entire sample and across trauma onset groups (N = 43)**

<table>
<thead>
<tr>
<th></th>
<th>Entire Sample (N = 43)</th>
<th>No Onset (n = 14)</th>
<th>Early Onset (n = 14)</th>
<th>Late Onset (n = 15)</th>
<th>Test statistic &amp; significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td><strong>Total Defenses Used</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Denial</td>
<td>8.74</td>
<td>3.93</td>
<td>8.00</td>
<td>3.68</td>
<td>7.87</td>
</tr>
<tr>
<td>Total Projection</td>
<td>14.26</td>
<td>9.09</td>
<td>12.29</td>
<td>5.44</td>
<td>17.00</td>
</tr>
<tr>
<td>Total Identification</td>
<td>8.88</td>
<td>6.42</td>
<td>8.86</td>
<td>5.11</td>
<td>9.60</td>
</tr>
<tr>
<td><strong>Low Anxiety Cards</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Total</td>
<td>3.37</td>
<td>2.13</td>
<td>2.79</td>
<td>1.97</td>
<td>3.14</td>
</tr>
<tr>
<td>Projection Total</td>
<td>3.89</td>
<td>3.70</td>
<td>3.21</td>
<td>2.29</td>
<td>4.71</td>
</tr>
<tr>
<td>Identification Total</td>
<td>5.07</td>
<td>3.67</td>
<td>5.29</td>
<td>2.98</td>
<td>5.29</td>
</tr>
<tr>
<td><strong>High Anxiety Cards</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Total</td>
<td>5.37</td>
<td>2.56</td>
<td>5.21</td>
<td>2.46</td>
<td>5.00</td>
</tr>
<tr>
<td>Projection Total</td>
<td>10.37</td>
<td>6.30</td>
<td>9.07</td>
<td>3.93</td>
<td>12.29</td>
</tr>
<tr>
<td>Identification Total</td>
<td>3.81</td>
<td>3.38</td>
<td>3.57</td>
<td>2.56</td>
<td>3.71</td>
</tr>
<tr>
<td><strong>Defense Ratio</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Ratio</td>
<td>29%</td>
<td>14%</td>
<td>27%</td>
<td>9%</td>
<td>26%</td>
</tr>
<tr>
<td>Projection Ratio</td>
<td>44%</td>
<td>15%</td>
<td>43%</td>
<td>17%</td>
<td>47%</td>
</tr>
<tr>
<td>Identification Ratio</td>
<td>27%</td>
<td>15%</td>
<td>30%</td>
<td>16%</td>
<td>27%</td>
</tr>
<tr>
<td><strong>Low Anxiety Cards</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Ratio</td>
<td>31%</td>
<td>23%</td>
<td>24%</td>
<td>12%</td>
<td>25%</td>
</tr>
<tr>
<td>Projection Ratio</td>
<td>29%</td>
<td>18%</td>
<td>29%</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Identification Ratio</td>
<td>40%</td>
<td>23%</td>
<td>47%</td>
<td>24%</td>
<td>41%</td>
</tr>
<tr>
<td><strong>High Anxiety Cards</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Ratio</td>
<td>29%</td>
<td>14%</td>
<td>29%</td>
<td>13%</td>
<td>26%</td>
</tr>
<tr>
<td>Projection Ratio</td>
<td>52%</td>
<td>18%</td>
<td>52%</td>
<td>20%</td>
<td>55%</td>
</tr>
<tr>
<td>Identification Ratio</td>
<td>19%</td>
<td>15%</td>
<td>20%</td>
<td>15%</td>
<td>18%</td>
</tr>
</tbody>
</table>

*Note.* Early Onset is PTE (potentially traumatic event) < 14 years old. Late Onset is PTE ≥ 14 years old. Defense Ratio refers to use of defense as a proportion of total defenses used. Low Anxiety Cards: TAT 1, 2, 8GF, 10. High Anxiety Cards: TAT 3BM, 8BM, 13MF, 18GF.
The physiological data for 5 participants were not successfully obtained due to technical difficulties with the GSR apparatus resulting in poor conductivity. Of the total 38 participants whose physiological data was captured, all SCR variables were found to be within acceptable limits for skewness and kurtosis as shown in Table 4.

The physiological characteristics of the entire sample (N = 38) is depicted in Table 7. The average Skin Conductance Response (SCR) rate for the entire sample (N = 38) was 6.73 (SD = 3.88). The EO and LO group had close SCR rate means: 6.52 (SD = 4.68) and 6.53 (SD = 3.50) respectively.

The skin conductance variables collected are known to be correlated with one another (Dawson, Schell, & Filion, 2007). Table 8 depicts that the physiological variables of this sample were significantly inter-correlated. Overall, the higher the SCL, or number of SCR’s a participant had, the higher was their frequency and strength of responses: \( r = .74, p = .01 \) and \( r = .87, p = .01 \) respectively. In addition, the faster or more sudden their arousal, the more quickly they recovered: \( r = .90, p = .01 \).

Table 5

<table>
<thead>
<tr>
<th>1. Total Denial</th>
<th>2. Total Projection</th>
<th>3. Total Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Total Projection</td>
<td>.26</td>
<td>1</td>
</tr>
<tr>
<td>3. Total Identification</td>
<td>.03</td>
<td>.39**</td>
</tr>
</tbody>
</table>

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

**Physiological Arousal**

The physiological data for 5 participants were not successfully obtained due to technical difficulties with the GSR apparatus resulting in poor conductivity. Of the total 38 participants whose physiological data was captured, all SCR variables were found to be within acceptable limits for skewness and kurtosis as shown in Table 4.

The physiological characteristics of the entire sample (N = 38) is depicted in Table 7. The average Skin Conductance Response (SCR) rate for the entire sample (N = 38) was 6.73 (SD = 3.88). The EO and LO group had close SCR rate means: 6.52 (SD = 4.68) and 6.53 (SD = 3.50) respectively.

The skin conductance variables collected are known to be correlated with one another (Dawson, Schell, & Filion, 2007). Table 8 depicts that the physiological variables of this sample were significantly inter-correlated. Overall, the higher the SCL, or number of SCR’s a participant had, the higher was their frequency and strength of responses: \( r = .74, p = .01 \) and \( r = .87, p = .01 \) respectively. In addition, the faster or more sudden their arousal, the more quickly they recovered: \( r = .90, p = .01 \).
Table 6
Comparison of defense use between Low Arousal Cards and High Arousal Cards (N=43)

<table>
<thead>
<tr>
<th></th>
<th>Low Anxiety Cards</th>
<th>High Anxiety Cards</th>
<th>Low minus High</th>
<th>Test statistic and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>(SD)</td>
<td>M</td>
<td>(SD)</td>
</tr>
<tr>
<td>Denial</td>
<td>3.37</td>
<td>2.13</td>
<td>5.37</td>
<td>2.55</td>
</tr>
<tr>
<td>Projection</td>
<td>3.88</td>
<td>3.70</td>
<td>10.37</td>
<td>6.30</td>
</tr>
<tr>
<td>Identification</td>
<td>5.07</td>
<td>3.67</td>
<td>3.81</td>
<td>3.38</td>
</tr>
</tbody>
</table>

*Note**: Correlation is significant at the .01 level (2-tailed). Low Arousal Cards: TAT 1, 2, 8GF, 10. High Arousal Cards: TAT 3BM, 8BM, 13MF, 18GF.
Table 7
Physiological characteristics of entire sample and by Onset of PTEs (N = 38)

<table>
<thead>
<tr>
<th></th>
<th>Entire Sample</th>
<th>No Onset (n = 12)</th>
<th>Early Onset (n = 14)</th>
<th>Late Onset (n = 12)</th>
<th>Test Statistic &amp; significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>SC level</td>
<td>2.99</td>
<td>2.29</td>
<td>3.29</td>
<td>2.44</td>
<td>3.00</td>
</tr>
<tr>
<td>SCR rate</td>
<td>6.73</td>
<td>3.88</td>
<td>7.19</td>
<td>3.51</td>
<td>6.52</td>
</tr>
<tr>
<td>SCR amplitude</td>
<td>0.20</td>
<td>0.15</td>
<td>0.23</td>
<td>0.17</td>
<td>0.19</td>
</tr>
<tr>
<td>SCR rise time (s)</td>
<td>3.12</td>
<td>1.37</td>
<td>3.16</td>
<td>1.24</td>
<td>3.49</td>
</tr>
<tr>
<td>SCR recovery (s)</td>
<td>7.75</td>
<td>7.11</td>
<td>6.90</td>
<td>5.77</td>
<td>9.98</td>
</tr>
</tbody>
</table>

Note. PTEs = potentially traumatic events. SC = skin conductance, SCR = skin conductance response. 5 participants with poor SCR data were not included.
Table 8
Correlations between skin conductance variables (N = 38)

<table>
<thead>
<tr>
<th></th>
<th>1. SC Level</th>
<th>2. SCR rate</th>
<th>3. SCR amplitude</th>
<th>4. SCR rise time (s)</th>
<th>5. SCR recovery time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SC level</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SCR rate</td>
<td>.74**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. SCR amp</td>
<td>.87**</td>
<td>.60**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SCR rise time (s)</td>
<td>-.59**</td>
<td>-.84**</td>
<td>-.55**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5. SCR recovery time (s)</td>
<td>-.50**</td>
<td>-.79**</td>
<td>-.49**</td>
<td>.90**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. SC = Skin Conductance. ** Correlation is significant at the .01 level (2-tailed)

