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POST-TRAUMATIC STRESS DISORDER: A STRUCTURAL APPROACH

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by

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ABSTRACT

In this research, neuroticism and introversion were hypothesized to promote the fear-avoidance conditioning common in anxiety disorders, and would therefore be highly associated with chronic PTSD. Additionally, the coping response of persistent dissociation was predicted to interact with these variables and enhance the relationship PTSD symptom severity. A corollary hypothesis suggesting the use of specific sub-facets in place of these global super-ordinate domains would enhance the level of precision previously established between them and PTSD symptom severity. A theoretical case for these predictions was proposed however, the overall results suggested an alternative interpretation. The individual facets that yielded the strongest relationship suggested that not introversion and neuroticism, but higher levels of trust with higher levels of competence in conjunction with the amnestic form of dissociative coping established the strongest association with PTSD symptom severity. These results converge with a social-cognitive perspective of shattered assumptions (Janoff-Bulman, 1992) which suggests that the level of PTSD severity experienced is based on the degree to which a traumatic event deviates from the individuals' core belief system. Further research that additionally assesses core schemas was suggested to further support these preliminary findings.

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Chapter I

INTRODUCTION

Post-traumatic stress disorder (PTSD) is an anxiety disorder distinguished by spontaneous intrusions of unwanted memories (Brewin, Dalgleish & Joseph, 1996) that bring about extreme psychological distress (Ehlers & Steil, 1995). Diagnostic consideration requires that these recurring symptoms be directly linked to a perceived life threatening experience (American Psychiatric Association (APA), 1994).

Epidemiological surveys suggest approximately 75% (studies ranging from 60-90%) of our population will be exposed to a traumatic life event (TLE) at some point in life, with the vast majority experiencing minor emotional reactions that dissipate within weeks (Breslau, Davis, Andreski, et al., 1991; Breslau, Kessler, Chilcoat, et al., 1998; Kessler, Sonnega, Bromet, et al., 1995; Norris, 1992). Approximately one in ten of exposed individuals will experience aversive emotional reactions and go on to develop acute PTSD after 30 days, of which one third will further develop chronic symptomatology after 90 days (Breslau, Davis, Andreski, et al., 1991; Breslau, et al., 1998; Davidson, Hughes, Blazer, et al., 1991; Helzer, Robins, & McEvoy, 1987; Kessler, et al., 1995).

Although only a minority of exposed individuals develops extreme severity, the elevated exposure rate translates into PTSD being one of society's costliest mental disorders over the past decade. This unfavorable trend is the result of PTSD

having one of the highest life-time prevalence rates (7.8%),
mental health service rates, and medical services usage rates
of treatment seeking individuals in the US (Friedman & Schnurr,
1995; Greenberg, Sisitsky, Kessler et al., 1999; Marshall, Jorm,
Grayson, & O'Toole, 1998; Solomon & Davidson, 1997; Switzer,
Dew, Thompson et al., 1999).

Ehlers and Clark (2000) have developed the most
comprehensive and empirically-validated model of PTSD to date
(Brewin & Holmes, 2003) and consider distorted cognitive
appraisals and fear-avoidance conditioning (Foa & Rothbaum,
1989; Keane, Zimering, & Caddell, 1985) as the principal
components in chronic PTSD development. Negative appraisals
associated with trauma and its sequelae elicit a cascade of
non-adaptive responses that promote chronic PTSD symptom
development. Most importantly, in the final stage of disease
progression, neither the initial emotional impact of the trauma
(Ehlers & Clark, 2000; Steil & Ehlers, 2000) nor the early
stress-responses seem to account for long-term symptomatology
(McFarlane, 1988b; Michael, Ehlers, Halligan et al., 2005;
Shalev, 1992).

These findings converge with recent randomized clinical
trials (RCT) that exclusively target these mechanisms in
treatment and have demonstrated preliminary success with low
attrition rates (Ehlers, Clark, Hackmann, et al., 2005; Wells,
& Sundeep, 2004). A natural next step would be to identify
risk factors linked to these non-adaptive mechanisms and develop

prevention methods based on that knowledge. The current research argues that the nature in which this disease process unfolds can be predicted in terms of individual differences that are in turn related to PTSD symptom severity.