Relationships among Variables

Independent samples t-tests and correlational analyses (Table 9 and Table 10) were conducted in order to determine whether there were any significant relationships between demographic characteristics (including age, gender, IQ) and either defense mechanism or physiological reactivity. There were no gender or IQ differences in the use of defenses or in physiological responses. Only age was found to correlate significantly with use of Projection and Identification as depicted in Table 10. As age increased, the total and proportional use of Identification decreased: \( r = -.44, p = .003 \) and \( r = -.35, p = .02 \), respectively. In addition, as age increased, the proportional use of Projection increased, \( r = .34, p = .03 \). Age did not have a significant effect on any of the SC variables. Therefore, age was used as a covariate in Hypothesis 3 regression models examining use of Projection and Identification.
Table 9
Gender differences and defense use (n=20 males, n=23 females);
Gender differences and physiological reactivity (n=20 males, n=18 females)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Defenses</td>
<td>-1.13</td>
<td>41</td>
<td>.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>29.25</td>
<td>11.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>34.17</td>
<td>16.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Denial</td>
<td>-1.00</td>
<td>41</td>
<td>.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>8.10</td>
<td>3.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>9.30</td>
<td>4.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Projection</td>
<td>-.40</td>
<td>41</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>13.65</td>
<td>8.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>14.78</td>
<td>9.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Identification</td>
<td>-1.33</td>
<td>41</td>
<td>.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>7.50</td>
<td>4.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>10.09</td>
<td>7.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Ratio</td>
<td>-.32</td>
<td>41</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>.29</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>.30</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projection Ratio</td>
<td>.62</td>
<td>41</td>
<td>.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>.45</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>.42</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification Ratio</td>
<td>-.32</td>
<td>41</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>.26</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>.28</td>
<td>.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC level</td>
<td>1.44</td>
<td>36</td>
<td>.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>3.49</td>
<td>2.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>2.43</td>
<td>1.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCR rate</td>
<td>1.17</td>
<td>36</td>
<td>.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>7.43</td>
<td>4.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>5.96</td>
<td>3.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCR amplitude</td>
<td>-.16</td>
<td>36</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>.20</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>.21</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCR rise time (s)</td>
<td>-.94</td>
<td>36</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>2.92</td>
<td>1.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>3.34</td>
<td>1.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCR recovery time (s)</td>
<td>-.17</td>
<td>36</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>7.56</td>
<td>7.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>7.96</td>
<td>7.20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. SC = skin conductance, SCR = skin conductance response. 5 participants with poor SCR data were not included.
Table 10
Correlation Analysis Between Age and IQ on Defense Use and Physiological Reactivity

<table>
<thead>
<tr>
<th></th>
<th>Age (N=43)</th>
<th>IQ (n=38)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
</tr>
<tr>
<td>Defense Use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Defenses Used</td>
<td>-.260</td>
<td>.092</td>
</tr>
<tr>
<td>Total Denial</td>
<td>-.097</td>
<td>.534</td>
</tr>
<tr>
<td>Total Projection</td>
<td>-.054</td>
<td>.731</td>
</tr>
<tr>
<td>Total Identification</td>
<td>-.443**</td>
<td>.003</td>
</tr>
<tr>
<td>Defense Ratio (% of total):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial Ratio</td>
<td>.029</td>
<td>.853</td>
</tr>
<tr>
<td>Projection Ratio</td>
<td>.336*</td>
<td>.028</td>
</tr>
<tr>
<td>Identification Ratio</td>
<td>-.349*</td>
<td>.022</td>
</tr>
<tr>
<td>Physiological Reactivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC level</td>
<td>-.128</td>
<td>.445</td>
</tr>
<tr>
<td>SCR rate</td>
<td>-.110</td>
<td>.512</td>
</tr>
<tr>
<td>SCR amplitude</td>
<td>-.106</td>
<td>.526</td>
</tr>
<tr>
<td>SCR rise time (s)</td>
<td>.171</td>
<td>.306</td>
</tr>
<tr>
<td>SCR recovery (s)</td>
<td>.240</td>
<td>.146</td>
</tr>
</tbody>
</table>

Note: **. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
**Hypothesis 1**

The first hypothesis predicted that the Early Onset group would demonstrate an overall pattern of lower level defense use compared to those with No Onset or with Late Onset of potentially traumatic events. Three one-way within-subjects analyses of variance (ANOVA) were conducted with the within-subjects factor being onset of PTEs (no onset, early, and late) and the dependent variables being the use of 3 defenses. The means and standard deviations are included in Table 4 where descriptives of defense use for the total sample have been previously reviewed. The assumptions of the ANOVA were met and analyses revealed no significant results. Whether one reported No Onset, endorsed Early Onset of PTEs, or Late Onset of PTEs, there were no significant differences between these groups in their average proportional use of Denial, Projection, or Identification respectively: $F [2, 40] = 1.11, p = .34$; $F [2, 40] = .58, p = .56$; $F [2, 40] = .68, p = .68$. Hypothesis 1 was unsupported. In order to determine whether there were group differences in proportional use of defenses on Low Arousal versus High Arousal cards, another three, one-way within-subjects analyses of variance (ANOVA) were conducted. These results are depicted in Table 11, demonstrating no significant differences between groups for denial, projection and identification respectively: $F [2, 40] = 2.12, p = .13$; $F [2, 40] = 2.30, p = .11$; $F [2, 40] = .02, p = .98$.

Figure 1 illustrates these non-significant group differences from Table 4, using the total number of defenses used. Notable in this depiction, is the overall greater use of Projection between arousal cards, across all groups. Also of note is the previously mentioned finding that Identification use was greater on Low Arousal Cards than High Arousal Cards for all groups. Implications of this trend are further discussed in a review of Hypothesis 3.
Table 11
Differences in Proportional Defense Use between groups for Low Anxiety vs. High Anxiety Cards (N = 43)

<table>
<thead>
<tr>
<th>Denial Use on Low vs. High Anxiety Cards</th>
<th>No Onset (n = 14)</th>
<th>Early Onset (n = 14)</th>
<th>Late Onset (n = 15)</th>
<th>Test statistic and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>F</td>
</tr>
<tr>
<td>Denial Use</td>
<td>-.05 (.17)</td>
<td>-.00 (.21)</td>
<td>-.11 (.28)</td>
<td>2.12</td>
</tr>
<tr>
<td>Identification Use on Low vs. High Anxiety Cards</td>
<td>.28 (.18)</td>
<td>.23 (.18)</td>
<td>.13 (.21)</td>
<td>2.30</td>
</tr>
<tr>
<td>Projection Use on Low vs. High Anxiety Cards</td>
<td>-.22 (.21)</td>
<td>-.22 (.23)</td>
<td>-.24 (.23)</td>
<td>.02</td>
</tr>
</tbody>
</table>

Note. Low Anxiety Cards: TAT 1, 2, 8GF, 10. High Anxiety Cards: TAT 3BM, 8BM, 13MF, 18GF.
Figure 1

Group comparisons of defense use on High vs. Low Arousal Cards
Hypothesis 2

The second hypothesis predicted that the Early Onset group, over Late Onset or No Onset group, would demonstrate greater physiological reactivity to a stress-response task, the TAT, as indicated by overall changes in measures of skin conductance including SCR rate and amplitude. The means and standard deviations of each group are included in Table 7, where physiological characteristics for the total sample have been previously reviewed. Three one-way within-subjects analysis of variance (ANOVA) were conducted with the within-subjects factor being onset of PTEs (no onset, early, and late) and the dependent variables being SC characteristics. The means and standard deviations and non-significant group differences are depicted in Table 7. Whether one reported No Onset of PTEs, endorsed Early Onset of PTEs, or Late Onset of PTEs, there was no difference between these groups in their SCR rates, $F[2, 35] = .12, p = .89$. Thus, Hypothesis 2 was not supported. Low Arousal and High Arousal Cards were alternatingly administered during the TAT administration, thereby contributing to the limits of capturing card-specific physiological data in this study.

Hypothesis 3

The final hypothesis proposed an exploratory model to begin investigating the correlations between patterns of defense use with patterns of autonomic response for the EO group, predicting that for these individuals, their pattern of defense use and trauma onset would predict physiological arousal, over and above PTSD symptoms. Given this study’s interest in investigating a sample of vulnerable individuals who have been exposed to potentially traumatic events at an early age, the proposed model included only those individuals who reported any
PTSD symptoms, thus excluding those with CAPS scores of 0, even if they had exposure to a PTE.

To investigate how well symptoms, use of defense, and onset of PTEs predicted physiological arousal when controlling for age, a hierarchical multiple regression was computed for each defense. The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met. In Table 12, when age and CAPS symptoms were entered in Step 1, they explained 23% of the variance in SCR rate, but not significantly, $R^2 = .23$, $p > .05$. 
### Table 12

Hierarchical Multiple Regression Analysis Summary for Symptom Severity, Onset of PTE, Use of Projection, Predicting Physiological Arousal (n = 23)

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>R²</th>
<th>Δ R²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td>.23</td>
<td>.23</td>
</tr>
<tr>
<td>Age</td>
<td>-0.03</td>
<td>0.08</td>
<td>-0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS symptom cluster severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.43*</td>
<td>0.20</td>
<td>1.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-0.26</td>
<td>0.17</td>
<td>-0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.06</td>
<td>0.16</td>
<td>.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td>.64***</td>
<td>.42***</td>
</tr>
<tr>
<td>Age</td>
<td>0.04</td>
<td>0.06</td>
<td>0.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS symptom severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.40*</td>
<td>0.15</td>
<td>.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-0.26†</td>
<td>0.13</td>
<td>-0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.17</td>
<td>0.13</td>
<td>.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTE onset (early vs. late)</td>
<td>0.57</td>
<td>1.35</td>
<td>.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projection defenses (proportional)</td>
<td>-20.34***</td>
<td>4.69</td>
<td>-.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td>.74***</td>
<td>.10*</td>
</tr>
<tr>
<td>Age</td>
<td>0.07</td>
<td>0.05</td>
<td>0.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPS symptom severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.43**</td>
<td>0.13</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-0.30*</td>
<td>0.11</td>
<td>-.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.20†</td>
<td>0.11</td>
<td>.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTE onset (early vs. late)</td>
<td>8.53*</td>
<td>3.45</td>
<td>1.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projection defenses (relative to total)</td>
<td>-8.95</td>
<td>6.19</td>
<td>-.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTE onset X Projection defenses</td>
<td>-19.92*</td>
<td>8.10</td>
<td>-1.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Trauma onset was contrast coded with early onset = -1 and late onset = 1. PTE = Potentially traumatic events.