To that end, the initial aim of this introduction is to give an overview of the specific conditions that lead to the development of chronic PTSD. More specifically, I will then explore how negative appraisals of the TLE reminders activate both effortful and automatic modes of non-adaptive responding. Effortful disengagement strategies are deployed by individuals to avoid activation of TLE reminders, but paradoxically increase them. This increase prompts the emergence of a fear-avoidance system that becomes automatic in nature and increases the vividness, and associated arousal of these unwanted intrusions to a degree that severely impairs psychosocial functioning (Ehlers & Steil, 1995).

The second aim then develops a series of arguments that characterizes this pathogenesis in terms of a union between personality and coping style, laying the foundation of the present investigation. Particularly, the case will be made that a specific profile combining higher degrees of neuroticism and introversion, or trait anxiety (Gray, 1982), with persistent dissociation will enhance the association between exposure to a TLE and PTSD symptom severity. Trait anxiety is argued to initiate negative appraisals and promote fear conditioning, while dissociation is argued to increase the frequency of

negative intrusions, prevent fear extinction learning and disrupt adaptive information processing.

Processes Involved In The Development of Chronic PTSD

In the immediate aftermath of being exposed to a TLE, most individuals will experience various short-term symptoms in response to unintentional reminders of the event, including anxiety, depression, and disturbed sleep wake cycles (APA, 1994). The reactivations of these memories are reported to naturally occur in the consolidation or updating efforts of the information processing system for life events (Misanin et al., 1968). These reminders reflect the initiation of an adaptive response to stressful experiences (Rachman, 1980) that are being assimilated into existing schemas (Foa & Riggs, 1993; Horowitz, 1975, 1985).

A marginal percentage of exposed individuals interpret these initial reminders (e.g., the initial feelings of extreme fear/horror/helplessness) as having threatening properties in and of themselves and result in consequential negative appraisals (e.g., "I am going crazy") that lead to learned helplessness (Steil & Ehlers, 2000). These symptoms are diagnosable as acute stress disorder (ASD) during the first 30 days of progression.

Negative appraisals result from the perception that a stressor exceeds available coping resources, resulting in alarm or flight/fight mode of responding that is experienced as

negative affect (Lazarus & Folkman, 1984). Certain individuals are predispositioned to deploy disengagement-oriented coping strategies to reduce these undesired emotional states (Compas, Connor, Osowiechi & Welch, 1997; Conner, Compas, Wadsworth, Harding-Thomsen & Saltzman, 2000). Behavioral avoidance, thought suppression, and dissociation have been identified as common strategies used for those who suffer from PTSD (Ehlers & Steil, 1995; Steil & Ehlers, 2000).

More specifically, these strategies are intended to promote the avoidance of triggers that would otherwise reactivate TLE reminders, or to buffer emotional distress in the event those measures fail. These modes of avoidance are negatively reinforced by immediate reductions in fear but ironically serve to maintain their fear-inducing value (Jones & Barlow, 1990) by indirectly increasing the frequency and intensity of unwanted thoughts and feelings (Brewin, 2001; Muris, Merckelbach, Horselenberg et al., 1997; Wegner, 1994). This process additionally inhibits fear extinction learning that would otherwise occur during subsequent reexperiencing episodes and begins to maintain an increased level of anxiety.

The consequential experience of these unrelenting intrusions promotes an alarm state that enhances the efficiency of rapidly detecting stimuli that represent danger (Conway, 1997; Charney, Deutch, & Krystal, 1993; Keane, Zimering, & Caddell, 1985) and begins to develop strong perceptual priming with noted reductions in stimulus discrimination (Ehlers & Clark,

2000). In other words, as a result of the associative learning that occurs during each TLE memory reactivation, the potential for otherwise unrelated cues to acquire fear-eliciting qualities that can trigger false alarms of threat are increased (Conway & Pleydell-Pearce, 2000). Additionally, research investigating attentional bias has determined that thresholds for detecting threat under times of stress can be significantly reduced to pre-attentive stages of information processing that occur below conscious awareness (Mathews & MacLeod, 1986). The resulting fear network that is established functions as an automatic surveillance and avoidance system that becomes more sensitive with each negative intrusion (Foa, Steketee, & Rothbaum, 1989).

Within three months post exposure, approximately two-thirds of those initially meeting criteria for PTSD at 30 days will engage various social support systems that facilitate long-term consolidation(Brewin, Dalgleish, & Joseph, 1996), corrective emotional processing (Foa & Kozak, 1986) and extinction of fear, all of which reduce intrusions to a sub-clinical threshold (Ehlers, Clark, & Hackman, 2005).