*p < .1, *p < .05, **p < .01, ***p < .001.
The beta weights suggest that the re-experiencing cluster of symptoms significantly contributed to the equation (B = .43, p < .05). In Step 2, when onset of PTE and proportional use of projection were entered, these entire group of variables significantly improved the prediction, explaining an additional 42% of the variability in SCR rate, over and above what is predicted by CAPS symptoms, R2 change = .42, F (2, 17) = 9.92, p < .001. The beta weights suggest that when accounting for symptoms and onset of PTEs, the proportional use of Projection contributed most to predicting SCR rate, with all variables significantly contributing to the model (B = -20.34, p < .001).

Adding the interaction at Step 3 further improved the model, with the significant interaction suggesting that trauma onset moderated the relationship between projective defense use and SCR rate. Specifically, these two variables were significantly negatively correlated in the early onset group, but not significantly correlated in the Late Onset group, as illustrated in Figure 2. Follow-up simple slope tests were performed to examine the effect of the interaction. The slope of the early onset group was significantly different from zero (slope = -31.29, t = -4.61, p < .001) while the slope for the late trauma group was not (slope = -9.52, t = -1.26, p = .23). Thus the interaction is such that the late onset group showed no difference in SCR over the different levels of projection use, and the early onset group showed decreasing SCR with increasing projection use. Thus, for these symptomatic individuals with Early Onset of PTEs, using more Projection is associated with significantly lower physiological response than individuals with late onset PTEs. There were main effects of re-experiencing symptoms, trauma onset, and projective defenses in the final model. Each of these made unique, significant contributions, predicting 74% of the variance in SCR rate.
The next model examined the potential interaction between use of Identification and SCR rate as shown in Table 13. Like the previous model, age and CAPS symptoms were first entered at Step 1. When symptoms, trauma onset, use of Identification, and the interaction between the variables were added, the model became significant. The entire group of variables with the interaction, significantly predicted SCR rate, $F (1,16) = 6.15$, $p < .05$, adjusted $R^2 = .52$. The beta weights suggested that re-experiencing, avoidance/numbing symptoms, as well as onset of PTEs all contributed significantly to predicting SCR rate. The interaction improves the prediction by 19%. This significant interaction effect suggests that trauma onset moderated the relationship between Identification use and SCR rate.
### Table 13

*Hierarchical Multiple Regression Analysis Summary for Symptom Severity, Onset of PTE, Use of Identification, Predicting Physiological Arousal (n = 23)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAPS symptom cluster severity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>-.03</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-.26</td>
<td>-.28</td>
<td>-.33</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.06</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>PTE onset (early vs. late)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification defenses (proportional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAPS symptom severity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.43*</td>
<td>0.46*</td>
<td>0.55**</td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-.26</td>
<td>-.28</td>
<td>-.33*</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.06</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>PTE onset (early vs. late)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification defenses (relative to total)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAPS symptom severity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.55**</td>
<td>0.57**</td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-.33*</td>
<td>-.32*</td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.09</td>
<td>0.09</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>PTE onset (early vs. late)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification defenses (relative to total)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Coefficients**                              | **.23** | **.33** | **.52** |
| **B**                                         | **SEB** | **β**   | **R²**  |
| **Δ R²**                                      | **Δ R²**| **Δ R²**| **Δ R²**|

**Note.** Trauma onset was contrast coded with early onset = -1 and late onset = 1. PTE = Potentially traumatic events.  
*p < .1, *p < .05, **p < .01, ***p < .001.
Figure 3 illustrates the significant interaction. Follow-up simple slope tests were performed to examine the effect of the interaction. The slope of the early onset group was significantly different from zero (slope = 19.52, t = 2.71, p = .01) while the slope for the late onset group was not (slope = -5.16, t = -0.65, p = .52). Thus the interaction is such that the late onset group showed no difference in SCR over the different levels of identification use, and the early onset group showed increasing SCR with increasing identification use. That is, for symptomatic individuals with early onset of PTEs, using more Identification is associated with significantly higher physiological arousal than the late onset group. Table 14 followed steps from the previous models and examined the potential interaction between use of Denial and SCR rate. No
significant relationships or interaction was found between the variables, yielding no significant results for the model, $F (7, 30) = .87, p = .54$.

In sum, the final hypothesis was supported by the regression models predicting SCR rate for the onset group in the use of Projection and Identification, but not in the use of Denial. That is, when controlling for age, individuals with early onset of PTEs who use Projection as their main defense (over Identification and Denial) showed lower physiological arousal, over and above symptoms. Furthermore, the more projection they used, the lower their skin conductance response rate would be. Individuals with early onset of PTEs who used Identification (over Projection and Denial) showed higher physiological arousal. The more Identification they used, the higher their SCR rates would be. Those who used Denial (over Projection and Identification) demonstrated no significant predictive relationship to physiological arousal.
Table 14
Hierarchical Multiple Regression Analysis Summary for Symptom Severity, Onset of PTE, Use of Denial, Predicting Physiological Arousal (n = 23)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>R²</th>
<th>Δ R²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td>.23</td>
<td>.23</td>
</tr>
<tr>
<td>CAPS symptom cluster severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.43*</td>
<td>0.20</td>
<td>1.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-0.26</td>
<td>0.17</td>
<td>-0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.06</td>
<td>0.16</td>
<td>0.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td>.32</td>
<td>.10</td>
</tr>
<tr>
<td>CAPS symptom severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.42*</td>
<td>0.20</td>
<td>0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-0.31</td>
<td>0.17</td>
<td>-0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.15</td>
<td>0.18</td>
<td>0.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTE onset (early vs. late)</td>
<td>-0.75</td>
<td>1.82</td>
<td>0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial defenses (proportional)</td>
<td>7.34</td>
<td>5.65</td>
<td>-0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td>.32</td>
<td>.00</td>
</tr>
<tr>
<td>CAPS symptom severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-experiencing</td>
<td>0.42</td>
<td>0.21</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance/numbing</td>
<td>-0.31</td>
<td>0.18</td>
<td>-0.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.15</td>
<td>0.18</td>
<td>0.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTE onset (early vs. late)</td>
<td>-0.56</td>
<td>4.18</td>
<td>1.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denial defenses (relative to total)</td>
<td>7.56</td>
<td>7.18</td>
<td>-0.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTE onset X Denial defenses</td>
<td>-0.63</td>
<td>11.88</td>
<td>-1.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. PTE = Potentially traumatic events. *p < .1, *p < .05, **p < .01, ***p < .001.
Post-Hoc Analysis

Hypothesis 3 produced 2 significant models predicting physiological increase and decrease depending on the trauma onset and type of defense proportionally used. Figure 2 suggests that for a vulnerable and symptomatic group of individuals who experienced an early onset of PTEs, their greater use of Projection yielded a reduction in physiological reactivity. Figure 3 suggests that for the same vulnerable group, those who experienced early onset of PTEs, and who used proportionally more Identification, had an increase in physiological arousal.

These findings counter the first two hypotheses of the study; namely that lower level defense use might be aligned with greater physiological reactivity with this early onset group. Following the developmental theory of defenses, it was hypothesized that the group using more Projection would have greater physiological arousal than the group using mostly Identification. The question emerged as to whether this discordance might be indicative of some dissociative process. Thus, the data collected from the parent study’s self-report measure of The Multiscale Dissociation Inventory (MDI) was incorporated into a post-hoc analysis for this study. Pearson correlations were computed to examine the inter-correlations between subscales of the MDI and all defense and SCR variables.

Table 15 shows that Derealization subscale scores were positively correlated with use of Total Projection as well as Projection use in Low Arousal cards for the whole sample (r = .32, p < .05; r = .37, p < .05, respectively). In addition, the subscale of Memory Disturbance was negatively correlated with proportional use of identification (r = - .32, p < .05). Given that there were significant correlations for projection and identification, further Pearson correlations were computed to examine whether these correlations would differ between EO and LO groups.

Correlations indicated that proportional projection use on low arousal cards was
significantly positively correlated with Derealization Sub-scores in the early onset group, $r = .67$, $p < .01$, and positively correlated in the late onset group, but not significantly, $r = .24$, $p = .40$. A Fisher's r-to-z transformation was conducted to determine whether the two correlations were significantly different. Results show that they were not statistically different from each other, $z = -1.36$, $p = .17$.