The other third (approximately 3-6% of those initially exposed) of these individuals will maintain use of these non-adaptive response styles, which continue to disrupt optimal information processing, and go on to develop a hypervigalent state of anxious apprehension. These non-adaptive responses then become rigidly entrenched as evidenced by cases of

individuals being treated several decades after exposure to
Viet-Nam combat trauma (Kulka, Schlenger, & Fairbank, 1990).
Such chronic cases of PTSD suffer from a host of life problems
including work place absenteeism, reduced job satisfaction
(Cudmore, 1996; Wagner, Heinrichs, & Ehlert, 1998), alienation,
and significantly reduced quality of life (Kessler, 2000;
Warshaw, Fierman, Pratt et al., 1993).

Individual Differences Related To These Processes

     Given all of this, individual differences that contribute
to the development of negative appraisals and fear-avoidance
conditioning would reasonably predict PTSD severity and
identify those who are likely to develop PTSD and those who
are not. The present proposal advances the argument that there
exist several underlying psychological traits that are
associated with these processes and are therefore potentially
related to the development of chronic PTSD. Specifically, the
broad personality domains of neuroticism and extraversion
combined with the coping response of persistent dissociation
may provide an insight into why TLE reminders could initiate,
maintain and escalate the symptom picture in the development
of chronic PTSD.

     Neuroticism involves a predisposition to negatively
appraise mild stressful transactions as aversive, to be
sympathetically over-responsive (Eysenck, 1967), and to
typically engage in emotion-focused modes of self-regulation

(Bolger, 1990). So, in response to a TLE, neuroticism hypothetically can promote the initial enhanced arousal that leads to the experience of the process as increasingly aversive, resulting in negative appraisals of initial TLE reminders.

Introversion (the lower end of the extraversion continuum), on the other hand, is conceptualized as being characterized by enhanced S-R and S-S conditionability in general (Eysenck, 1967), reduced extinction learning(Fredrikson & Georgiades, 1992), and a bias to avoid social support (Costa & McCrae, 1992), all of which are highly associated with acute levels of disorder (Ozer, Best, Lipsey et al., 2003). So, in response to a TLE, introversion hypothetically can lead to an individual to become rapidly identifying and reacting to environmental triggers associated with warning signs of threat, being resistant to information that would otherwise signal safety, and having a reduced tendency to engage in social activities (Costa & McCrae, 1995).

Finally, dissociation involves the detachment and compartmentalization of emotions and associated information in response to fear and stress and has implications for resulting distortions of memory and/or self (Allen, 2001; Brown, 2002; Holmes, Brown, Mansell et al., 2005). In response to a TLE, dissociation can hypothetically inhibit long-term consolidation of the TLE representation into an existing autobiographical network (van der Kolk & Fisler, 1995) and prevent extinction learning from occurring (Keane, Zimering,

& Caddell 1985). These unprocessed streams then become easily reactivated by conditioned triggers that then begin to represent current threat (Brewin, Dalgleish, & Joseph, 1996).

In other words, these reminder cues that would otherwise give rise to the adaptive process of reconsolidation (Misanin, Miller, & Lewis, 1968; Nader, 2003; Sara, 2000) are continuously perceived as warning signals of current threat that further elicit avoidance and dissociative responses. This in turn inhibits the corrective emotional experience necessary for extinction of fear to occur and further maintains feelings of current threat (Keane, Zimering, & Caddell 1985). Theoretically, this vicious cycle of unprocessed negative intrusions and perpetual avoidance (Brewin, Dalgleish, & Joseph, 1996; Ehlers & Clark, 2000; Horowitz, 1975, 1985) could promote the emergence of a persistent dissociative response style as a method of emotional self-regulation.

From these theoretical and empirical statements, it can be concluded that PTSD severity in response to a TLE will be due to the extent to which an individual negatively appraises initial traumatic reminders as having threatening implications for emotional well-being and responds with specific non-adaptive coping processes that inhibit corrective emotional processing (Ehlers & Clark, 2000; Foa & Rothbaum, 1989). More specifically, the disengagement strategies of behavioral avoidance, thought suppression, and dissociation result in the paradoxical increases in the frequency and intensity of the

negative intrusions and the disruption of the encoding of safety information, all of which reinforce these negative appraisals and contribute to acute symptomatology (Ehlers & Clark, 2000). Importantly, the emergence of a threat monitoring system is crucial in accounting for the maintenance of acute severity. Finally, the continuous activation of these effortful and involuntary modes over time creates a kindling effect (i.e., synchronized automaticity) resulting in exacerbation of this process to the chronic stage of progression (van der Kolk, 1996).

Given the above, a rationale exists to explain how these global domains of neuroticism, introversion and dissociation can account for the idiosyncratic tendencies that drive these non-adaptive processes, prevent fear extinction learning, disrupt optimal information processing (Ehlers & Clark, 2000; Wells, 2004), maintain the cycle of reexperiencing and avoiding (Horowitz, 1975, 1985), and contribute to symptom severity based on an individual's standing on these dimensions. Arguments will be developed that outline the various relationships that neuroticism and introversion have in conjunction with persistent dissociative coping, leading to PTSD symptom severity. Finally, I will propose that a theory-driven selection of combinations of specific sub-facets (lower level traits in the hierarchy) to be used in place of these domains will increase predictability of PTSD symptom severity beyond that previously established by the global approach (Paunonen, 1998, 2003; Paunonen & Ashton, 2001a; 2001b; Paunonen & Nicol,

2001; Paunonen Rothstein & Jackson, 1999).

To substantiate these arguments, I initially provide a contemporary cognitive-behavioral framework that suggests PTSD development is best conceptualized as a non-adaptive response to an otherwise normal information processing mechanism that integrates daily experiences into an autobiographical account (Brewin, 2001; Brewin, Dalgleish & Joseph, 1996; Foa & Rothbaum, 1989; Horowitz, 1975, 1985; McNally, 2003). Furthermore, PTSD development is argued to be based on the misperception of benign cues as impending threats (false alarms) that are subsequently avoided and further prevents corrective emotional processing (Ehlers, Hackman, & Steil, 2002). Finally, these non-adaptive processes result in a chronic form of clinical impairment that is experienced as a continuous cycle of spontaneous retrieval of unwanted negative intrusions, engagement of avoidance behaviors, and hypervigalent state of arousal (APA, 1994, Horowitz, 1975, 1985).

I then argue that this functionalist perspective of psychological mechanisms and processes can also be understood in terms of behavioral tendencies within the structural domains of neuroticism, introversion and dissociation. The resulting linkages between these non-adaptive psychological processes and the underlying traits will provide an account of why these mechanisms would most likely contribute to the development of chronic PTSD.

Although the hypotheses derived from this context imply

a causal sequence that cannot be tested in the present study, assessing the degree of association between combinations of individual differences and PTSD symptom severity may provide additional knowledge towards prevention. The underlying assumptions for the supporting arguments are anchored in an evolutionary-based information processing paradigm, utilizing a general model of stress (Lazarus & Folkman, 1984) which is extended as it applies to relevant clinical models of PTSD (Brewin, Dalgleish & Joseph, 1996; Ehlers & Clark, 2000; Horowitz, 1975, 1985; Keane, Zimering & Caddell, 1985).

Chapter II

Literature Review

Post-traumatic stress disorder (PTSD) is a complex anxiety-oriented reaction in response to a perceived life-threatening event associated with extreme fear, horror, and helplessness, with both psychological and biological influences on psychosocial impairment (APA, 1994). PTSD was initially conceptualized as an opponent process characterized by oscillations between involuntary 'here-and-now' negative intrusions reminiscent of the fear and/or helplessness about the event, and efforts to avoid internal and external triggering stimuli in all spheres of consciousness (Horowitz, 1975, 1985). As mentioned earlier, a more contemporary view attributes the chronic aspects of this disorder to distorted appraisals and fear conditioning which contributes to the dysregulation of the autonomic nervous system (van der Kolk, 1996, 1998), endocrine system and immune functioning (Yehuda, 2002; Rasmusson, Vythilingam, & Morgan, 2003). These biological expressions may have contributed to over a century of the misdiagnosing and mistreatment of this syndrome from the late 1860's until 1980, with the advent of the formal recognition of PTSD in DSM-III (APA, 1980; see appendix A for epistemology of PTSD).