Proportional identification was found to be significantly negatively correlated with Memory Disturbance Sub-scale scores ($r = -.59$, $p < .5$) in the early onset group. In the LO group, proportional identification was negatively correlated with Memory Disturbance, but not significantly ($r = -.25$, $p = .37$). Based on medium effect sizes, these non-significant results may be suggestive of significant findings in a larger study. In short, there is some indication that there may be more distinctive, dissociative processes that relate to the unique pairings of defense use and physiological responsiveness.
Table 15
Correlations between defense use, skin conductance and MDI scales

<table>
<thead>
<tr>
<th></th>
<th>Disengagement Sub-score</th>
<th>Depersonalization Sub-score</th>
<th>Derealization Sub-score</th>
<th>Emotional Constriction Sub-score</th>
<th>Memory Disturbance Sub-score</th>
<th>Identity Dissociation Sub-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin conductance level</td>
<td>0.202</td>
<td>0.234</td>
<td>0.205</td>
<td>0.034</td>
<td>0.079</td>
<td>0.157</td>
</tr>
<tr>
<td>SCR rate per minute</td>
<td>0.029</td>
<td>0.011</td>
<td>-0.053</td>
<td>-0.060</td>
<td>-0.051</td>
<td>0.012</td>
</tr>
<tr>
<td>SCR amplitude</td>
<td>0.175</td>
<td>0.145</td>
<td>0.159</td>
<td>0.012</td>
<td>0.112</td>
<td>0.213</td>
</tr>
<tr>
<td>SCR rise time</td>
<td>-0.056</td>
<td>0.047</td>
<td>0.086</td>
<td>-0.021</td>
<td>-0.094</td>
<td>0.006</td>
</tr>
<tr>
<td>SCR half-recovery time</td>
<td>-0.081</td>
<td>0.028</td>
<td>0.071</td>
<td>0.042</td>
<td>-0.098</td>
<td>-0.085</td>
</tr>
<tr>
<td>Total defenses</td>
<td>0.055</td>
<td>0.083</td>
<td>0.187</td>
<td>0.008</td>
<td>-0.051</td>
<td>-0.027</td>
</tr>
<tr>
<td>Total denial</td>
<td>-0.077</td>
<td>-0.029</td>
<td>-0.011</td>
<td>-0.102</td>
<td>0.086</td>
<td>0.072</td>
</tr>
<tr>
<td>Total projection</td>
<td>0.126</td>
<td>0.168</td>
<td>0.315*</td>
<td>0.071</td>
<td>0.055</td>
<td>-0.049</td>
</tr>
<tr>
<td>Total identification</td>
<td>-0.010</td>
<td>-0.034</td>
<td>-0.022</td>
<td>-0.020</td>
<td>-0.243</td>
<td>-0.035</td>
</tr>
<tr>
<td>Proportion denial</td>
<td>-0.047</td>
<td>-0.058</td>
<td>-0.090</td>
<td>-0.077</td>
<td>0.150</td>
<td>0.132</td>
</tr>
<tr>
<td>Proportion proj.</td>
<td>0.148</td>
<td>0.184</td>
<td>0.269</td>
<td>0.168</td>
<td>0.198</td>
<td>-0.023</td>
</tr>
<tr>
<td>Proportion ident.</td>
<td>-0.101</td>
<td>-0.126</td>
<td>-0.180</td>
<td>-0.093</td>
<td>-0.322*</td>
<td>-0.094</td>
</tr>
<tr>
<td>Denial in low arousal cards</td>
<td>-0.090</td>
<td>-0.124</td>
<td>0.002</td>
<td>-0.074</td>
<td>0.082</td>
<td>0.067</td>
</tr>
<tr>
<td>Ident. in low arousal cards</td>
<td>-0.018</td>
<td>-0.010</td>
<td>-0.032</td>
<td>-0.002</td>
<td>-0.254</td>
<td>-0.078</td>
</tr>
<tr>
<td>Proj. in low arousal cards</td>
<td>0.153</td>
<td>0.205</td>
<td>0.372*</td>
<td>0.003</td>
<td>0.047</td>
<td>0.100</td>
</tr>
<tr>
<td>Denial in high arousal cards</td>
<td>-0.045</td>
<td>0.059</td>
<td>-0.019</td>
<td>-0.095</td>
<td>0.064</td>
<td>0.056</td>
</tr>
<tr>
<td>Ident. in high arousal cards</td>
<td>0.002</td>
<td>-0.054</td>
<td>-0.007</td>
<td>-0.036</td>
<td>-0.187</td>
<td>0.018</td>
</tr>
<tr>
<td>Proj. in high arousal cards</td>
<td>0.093</td>
<td>0.122</td>
<td>0.235</td>
<td>0.100</td>
<td>0.052</td>
<td>-0.130</td>
</tr>
</tbody>
</table>

Note. MDI = Multiscale Dissociation Inventory. SCR = Skin conductance response
*Correlation is significant at the 0.05 level (2-tailed).
CHAPTER 5 : DISCUSSION

“I thought how unpleasant it is to be locked out; and I thought how it is worse, perhaps, to be locked in.” (Virginia Woolf, 1929, p. 24)

Summary of Main Findings

The exploratory nature of this study afforded an opportunity to examine some important theoretical constructs in light of empirical evidence. Namely, the study examined the hypothesis that early exposure to potentially traumatic events would have a qualitatively different impact on individuals than late onset of such events. The questions for the present study were inspired by clinical presentations of trauma survivors and psychoanalytic models that inform theories of mind, and that in turn impact clinical conceptualization and intervention. The differences were hypothesized to be evidenced by unique patterns of defense use and physiological reactivity. The main findings indeed support this hypothesis, demonstrating that the onset of potentially traumatic events is linked to distinct pairings between the use of a particular defense and its moderating impact on physiological reactivity. The overall aim was not to identify conclusive thumbprints branding early trauma survivors, but to better understand a potentially differential developmental relationship that may exist between unconscious defensive functioning and physiological reactivity.

High Projection Use and Low Arousal in Individuals with Early Onset of Potentially Traumatic Events

The first main finding revealed that a group of symptomatic adults who had been exposed to potentially traumatic events before the age of 14, and who tended to use projection as their main defense (over denial and identification), demonstrated significantly lower rates of
physiological reactivity than adults who were exposed to potentially traumatic events as an adult. Moreover, using proportionally more projection significantly reduced their physiological reactivity, compared to the late onset group. The implications of this finding suggest that this early onset group who used projection as their modus operandi, used it effectively, such that it lowered their arousal level during the stressful task.

To briefly review, the advantage of measuring skin conductance is that the autonomic response system is not normally under conscious control. According to the theory, psychological stress will activate the use of defense mechanisms. The greater the stress, the greater the need for defense. Since stress also activates the autonomic nervous system, an increased use of defenses should be related to heightened physiological arousal. The use of defenses protects the participant from the conscious experience of anxiety, although arousal on the physiological level may continue (Cramer, 2003).

That greater use of projection lowered the physiological stress response for these individuals is consistent with the developmental theory of this defense. Projection emerges as a defense of “expulsion” (Tuber, p. 40, 2012). This defense works effectively if it gets rid of noxious, unwanted, or unacceptable feelings by attributing them to someone or something else. The lowered physiological stress response with greater use of this defense can be interpreted as an indicator of its effective discharging of the negative affect.

Of note, the Defense Mechanism Manual sub-category of projection that was ubiquitously used by participants in this study was the “Attribution of Aggressive or Hostile Feeling, Emotions, or Intentions to a Character, or Other Feelings, Emotions, or Intentions that are Normatively Unusual” (Appendix B). This category was scored when such emotions were attributed by the participant to a character in their TAT story, or when one character attributed
them to another character, but only if such attribution was without sufficient reason. In addition, references to a character’s face or eyes looking a certain way, or references to body position were also scored under this sub-category. The literature has suggested that individuals with PTSD demonstrate an expectation for threat and harm, as evidenced by selective attention to threat cues and tendency to interpret neutral or ambiguous stimuli as threatening. This hypersensitivity to threat is associated with heightened emotional responsiveness including hypervigilance (Garfinkel & Liberzon, 2009). Other neurophysiological findings support that PTSD is characterized by increased autonomic arousal in response to trauma-related stimuli, and that these individuals are hypervigilant because their increased physiological arousal predisposes them to readily process stimuli that are minimally threatening (Chemtob et al., 1998). What then, might explain this significant main finding of lowered physiological response?

By examining the appraisal process itself, the literature suggests that the exact mechanisms of attentional bias remains mixed (Buckley, Blanchard, Neill, 2000), including findings that report that the development of PTSD is associated with specific appraisals (McNally, 2003; Ehlers et al., 1998) and coping styles (Aldwin and Yancura, 2004). Whether the pathways of appraisal are adaptive or maladaptive is multi-determined (Olff, et al, 2005). For instance, epidemiological studies of PTSD prevalence has shown that compared to subjective characteristics, the objective characteristics of events were far less sufficient predictors, particularly with the chronic subtype of PTSD (Ozer et al., 2003). Subjective appraisals such as perceptions of loss, threat, and harm may explain divergent results about the risk for PTSD. Alternatively, divergent results in the literature have been interpreted in terms of habituation or accommodation to chronic exposure to stress, such as coping with air raids, and exposure to threat of terrorism (Arambasic, 1996; Zeidner and Bleich et al., 2003). There may be specific
adaptive modes of coping with ongoing threat, as well as a kind of stress-inoculation process that may be occurring.