Overview of Information Processing and PTSD Development

From an information processing perspective, we learn from our experiences by cataloging and storing representations of them into memory for future retrieval. Life experiences must therefore first be transduced into electrochemical impulses, encoded into short-term memory, and consolidated into a distributed autobiographical network. Memory consolidation involves the integration of an independent labile representation that is highly subject to interference into a cohesive account of prior experiences (Misanin, Miller, & Lewis, 1968). This process of integrating an independent memory stream into an elaborated network of episodic memories facilitates the accessibility of these events by various themes and periods (e.g., my birthdays, my adolescent years). These cues provide enhanced accessibility of the event via a variety of nodes within the distributed network.

On the other hand, most TLE's contain life-threatening elements (APA, 1994) that activate survival responses of anticipatory preparedness via the sympathetic branch of the autonomic nervous system (ANS). This motivational state prevents re-exposure to additional harmful agents, but also temporarily disrupts the consolidation of the TLE memories.

In the course of normal, adaptive processing of emotional information, once signals of safety emerge, the engagement of the parasympathetic nervous system (PNS) activates restorative functioning that fosters consolidation efforts necessary to integrate the experience into autobiographical memory. This

basic survival mechanism is argued to be a function of natural selection and is conserved across a variety of species (LeDoux, 2000).

This adaptive process of memory consolidation in response to a TLE could provide an explanation for why early intrusions are experienced by most people during the first two weeks after a TLE. These reminders are however negatively appraised by a small percentage of those who are exposed to a TLE and result in a state of hypervigalent alarm that is managed by both effortful as well as involuntary self-regulatory mechanisms (Lazarus & Folkman, 1984). These non-adaptive coping responses prevent the memorial representation from becoming fully elaborated into an autobiographical account, rendering it to a labile state to be easily reactivated by conditioned stimuli. These outcomes are in opposition to consolidated long-term memory representations that are elaborately contextualized and require conscious effort to be reactivated (Brewin, Dalgleish & Joseph, 1996; Conway & Pleydell-Pearce, 2000).

Within this view of normal memory consolidation, it is argued that each time a stable memory representation is reactivated into working memory, it returns to a labile state that is subject to interference (Misanin, Miller, & Lewis, 1968; Nader, 2003; Sara, 2000) and may be permanently altered as a function of reconsolidation (Dudai, 2004). With respect to unconsolidated TLE's, each reactivation of this fragile and emotionally-valenced representation could hypothetically take

on more intense and negative associations related to the self, world, and future. This higher-order conditioning that occurs during the reexperiencing episodes of PTSD then increases the probability for additional non-threatening cues to gain the threat status necessary for future reactivations. Subsequently, each negative intrusion is regulated by non-adaptive control strategies that ironically enhance the probability of its reoccurrence and lead to an escalated sense of current and/or impending threat. This process will then cascade into a vicious cycle of intrusion, alarm, avoidance, and further intrusion (Horowitz, 1975, 1985).

Clinical Models of PTSD

Stress Response Model

The earliest modern theoretical account of PTSD was an integration of psychodynamic, social-cognitive, and information processing perspectives to bereavement and trauma (Horowitz, 1975), resulting in an information processing account of PTSD symptomatology (Brewin & Holmes, 2003). Horowitz (1975) applied the Ziegarnick effect (an evolutionary-driven argument that suggests that the mind repeatedly returns to tasks that have not achieved closure) as an underlying mechanism that accounted for a need for the information processing system to encode daily events into long-term memory. Subsequent to a TLE, an individual initially

engages in denial due to the aversive and overwhelming nature of the trauma. Horowitz (1975) suggested this alarm mode was then met with an inherent tendency to update the experience into long-term storage. However, the memory stream becomes stuck in an 'active memory storage' (p. 1462) and is continually presented to conscious awareness for proper encoding. Thereafter, the corresponding negative emotions associated with this reactivation are met with avoidant behaviors aimed at reducing arousal. At this stage in the development of disorder, individuals vacillate between a natural drive to encode and psychological defenses to preserve and protect, resulting in both the reexperiencing and avoidant symptoms commonly expressed in the presentation of PTSD (Horowitz, 1975).