Beyond the appraisal of an external event as threatening, it has been researched that perceived controllability or belief in the effectiveness of coping can moderate biological stress response (Olff et al, 2005). For individuals in this study, it would appear that though they may perceive an elevated sense of threat, their ability to appraise effectually serves a protective function. The seeming incongruence of greater defense use and lower physiological arousal points towards the idea that goal-directed and self-preserving maneuvers employed by this group may be seen as an adaptive response associated with efficacy of ridding negative feelings and using skills primed for threat evaluation. By focusing on the how –whether the defense of choice is effective, over the what- the defense of choice itself, there is opportunity to interpret the findings from a strengths-based perspective. Reconceptualizing aspects of symptomatic hypervigilance as an adaptive, effective skill, might help patients apply these strengths towards other needed areas of weakness. Furthermore, given that these participants appeared to use more projection when endorsing greater symptoms in the Re-experiencing cluster of symptoms, it could be useful to reframe patients’ subjective symptoms (of intrusive recollections, distressing dreams, acting/feeling as if event were recurring, psychological distress and reactivity) using a perspective that underscores some aspect of their pro-active, adaptive responding.

In considering how effective this defense use may be, study findings suggest that there are limitations to what can be interpreted. In the short-term, as far as moderating the physiological arousal based on a stress-inducing TAT task, the findings support an adaptive response. However while situational hypervigilance may be adaptive, it is difficult to determine the long-term effects of this defensive strategy. This is a symptomatic group of participants
whose marked reliance on projection corresponds to a significant increase in *Re-experiencing* and *Hyperarousal* symptoms. It is possible that while in the short-term, the use of this defensive strategy is effective, it has long run consequences, with evident stress-related symptoms. This defensive coping may impede broader information processing abilities and maintain anxiety. In addition, SCR rate, while found to be sensitive to threat cues (Phelps et al., 2001; Szpiler & Epstein, 1976), is a measure that captures sympathetic nervous system activation. This is distinct from endocrine and cardiovascular responses, which encompass both sympathetic and parasympathetic activity. Biological studies of PTSD have established that the hypothalamic-pituitary-adrenal (HPA) axis in PTSD sufferers have a unique profile of elevated corticotropin releasing hormone (CRH). Moreover, in line with stress-response theory, PTSD is linked to the phenomenon of allostatic load (McEwen, B.S., 2002), referring to the cumulative strain on the body produced by repeated ups and downs of physiologic response, as well as elevated activity of physiological systems under stress. That adaptive situational hypervigilance may be linked to other potentially maladaptive, chronic (increased cortisol production, exaggerated startle response) behaviors complicate the symptom picture.

**High Identification Use and High Arousal in Individuals with Early Onset of Potentially Traumatic Events**

The second main finding with a group of vulnerable, symptomatic adults who had been exposed to a potentially traumatic event before the age of 14, and who tended to use identification as their main defense (over denial and projection), showed significantly *higher* rates of physiological reactivity than adults who were exposed to a potentially traumatic event as an adult. In addition, using proportionally more identification increased their physiological
response. The late onset group who used more identification had significantly lower physiological response compared to the early onset group. This finding suggests that the defense of identification may have been used differentially between individuals with early exposure versus late exposure to potentially traumatic events.

Following the developmental model of defense development, identification comes with advances in object relations and the ability to differentiate between self and others. In short, one of the main functions it may serve is to protect self-esteem (Cramer, 1991). In contrast to the simple expulsion characteristic of projection, identification is a defense with more affective sophistication. Use of identification allows for an internal transformation of affective experiences into more tolerable, manageable internal phenomena (Tuber, 2010, p. 41). Identification may be manifest in different ways. It may be seen in the wish or attempt to take on the skills or accomplishments of admired others, or acquire their personal qualities. Identification is also seen when the individual affiliates with another or group, for enhancing compromised self-esteem.

Within a traumatically vulnerable group, a prevalent use of this defense may reflect a heightened awareness of one’s bad, malevolent, or threatened parts of self. The need to use this defense reflects some cognizance of these different parts. In this way, the defense operates by affiliating with someone unlike them, expressing an unconscious wish to preserve their own self-esteem. The present study findings that for the early onset PTE group, physiological arousal increases with greater use of identification may be explained by the fact that unlike projection, the use of identification does not negate or expel unwanted feelings. The damaged self-concept persists and perhaps is reified in contrast to an “other,” despite attempts to affiliate with a “good” self. Cramer delineates this use as “defensive identification,” or a way of avoiding anxiety and maintaining self-esteem (2006, p. 108). This may be in contrast to the mechanism used by the
late onset group, who demonstrates significantly lower arousal when using identification as their modus operandi. Without a chronic history of developmental trauma, and thus a long-standing “bad” self, it is possible that this group was able to use this defense more effectively and rely on a “good” self that was not as compromised with later exposure to potentially traumatic events. Cramer refers to this mechanism as “developmental identification” (2006, p. 110), a necessary part of normal psychological development that contributes to the formation of a conscience, of the ego-ideal, and of “identity.” Cramer explains that in contrast to defensive identification, developmental identification leads to structural change in the self-representation (2006, p. 110).

Recalling early ego-psychology theories (Freud, 1926, Hartman, 1965, Blum, 1987), the development of identification involves taking experiences with the outside world and placing them inside to create new ego structures. With early trauma survivors, it is theoretically surmised that such structural formation has been compromised and thus it is really the use of defensive identification that is called upon during situations of stress and anxiety.

In early psychoanalytic studies on the consequences of trauma, the defense of identification has been reviewed around the concept of identification with the aggressor. First formulated by Anna Freud in her classic book The Ego and the Mechanisms of Defence (1936), this concept is related to the mastery of stress and shock trauma and to the tendency of the ego to be active where it was formerly passive or helpless (Blum, 1987). It is understood as a response to feeling overwhelmed with threat, and the adoption of behaviors, perceptions, emotions, and thoughts of the aggressor. The tendency to identify with the aggressor is rooted in the child’s use of identification to overcome feelings of fright and helplessness. The developmental roots of identification with the aggressor are described by Spitz (1965) as identification with the “no” and the beginnings of internalization of parental prohibitions which the child will begin to verbalize
on her own, later in development (Blum, 1987). Once again, when considering an early environment where this normal structuralization of prohibitions and ego-development are disrupted, and when a sense of the world as safe no longer exists, this defense may be essential to make one’s self disappear. It would be safer to transform ourselves into someone else’s image of us, into the very thing that threatens us, in order to protect ourselves.

Contemporary psychoanalytic writings have investigated the links between identification with the aggressor and dissociation as part of traumatic response (Frankel, J. 2002; Davis, J.M. & Frawley, M. G. 1994). Davies and Frawley (1994) write:

“In addition to preservation of relational bonds, the survivor’s identification with the perpetrator protects her from contacting the helplessness and vulnerability of her victimized self. Survivors report a paradoxical sense of power and control when they cut themselves or drive recklessly, or engage in sex with men they hardly know. Identifying with her perpetrator, the survivor experiences this illusory empowerment, denying that her self-abuse is hurtful. ...Like their victimizers, they successfully split off a sense of themselves as vulnerable, scared, and out of control” (p. 132).

Frankel (2002) writes about how habitual identification with the aggressor can lead to masochism, chronic hypervigilance, and other personality disorders as a response to trauma. He describes the:

“precocious development of hypersensitivities, super-intelligence, even clairvoyance, whose purpose is to assess the environment and calculate the best way to survive. Knowing the aggressor ‘from the inside,’ in such a closely observed way allows the child to gauge at each moment precisely how to appease, seduce, flatter, placate, or otherwise disarm the aggressor. Without conscious thought, the child suddenly discovers the precocious abilities that are needed for the job” (p. 104).

In these conceptualizations of the ways that the defense of identification may be used, the prominent need to protect against imminent threat is apparent. Perhaps in contrast to the way that
projection was used effectively, there may be more dissociative mechanisms involved in using identification with the aggressor, assisting an adaptive response by selectively splitting off only those feelings that may pose a threat in the immediate situation if they were expressed. The presence of such dissociative features may be one explanation for the evidence of higher physiological arousal with greater use of this defense in the early onset group. Davies (1998) discusses the distinction between dissociation and repression where repression has the unconscious “goal of keeping certain experiences entirely and permanently out of awareness, whereas dissociation stresses the failure to integrate certain fundamentally incompatible interpersonal experiences and the vertical splitting of consciousness into independent centers of associational interconnection” (pp. 58-59).

The literature on the relationship between dissociative reactions and PTSD has been extensive, yet mixed. One meta-analysis of pre and peritraumatic risk factors for PTSD concluded that peritraumatic dissociation was the strongest predictor of PTSD (Ozer et al., 2003). In others, the trauma itself seems to breed chronic dissociative symptoms. A history of childhood trauma in particular, has been researched to be prevalent among adults who dissociate (Dancu, Riggs, Heart-Ikeda, Shoyer, & Foa, 1996). As of yet, the available evidence indicates that research is still needed to delineate the specific roles of all potential factors that may account for the association between dissociation and trauma pathology – including pre, peri, and post-traumatic links. Much like the term “trauma,” dissociation has come to mean too many things and the construct suffers from over-use.

**Dissociation subscales and Defense Use**

An unarticulated aim of this study has been to contribute to a better conceptual understanding of some aspect of dissociation - is it a process, organization, psychological
defense, or symptom? It is clear that dissociative phenomena is intimately tied to trauma experiences. Might it be possible then to consider that the present study’s finding of high projection use and low arousal, and high identification use and high arousal, are manifestations of some aspects of dissociation? Post-hoc analyses were employed to investigate this question, revealing significant correlations with some aspects of dissociation. Individuals with early onset of potentially traumatic events who relied on projection on low arousal cards, endorsed higher Derealization scores. Individuals with early onset who used proportionally more identification overall endorsed lower Memory Disturbance scores.