Fear Conditioning Model

Keane, Zimering, and Caddell (1985) extended Mower's (1960) learning theory and developed a fear conditioning model of PTSD. Accordingly, the TLE was perceived as a single-trial acquisition of conditioned fear. In other words, stimuli present during a TLE could acquire the fear-eliciting properties of a CS and activate negative intrusions when they were encountered later. Although strict Pavlovian conditioning would indicate that extinction would occur in response to repeated exposures of the subsequent intrusions, Keane et al. (1985) argued that subsequent avoidant behaviors associated with the disorder result in an incomplete exposure and maintain the avoidant

symptoms via the negative reinforcement provided by reductions in fear.

Fear Network Model

Foa, Steketee, and Rothbaum (1989) integrated elements (removing the broader personal and social contexts) of the earlier work of Horowitz (1975, 1986) with a behavioral perspective (Lang, 1979), resulting in a refined information processing account of PTSD (Brewin & Holmes, 2003). Foa et al. (1989) developed a fear-network theory that specifically addresses the memorial representations associated with safety schemas that are violated by a TLE. This approach incorporated the notion of distributed memory which consists of the interconnection of nodes and networks. Subsequent to a TLE, any reminder of the event could activate the corresponding node, which in turn activates the entire network to include feelings, thoughts, and actions. Foa and Rothbaum (1989) also outlined methods to enhance exposure treatment to facilitate habituation, counter-conditioning, and cognitive restructuring.

Foa and Riggs (1993) expanded the original (Foa et al., 1989) model in response to the accumulation of research completed in their laboratory assessing assault and rape victims. The inclusion of rigid core beliefs and perceptions of self in relation to the world began to be investigated as vulnerability factors in this population.

Dual Representation Model

Brewin, Dalgleish and Joseph (1996) argued in opposition
to fear-network theory's assumption that trauma memories are
fundamentally similar in structure to non-trauma memories and
highlighted the fact that traumatic memories are distinctive
due to an encoding failure attributable to dissociative
processes. Normal life experiences are fully consolidated into
long-term storage, as is the case in autobiographical memory,
and are termed verbally accessible memory (VAM). VAM is fully
contextualized and elaborated and can be intentionally recalled
due to the distributed nature of memory. Trauma memories, on
the other hand, are subjected to dissociative processes and
are therefore prevented from being elaborated and thus result
in situational access memory (SAM). SAM's are similar to
Horowitz's (1975) 'active memory storage' and are triggered
by situational cues associated with TLE (Charney, Deutch,
Krystal et al., 1993; Keane, Zimering, and Caddell, 1985).

Cognitive Model

Ehlers and Clark (2000) integrated aspects of each of the
theories above and considered the cognitive aspects of appraisal
of the initial TLE and the subsequent intrusions as the core
determinants for the onset and progression of PTSD. More
specifically, Ehlers and Clark (2000) suggest that individuals
do not recover from a TLE because their negative appraisals
lead to a state of current threat (i.e., "I am going crazy,"

or "I cannot handle this") even though the event is past. This is due to the negative appraisals leading to a state of arousal (or negative affect) that initiates automatic self-regulatory strategies intended to reduce the alarm state, but paradoxically maintain or enhance the syndrome. These idiosyncratic negative appraisals have been found to account for symptom severity in chronic PTSD for adults (Clohessy & Ehlers, 1999; Dunmore, Clark & Ehlers, 1999; 2001; Ehlers et al., 1998; Ehlers, Maercker & Buss, 2000; Ehlers, Mayou & Bryant, 1998; Foa, Ehlers, Clark, Tolin & Orsillo, 1999; Laposa & Alden, 2003), even after controlling for accident severity, intrusion frequency, or general anxiety (Steil & Ehlers, 2000) and in both children and adolescents (Steil, Hempt & Defflee, 2001).

As a result of the research identifying the associations between negative appraisals and PTSD, the most recent interest has shifted to understanding the development of negative intrusions, and a few studies have addressed this issue (for reviews see Falsetti, Monnier, Davis & Resnick, 2002; Reynolds & Brewin, 1998; 1999). Unwanted intrusions are the most common symptoms reported by those who experience PTSD symptoms (Ehlers & Clark, 2000) and commonly occur even in individuals who do not go on to develop PTSD in the first two weeks after being exposed to a TLE. This initial period of intrusions has been conceptualized by various researchers to have an adaptive function (Horowitz, 1975, 1985; McNally, 2003; Rachman, 1980) that should not be used as a prognosticator of symptom

development (McFarlane, 1988a; Michael, Ehlers, Halligan et al., 2005; Shalev, 1992).