Might this support the idea that particular psychological defenses may support the adaptive or maladaptive use of varying forms of dissociation? Holmes et al. (2005) has evaluated the differentiation of two qualitatively separate types of dissociation: detachment and compartmentalization. They specified Derealization as an example of detachment, and Memory Disturbance as a form of compartmentalization. Detachment is considered to reflect experiences of disconnection from self and others while compartmentalization portrays disturbances in the capacity to manage and experience certain internal processes of emotion, thought, and memory. The former is an externalizing phenomenon, the latter a more internalized conflict. These conceptualizations help to more closely target therapeutic interventions.

Case Studies

Drawing from the rich data of the TAT, 4 individual case studies will be discussed to expand upon the main group findings. A qualitative analysis can further highlight the complexities of individual difference, amidst the group effects. The following 4 participants were chosen because their profiles approximate the study’s main findings. All 4 participants endorsed
early exposure to potentially traumatic events. 2 relied on using the defense of projection and indicated a low arousal profile. Another 2 participants tended to rely on identification and demonstrated high physiological arousal. A closer examination of their narratives helps bring to life the nature of their anxieties, their main defenses against identified conflicts and fears, and ways in which they attempt to reconcile them. This data enriches the study’s main findings by adding clinical relevance. These qualitative analyses can be juxtaposed with a visual representation of their physiological profiles as represented in Figure 4.

**High Projection Users**

*Case of “Paula”: Early exposure to potentially traumatic events*

Paula is a 23 year old Black female who endorsed childhood sexual trauma at age 9. She met criteria for PTSD.

Card 1, the first to be administered, depicts a young boy contemplating a violin that rests on a table in front of him. Paula’s responses are longer than most in the sample, running approximately 24 minutes. Of note, her language throughout the task includes repetitions of words, phrases, and ideas:

(Card 1) Well this little boy he looks as if he’s confused or he’s just sad about not being able to play the violin as I can see. Or he’s been let down by a parent or has been told he’s been disappointed in. And he feels as if he can’t accomplish certain things so therefore he just put his instrument down and just looks at it as an obstacle he can’t overcome. He, he wants more in life even though he’s just a child he feels as if he shouldn’t be treated the way he is being treated or he shouldn’t be told certain things the way he’s told. Because I know that kids they usually feel as if when you’re told the harshest of truths it really affects them so. He just looks, he’s really, really let down and he doesn’t know how to feel at that point, at that given time. What may be happening next would be him giving up completely playing the instrument probably be more serious in his work or in his studies. But truly his passion lies within the instrument, you can see that. He expects more in life but I feel like if he were to get older, he probably would try to repress his passion for certain things and just go full fledge into the work field and
try to forget about it. But even that you could see within his work he wouldn’t be happy. He looks like he’s bored with work ‘cause there’s a book under the violin and he looks like he doesn’t want to do anything pertaining to work. He rather just play the instrument himself. That’s it.

Striking in Paula’s narrative is a lack of an organizing temporal glue. Though Paula generates many words and offers a succession of hypothetical themes, it’s difficult to understand where the story is going. Paula’s attempt to deal with the ambiguity of the card produces an abundance of defensive reactions. Most prominently, she projects negative attributions onto the adult figures and the child in the card is left confused, let down, and helpless. There is an emergent feeling of disorganized attachment in the way the child relates to his predicament. The anxiety produced by this first card causes Paula to grasp rather ineffectively at all her defenses.

With the 4th card, Paula’s use of projection is more fully prominent. While there continues to be an ineffective temporal integration of the story, Paula begins to project threatening, aggressive, hostile impulses with abandon and her narrative does convey a sense of discharging all the rising, negative affect:

(Card 8BM) Woah. Okay! Well this kid looks like he’s from the Omen. I don’t know who’s having surgery but it seems as if this child is losing something great in his life so he has to watch on and hope and pray that this person lives on to help him live. And he’s never seen some trauma like this in his life so now it’s like the crossroads where he has to wait. These doctors on this person, it seems as if it just happened over night like somebody broke into the house and somebody, a lot of people were held hostage and somebody was stabbed or injured or shot and god, by god’s grace there’s like two doctors in the house and they’re performing a surgery without no anesthesia, no anything and they’re just trying their best to make the best of this situation and save this person. But then again, there’s a shotgun pointing upward so maybe this person is being abused cause they have a really strange, weird face like that straight face with no emotion in their eyes so maybe this person is actually shot the person that was providing for them because they felt a certain way or they weren’t given a certain attention or a certain love that they see other people get like. Like there’s a coldness in this kid’s eyes and it’s scary like, why? There’s a dark window… there’s a person on the table you can see he’s in pain but this kid just has a straight face as if he’s the murderer himself almost. Maybe he was abused, maybe he was hurt or maybe his mother was hurt. Maybe somebody he was close to got hurt in such a way that this is the
person on the table affecting everybody and he thought maybe if I killed him, maybe if I shot him he’d stop. Future wise, futuristic wise maybe he becomes a serial killer later on in life, I don’t know. Or he becomes a person that wants to be part of the laws made. Maybe this is a mistake he never realized would affect so much, Or maybe he doesn’t care cause he felt like this was justice served. And these doctors they’re working effortlessly to try and save but this is only the first phase of the surgery as I can see.

The story also includes an addition of more ominous characters – “somebody broke into the house” and “a lot of people were held hostage,” and multiple references to injury, assault, entrapment, and cruelty abound. Paula’s ability to integrate the characters in the story is compromised also by the fact that she frequently performs a reversal of roles. Cramer defines this defensive maneuver in the denial category, when characters take on qualities previously stated conversely in the story. Paula does this often – the protagonist is the abuser, then becomes the abused, then returns to becoming a serial killer in the future. It seems that the reversals serve the purpose of covering all potentially threatening possibilities – as if the organizing principle is to name all the sources of potential danger.

Paula’s response to the next card is especially revealing because it is a low arousal card with one of the more neutral images in the series. A young woman is sitting in a chair with her chin in her hand, looking off in to the distance. Paula’s high generation of aggressive and hostile projections is readily apparent:

(Card 8GF) This woman looks as if she’s daydreaming. She looks like she’s been working really, really hard cause her hands are kind of, her sleeves are up. So maybe she’s a maid. And she wishes to be rich one day and to fall in love one day. Maybe she wishes for the man of her dreams to come through the door where she’s in love with this person that she’s cleaning for. She sees all the things around him going awry or maybe he’s a single father or a single rich man. I don’t know, with children. And she wants to be the mother at that point. Or maybe she sees this rich man and his wife fall in love and she’s jealous. She could be jealous and thinking of ways to get rid of this extra person that’s in her way. So that she gets what she wants. Or maybe she’s just thinking overall like how she’s going to provide for her family. Cause she’s just daydreaming for the most part. She doesn’t have a rough face. She looks like she’s just zoned out. Maybe she’s in a
corner of a house. She finds her own little corner like after she stops working for a
little bit, takes a rest, and she just started daydreaming about what she could have
done in the future, what she could have done in her past and be her future. Um
certain answers and certain decisions she made, she could’ve made better and
now she realizes that she had no choice. Or maybe she’s a single mom with a lot
of kids and the man is probably beating her cause it looks like she’s a little
bruised here on top of her eye a little bit. So she said this is her only escape I
guess, out of the household. She’s cleaning somebody else’s house and she’s
away from her husband, she’s away from her kids. But she probably worries
about her kids thinking that her husband can do the worst possible things to them.
But! yet again she has to make a living. Futuristic wise, she said she’s going to get
herself out of certain situations but she still remains because there’s the roof over
her head, over her children’s head. Her husband is probably still going to remain
her husband because she loves him and she knows him before all the abuse. Or
she sees the family that she wants or - and she wants it for herself too but then
again she’s not as strong as other woman may be. So she decides she’ll stay, hope
to get a little more money and get her kids out of whatever situation she’s going
through. That’s it.

The protagonist begins with an idealizing wish to fall in love. Quickly this devolves, once
“she sees all the things around him going awry,” and her defensive reactions are unleashed, as if
her flight into fantasy was intolerable. Themes of jealousy, threat, uncertainty, mistrust and
abuse are imbued into the story but the underlying affects are not confronted. The clear sense of
threat, that something will go awry, is dealt with by shifting attention to another, possibly more
heinous event. Paula’s reference to the figure’s “bruised here on top of her eye a little bit,” is a
striking comment, generating the plotline of abuse.

Case of “Pam”: *Late exposure to potentially traumatic events*

Pam is a 50 year old Hispanic female who endorsed her first sexual assault at age 46. She
met criteria for PTSD.

(Card 1) Oh, wow. It looks like he’s a kid who’s been sexually abused and he
doesn’t know what to do. Um, he trusted his violin instructor and he’s at home
right now and he doesn’t want to go to violin practice and he’s not telling… Like
his mother’s saying “You have to go! You have to go! You have to go!” and he
doesn’t want to go, but he doesn’t know what to do about it. \textit{(And what’s going to happen?) He’ll get raped. He’s going to get molested.}

Pam’s response is a good example of an evident mismatch between the common themes typically pulled for by this low arousal card and Pam’s interpretation of the boy’s situation. If the TAT is a task that tests for the “mastery of morbid affects” through the use of narrative (Tuber, 2012), Pam’s response calls into question her basic reality testing. She projects an inordinate degree of threat experienced by the boy, as well as an added, abusive violin teacher. The boy’s mother too, is mis-attuned, hostile, and can’t be trusted as someone the boy might turn to for safety. In contrast to a Pollyanna-lish story that ends with a superficial ending, this one completes with determined danger. Nonetheless, the effect of Pam’s degree of apprehension for threat based on this card may indicate her great need to expel the hostile affects she experiences everywhere.

Pam’s responses are also striking for the ways in which she intrudes upon the storytelling task by inserting her own, first-person subject. On Card 3BM, and then a few times throughout the task, she uses the pronoun “I,” breaking the frame of the task.

(Card 3BM) Battered and abused. Yeah, this is, this is like someone, you know, I don’t know, I can’t tell if it’s a woman? Yeah, probably a woman, who’s feeling like I do. You know, drained, don’t know what to do, where to go, who to talk to. Physically abused, mentally abused. And, um, just in pain. Just don’t know what to do. Just in a hole. What led to that could be through no fault of her own. Just a bad decision. Even the best decisions can get you in situations like this woman here.

Pam shows her limited ability to create a narrative with temporal parts. She aligns herself with the character’s affective state and then has difficulty moving beyond it. The character, and Pam for matter, is stuck with her own bad decision. There is no elaboration beyond the perception of her battered experience. By the end, it is as if Pam is describing herself, providing a view into the egocentric quality of Pam’s limited object relational world.
**High Identification Users**

Case of “Isaac”: *Early exposure to potentially traumatic events*

Isaac is a 35 year old male, identified as “other,” who experienced sexual assault at 10 years old.

He met Criterion A only, and does not carry a PTSD diagnosis.

(Card 1) So this is a story of a little boy who plays violin. One day he was playing his violin and one of his strings broke and so he had no strings and he was wondering how to fix it. So he sat down on the table and put his hands on his head and was thinking about how he can fix the violin so he can play it again. *(What’s going to happen?)* And he realized that he doesn’t really have the money for it himself so he’s thinking that eventually when his grandpa comes home, his grandpa will take him out and help him get the violin restrung. *(What is he thinking and what is he feeling?)* So he’s thinking how that, long that will take to get it fixed and, and he’s frustrated because he had to practice and wasn’t able to do. He wants to make music.

Isaac demonstrates a seamless integration of conflict, resolve, and temporality in his narrative.

There is some paucity of affect – the little boy thinks his way through the situation initially until Isaac is prompted to answer about what he might also be feeling. There is also identification with a benevolent, older figure who will aid the boy and support his ambition to make music.

As the task progresses, the conflict of indecision becomes a predominant theme throughout Isaac’s responses, and actually appears on nearly every card after Card 1:

(Card 3BM) So this is a story about a young adolescent that…. is tired, and has a lot of emotion I think. And sat down one day just to have some quiet time, by I guess himself, and needed some quiet time to just collect his thoughts away from the parents, and….. *(So what’s going to happen and what is he thinking and feeling?)* I think that he came there because he was tired and needed to rest and collect his thoughts in solitude and, eventually he’ll get up and have to face the rest of his day. And I think, he’s thinking about some of the different decisions that he’s had to make. And he’s felt a bit indecisive about them, and maybe perplexed because he doesn’t know how to make the right decision, or decision that he feels comfortable with. But he wants to do his best so after the quiet time, he will have to make the decision that he thought about.
Unlike Card 1, Isaac’s protagonist in this card identifies parental figures who he needs to separate from. Though he begins the response with reference to affect – “lot of emotion,” there is little elaboration beyond this. In fact, Isaac returns to a conflict of right versus wrong through a decision he needs to make.

(Card 8GF) This is a story about a woman, who’s an artist and lives alone, and is having a cup of tea, and is waiting, thinking, contemplating, some of their work. And she’s been living alone for a while and is thinking about moving to another place, maybe to another location in the world; is thinking about if this is the right space for her, in the city. Or if these people she’s meeting, are the right people that she’s meeting. (What’s going to happen next?) She’s going to make a decision, whether not to do that, whether not to move, and she… she’s trying hard because of the financial situation she’s in. (What is she feeling?) She’s feeling a lot of emotions. Like she wants to stay, she wants to go, and she’s feeling inhibited somewhat.

Case of “Ivan”: Late exposure to potentially traumatic events

Ivan is a 29 year old Black male, who experienced combat in a war zone at age 19. He met criteria for PTSD.

(Card 1) He’s upset because his violin broke and he really wants to play it. It’s frustrating him and he wants to throw it on the floor and break it. He’s bored and he, um, he doesn’t know what to do with himself. You want me to keep on going? (What’s going to happen?) He’s going to find a way to try to fix it, but it’s not going to work, so he’s going to end up eventually breaking it.

Readily apparent in Ivan’s response is the confounded and constricted sense of time. The boy is upset in the present because the violin is broken, yet he wants also to break it himself, and in the future, he’ll still “end up eventually breaking it.” His sense of the future is restricted and hopeless, as if he is telling a story with no possibility for a new ending. It ends just as it begins, with no hope for a reparative or agentive future. Also evident is the easily accessed aggressive impulse – “he wants to throw it on the floor and break it,” that Ivan quickly departs from by stating immediately after that the boy is “bored.” Ivan undoes the aggression by reverting to a state of unknowing, evidenced further by his own direct questioning to the administrator about
the task. In identifying with the frustration, there is a sense of hopeless destruction. Ivan shows very little affective flexibility. There are few choices about how to feel about this situation.

In the next few responses, an interesting shift occurs around managing the aggressive impulse Ivan identified with above. In Card 2 and Card 3BM, Ivan’s protagonists get punished for doing things they’d like to do:

(Card 2) She just got out of school. She doesn’t want to go straight home. She wants to stay out and gaze upon the hills and watch the farmers plow the land. She’s going to get in trouble when she gets home because she was supposed to go straight home from school and she didn’t listen.

(Card 3BM) She’s real tired. She went out last night, to hang out with some friends. And now she has to go to work in the morning. But she can’t get out of her bed, so she decided to kneel down and put her head on the bed. She will be running late. She’s going to get written up for it. Anything else?

There are several striking things to note in Ivan’s responses. For one, there is some improvement in temporal breadth, in contrast to the circularity of time in Card 1. However, both cards have a very similar arc whereby the protagonist will “get in trouble,” and pay consequences for doing what she prefers. For both responses, there is a clear presence of a powerful, externalized authority. Ivan reveals how rigid his internalized prohibitions are, limiting his ability to imagine any other outcome other than reproach. In Card 3BM, Ivan completely omits mention of the object commonly seen as the gun, further indicating how his aggression, readily seen in Card 1, turns latent. Instead, he effectively aligns it with a harsh superego that becomes the main organizing force of his stories, indeed contributing to a less constricted narrative than his first response, albeit still limited in its affective range.

By Card 8BM, Ivan reveals his range of functioning, evidencing his ability to integrate the characters quickly into relationships that make sense of the complex scene.

(Card 8BM) This one, um, seems like a bystander, is in the medical facility and like he wants to look at the operation but he really doesn’t so he’s staring away.
But it’s hard for him, and it’s making him sad because he can’t really look at what they’re doing to the guy on the table. *(What led up to it, what’s going to happen?)*

Hm. He’s an intern, and the guy on the table got a gunshot wound. And what’s going to happen is he will eventually turn around and watch and try to take the bullet from his side.

He does not completely shy away from the aggression here, incorporating it as a “gunshot wound.” Furthermore, he turns his “bystander,” into an “intern,” who, despite not wanting to look, takes action in the end to “take the bullet.” Ivan also reveals more about his conflicts – “he wants to,” “he really doesn’t,” and “it’s hard,” “it’s making him sad because he can’t really look.” Ivan reveals identifications with various parts of himself – as a passive bystander, a timid intern, and then a brave hero, and his conflicts around reconciling these possibilities breaks through. Ivan’s protagonist also struggles with his own desire, fear, and sadness, and eventually can “take the bullet” but offers no explanation for how or why.

Ivan’s progression through the task reveals a range of his defensive operations; how his superego contains his aggression, can organize his thoughts under pressure, but also how it limits his overall emotional range. Ivan does demonstrate his reliance on identification to regulate destructive impulses.

Figure 4 depicts a snapshot of the physiological profiles of the 4 cases previously illustrated. The overall higher and increasing physiological profiles of high identification users Isaac and Ivan, stand in contrast to the markedly lower physiological profiles of high projection users, Paula and Pam. Their length of narrative responses and time of physiological responding in these 4 cases also demonstrates a broad range. The figure reveals an overall flattening effect from high projection users, and activated responsiveness from high identification users. While there is some overlap of themes across the 4 cases, the sense of temporal constriction and limited integration of other characters is prevalent in high projection users. Fending off the negative
affects seemed to be a primary goal. In contrast, high identifications users explicitly struggled to integrate their object relational world, grappling with indecision and somewhat more cognitively complex tasks.

This graphic depiction of individual cases can only be cautiously viewed in light of this study’s main findings but provides another window into the relationship between defense use and physiological response.
Figure 4
Physiological Profiles of Case Studies: High Projection & High Identification Users with Early and Late Onset of PTEs
Clinical Implications of the Current Findings

The results of this study demonstrate that an individual’s response to trauma is multidetermined and complex. The study gives empirical evidence as to how the onset of potentially traumatic events play a role in how psychological defenses impact the body’s autonomic reactivity. This study builds upon prior research that investigates the subset of re-experiencing and hyperarousal symptoms so common to traumatized populations, providing evidence that situation-specific variables must be taken into account. For example, hypervigilance may not equate to physiological arousal, and the relationship between the two are impacted by individual differences including defense use and personality structure.