In the initial aftermath of a TLE, intrusive symptoms have been reported to range from 14 % (Herkov & Biernat, 1997) to 94% (Rothbaum, Foa, Riggs, Murdock & Walsh, 1992) in the general population, with 95% of emergency workers experiencing at least one symptom (Genest, Levine, Ramsden & Swanson, 1990). In the most recent research conducted in the area, Michael, Ehlers, Halligan, & Clark, 2005 reported that 49% of subjects (in a cross section design) and 54% of subjects (in a prospective design) exposed to a TLE but not developing PTSD experienced negative intrusions, characterized as sensory snap shots dominated by visual presentations (Ehlers et al., 2002; Ehlers & Steil, 1995; Mellman & Davis, 1985). Ehlers & Clark (2000) additionally suggest that these intrusion-generated appraisals initiate coping attempts that facilitate a negative cascade of events that begin to maintain its symptoms and without intervention will escalate to a state of mental exhaustion (Selye, 1955).

Processes Involved in the Development of PTSD

Coping responses are intended to minimize the aversive effects of stress transactions. These forms of resistance (Selye, 1955) can either directly engage (i.e., approach) the source of threat, or make adjustments to disengage (i.e., avoid). These processes are further classified as being voluntary

control strategies or involuntary responses (Conner et al., 2000). Disengagement strategies associated with PTSD include behavioral avoidance, thought suppression and dissociation. These disengaging strategies attempt to internally regulate behavioral, cognitive, and physiological responses to buffer the anticipated negative emotional impacts associated with the stress process (Compas, Connor, Osowiechi & Welch, 1997). The predominance of these response-styles has been associated with distress in adolescents, young adults, and clinical populations (Conner et al., 2000; Glinder, Compas & Kaiser, 2003).

The hypervigalent mode of pre-attentive detection of threat, on the other hand, is an involuntary response that can be activated under conditions of impending danger. This automatic system combines the swift detection of warning signals with crude dissociative responses in a preemptive attempt to avoid the experience of terror associated with unwanted intrusion reactivations.

Non-adaptive Self-regulation

<u>Behavioral Avoidance</u>:

As stated earlier, behavioral avoidance is intended to prevent exposure to threat cues in the environment. These cues could be physical properties, discussions of the topic, or anything remotely related to the conditioned stimuli that have been previously associated with temporal reactivation of the negative intrusions (Ehlers et al., 2002). This strategy

prevents opportunities that would otherwise initiate fear

extinction learning inherently incorporated in exposure

therapies that reduce fear and anxiety (Foa et al., 1989).

Also, by avoiding and preventing this adaptive process of

healing, it strengthens the fear value of the object via negative

reinforcement from reduction in fear. The evaluative process

that drives the belief that one will be overwhelmed or go crazy

if confronted by the memory and associated emotional responses

maintain the negative beliefs and hence the anticipatory anxiety

associated with the potential of reactivation (Foa & Rothbaum,

1989).

Cognitive Avoidance:

Thought suppression has been defined as chronic attempts

to remove thoughts from consciousness (Wegner, Schneider,

Carter, & White, 1987). Wegner's Ironic Process Theory (1994)

suggests that in order to control mental thoughts, two parallel

processes occur: an operational and a monitoring process. The

operating process searches for the desired mental state as the

monitoring process evaluates the success of the operation by

seeking thoughts that represent failure of control. The ironic

effect emerges due to the effortful requirements imposed on

the operational process. Automatic, or effortless, processes

of the monitoring system become evident when competing for

allocation of cognitive resources, resulting in the failure

of operational processes and hyperaccesibility of the target

thought.

Research applying this model to clinical and non-clinical anxiety has gained limited support, and findings in the field are equivocal (see Abramowitz, Tolin, & Street, 2001; Purdon, 1999). The process of attempting to consciously sequester thoughts and feelings has been demonstrated to have a paradoxical outcome of making these unwanted entities to become hyper-accessible (Wegner et al., 1987). When this strategy is applied as a pain management strategy, it delays the recovery rate (Cioffi & Holloway, 1993). Wegner and Zanakos (1994) developed the White Bear Suppression Inventory (WBSI) to assess an individual's tendency to use thought suppression and have found that its scores positively correlate with levels of intrusive thinking (Muris, Merckelbach, & Horselenberg, 1996; for review see Purdon, 1999).