Importantly, the study provides evidence that patients who dissociate characterologically may be qualitatively different than adults who use a form of repression as an effective coping strategy. In treatment, clinicians must seriously consider that it may not always be important to “uncover” early traumas. Rather, a thorough assessment and close attention to how an individual uses their defense of choice as an effective coping strategy is of utmost importance. This will provide clinicians with a strength-based perspective to work with and ultimately improve treatment when amplifying ways to work with a patient’s defenses.

Given the complex relationship between defense use and physiology, working with trauma populations would warrant careful attention to patients’ often variable, subjective experiences of stress, their own active/passive coping strategies, and baseline physiological assessments as part of the therapeutic process. Using neuro or biofeedback techniques to help patients themselves understand, and realize their own stress response may be empowering to allow them to “see” change in their own bodies. This may be one way to incorporate the patient’s body in a safe and controlled way in the therapeutic relationship.
 Limitations and Directions for Future Research

The results of this study carry implications for clinicians and researchers working with traumatized populations, but there are a number of shortcomings of the design and execution that limit conclusions. First, the study was ultimately exploratory in nature and thus tested hypotheses that were purposefully broad in their specification. Although valuable for refining questions for further research and theory development, this approach limits the specificity of findings. One major weakness of the study is its sample size of 43, with group sizes between 14-15 individuals limiting the generalizability of findings. The mixed trauma sample, including those with interpersonal and non-interpersonal traumatic exposure, made comparisons to other studies that focused on childhood abuse or adult-onset trauma, more difficult. In addition, because chronicity of traumatic exposure is a delineating feature of complex trauma, it would be prudent to include a more thorough assessment of the nature and intensity of indexed traumas in future study designs and data analyses.

One major conceptual shortcoming of the study is the tendency to equate early onset trauma with a complex PTSD picture. Certainly, suggesting causal links in this regard runs counter to the aims of this study, which privileges the heterogeneity of factors contributing to traumatic response. Relatedly, an alternative interpretation in understanding why the early onset group using greater projection demonstrates decreased physiological reactivity, is to consider that this is a population already traumatized. In other words, perhaps their greater use of projection is not indicative of greater pathology, but perhaps of an altered reality.

The use of a projective assessment such as the TAT is a strength of the study in that it provides a way to overcome the limitations of self-report measures. It would be particularly meaningful to continue using projective measures in future studies to better understand the
complex clinical symptom picture including unsymbolized experiences and heightened dissociative processes so common in this population (Arnon et al, 2011). Given the rich data that the TAT provides, future studies could further analyze the narratives to investigate linguistic characteristics and storytelling capacity. This would expand upon existing research linking aspects of cognitive style and dimensions of alexithymia to even better differentiate the defense processes that these individuals may be utilizing.

While the DMM is well-validated through repeated use, it does not capture many operationalizations of ego-defense, and excludes the representation of one very commonly used defense of repression, pervasive to trauma populations. Some of the clinical implications of working with patients who use repression as an effective coping strategy versus patients who may dissociate characterologically have been previously discussed. It is quite possible that the adaptive defense use captured by findings in this study may have overlap – conceptually and empirically – with a flexible coping style, a style that has been correlated with good prognostic outcomes in the literature (Mancini & Bonanno, 2006; Bonanno et al., 2004). Specifically, Coifman and Bonanno (2007) have attempted to measure repressive coping behavior called “affective-autonomic response discrepancy” (AARD), that is defined as occurring when individuals report relatively little negative affect during stressful tasks while simultaneously evidencing heightened physiological responses. Their findings include that the tendency to direct attention away from negative affective experience, such as repressive coping, may promote resilience following extremely aversive events (Coifman and Bonanno, 2007). The burgeoning area of research in traumatic resilience may use similar conceptual models to the one used in this study – a review of convergent findings would be an exciting next step. Nevertheless, future studies might not shy away from the challenge of finding an ecologically valid way to assess
repression, a mechanism that may very well underlie many other defenses and thus may provide a more nuanced understanding of defense mechanisms.

The advantage of using SCR rate is that it can measure activity of the autonomic response system that is not always under conscious control. It provides an objective measurement of subjective experiences. However, there is conflicting evidence in how different systems within the autonomic nervous system respond differentially to psychological processes (Hughes, Uhlmann, & Pennebaker, 1994; Fowles, 1980; DePierro, J., D’Andrea, W., Pole, N., 2013). Though beyond the scope of this study, including a measure of the parasympathetic branch, which also corresponds to stress and cognitive engagement, would be useful. For example, lower heart rate and respiration rate, both measures of the parasympathetic nervous system, have been linked to individuals with trauma exposure (Hopper, Spinazzola, Simpson, & van der Kolk, 2006); Sack, Hopper, & Lamprecht, 2004). Research attending to PTSD symptom clusters and both ANS branches (sympathetic and parasympathetic) may clarify the meaning of blunted and heightened physiological responses. In short, despite the compelling utility of using skin conductance measures as an indicator of a psychological state or process, changes in skin conductance and electrodermal activity do not occur in isolation. Rather, they occur as a part of complex set of responses mediated by the autonomic nervous system. It is crucial to determine the psychological meaning of any particular SCR after establishing a well-controlled stimulus situation. The paradigm of this study relies greatly on subjective coding and interpretation – both of defense use and nature of trauma. Future studies should attempt to replicate findings with improved participant criterion selection.

This study has attempted to make links between unconscious defense use and physiological markers between individuals who have been exposed to potentially traumatic
events. Individuals recruited in this study were already exposed to PTEs. They were considered vulnerable if they endorsed symptoms. The research into PTSD vulnerability factors has most often entailed non-biologic measures (Orr, S.P. & Roth, W.T., 2000). Future research can use electrodermal lability and habituation rate to investigate pre-trauma vulnerability. This research would expand existing findings that suggest that the conditionability of individuals impact their sensitization to trauma (Orr et al, 2000). These individuals may not fare as well in extinction-based treatments. Furthermore, physiological measures should continue to be used not just as predictors of diagnostic picture, but as valuable information for treatment and recovery.

**Conclusion**

The aim of this exploratory study was to link psychoanalytic theories of trauma and its impact on the mind with psychobiological research of how trauma lives in the body. The present study expands on prior research (Cramer, 2003) providing evidence that defense mechanisms do in fact, moderate the relationship between stress and physiological response. The subjective interpretation of traumatic events and the psychological defenses used, start the cascade of psychobiological responses to trauma. The present study attempted to identify the psychological concomitants of these individual differences within a population exposed to potentially traumatic events, and their proclivity for using different defense mechanisms. There is evidence to support that there may be distinct dissociative processes that differentiate the use of projection and identification.

In short, this study supports the notion that early exposure to trauma does not give one a fixed identity. PTSD is a living diagnosis, with responses that are infinitely complex, based on
individual differences and vulnerabilities. Post-traumatic responses must be understood from a developmental psychopathology framework, supporting the notion that potentially traumatic experiences in an individual’s life contribute to a loading of multi-determined factors in a person’s life.
Appendix A

The current diagnostic criteria for DESNOS is listed here: (Luxenberg, Spinazzola, & van der Kolk, 2001)

I. Alteration in Regulation of Affect and Impulses (A and 1 of B-F required):
   A. Affect Regulation
   B. Modulation of Anger
   C. Self-Destructive
   D. Suicidal Preoccupation
   E. Difficulty Modulating Sexual Involvement
   F. Impulsive & Excessive Risk-taking

II. Alterations in Attention or Consciousness (A or B required):
   A. Amnesia
   B. Transient Dissociative Episodes and Depersonalization

III. Alterations in Self-Perception (2 of A-F required):
   A. Ineffectiveness
   B. Permanent Damage
   C. Guilt and Responsibility
   D. Shame
   E. Nobody Can Understand
   F. Minimizing

IV. Alterations in Relations With Others (1 of A-C required):
   A. Inability to Trust
   B. Revictimization
   C. Victimizing Others

V. Somatization (2 of A-E required):
   A. Digestive System
   B. Chronic Pain
   C. Cardiopulmonary Symptoms
   D. Conversion Symptoms
   E. Sexual Symptoms

VI. Alterations in Systems of Meaning (A or B required):
   A. Despair and Hopelessness
   B. Loss of Previously Sustaining Beliefs
Appendix B


DENIAL:
1. Omission
2. Misperception
3. Reversal
4. Statements of Negation
5. Denial of Reality
6. Overly Maximizing Positive, Minimizing Negative
7. Unexpected Goodness, Optimism, Positiveness, Gentleness

PROJECTION
1. Attribution of Aggressive or Hostile Feeling, Emotions, or Intentions to a Character, or Other Feelings, Emotions, or Intentions that are Normatively Unusual.
2. Additions of Ominous People, Ghosts, Animals, Objects or Qualities.
3. Magical or Circumstantial Thinking
4. Concern for Protection from External Threat
5. Apprehensiveness of Death, Injury, or Assault
6. Themes of Pursuit, Entrapment, and Escape
7. Bizarre or Very Unusual Story or Theme

IDENTIFICATION
1. Emulation of Skills
2. Emulation of Characteristics
3. Regulation of Motives or Behavior
4. Self-esteem through Affiliation
5. Work: Delay of Gratification
6. Role Differentiation
7. Moralism
REFERENCES


101


Mills, J. (2002). The unconscious abyss: Hegel's anticipation of psychoanalysis


Rapaport, Gill (1959), "The Points of View and Assumptions of Metapsychology", *IJP*