However, more recently it has been determined that under the threat of an imminent aversive event and once suppression is halted, a rebound effect occurs with enhanced frequency and self-reported anxiety (Koster, Rassin, Crombez, & Naring, 2003), an effect attributable to interference with otherwise naturally occurring habituation process (Roemer & Borkovec, 1994). This finding has implications for obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), and PTSD, as all involve anticipation of threat and attempts to control thought activity related to those threats (APA, 1994). Most recently in the area of OCD, Purdon and colleagues (Purdon, Rowa, & Antony,

2005) reported that the negative appraisals made in response to failures in thought control are key in the maintenance of OCD. Given all of this, the process of thought suppression under conditions of imminent threat has been demonstrated to contribute to a paradoxical increase in thought intrusions, either directly or as mediated by negative appraisals of failures of mental control (Wegner, 1994; Purdon, 2005). Individuals suffering with PTSD commonly report actively engaging in thought suppression in an attempt to prevent reactivation of unwanted intrusive memories (Amir, Kaplan, Efroni et al., 1997). This strategy has also been reportedly associated with memory impairment. In a laboratory experiment using the film clips to simulate trauma, thought suppression was positively associated with deficits in episodic memory and hyperaccesibility of unwanted thoughts five hours later. The temporal dimension of memory was affected, and the representation manifested itself as snap shots, not unlike the hot spots experienced by those with chronic PTSD (Ehlers, Clark, Hackman et al., 2005).

Emotional Avoidance:

Currently, the APA defines dissociation as a "disruption of the usually integrated functions of consciousness memory identity or perception of the environment" (1994). Historically, dissociation has been conceptualized as a human defense mechanism in response to trauma as a coping mechanism to reduce

pain or vehement emotions (Janet, 1907).

The more pathological traits of this broad domain consist of depersonalization (feelings of leaving your body) and amnesia. These processes are functionally deployed as coping strategies in response to trauma and seem to be effective in the short-term, but can adversely impact encoding, storage, and retrieval of aspects of memory. These aspects of dissociation have been identified in various disorders.

The disorders commonly associated with these processes are borderline personality disorder (BPD), eating disorders of the bulimic-type, dissociative disorders and acute stress disorder (ASD). BPD and dissociative disorders are hypothesized to be associated with childhood abuse and neglect and are thought to result from repeated exposure prior to consolidation of the self, with the dissociative process being more severe (Herman, 1992). Eating disorders of the bulimic-type are purported to serve as a dissociative function during the purging aspects of the behavior and are seen as a method to cope with stressful transactions for those exposed to sexual abuse (Everill, Waller & Macdonald, 1995; Heatherton, & Baumeister, 1991; Root & Fallon, 1989).

Finally, peri-traumatic dissociation was demonstrated to be a robust predictor in the development of acute development of ASD and severe PTSD (Buckley, Blanchard & Neil, 2000; Brewin, Andrews, & Valentine, 2000; Gershuny, 1999; Ozer, Best, Lipsey et al., 2003). This relationship was reported as being mediated

by the panic associated with fears of death or of losing control (Gershuny, 2003), suggesting again the potential importance of negative appraisals in the development of PTSD.

Attentional Bias to Threat:

The attentional system is the first stage of information processing and has been defined as a rapid orienting response (Sokolov, 1963) that operates preconsciously (Posner & Peterson, 1990). Attentional focusing consists of mechanisms that provide constant scanning, engagement, and disengagement of environmental stimuli (Posner & Peterson, 1990). Once a stimulus has been targeted as being of interest, scanning is terminated and the target becomes a point of focus, until disengagement is reactivated and the system scans the environment for novel stimuli (Posner & Peterson, 1990). These attentional processes have been argued to be highly influenced by motivational and emotional states, and less so by higher-order functions of the association areas located in the neo-cortex, which would require much more elaboration and increased response time (Fuster, 1997).

Attentional bias towards threat can predispose an anxious individual to perceive a mild stressor as having threatening properties to a greater degree than non-anxious controls (Mathews & MacLeod, 2002), even at a pre-attentive stage of information processing (Fox, 1996; MacLeod, & Rutherford, 1992; Mogg, Kentish et al., 1993; Williams, Mathews & MacLeod, 1996;

van Honk, Tuiten, de Haan et al., 2001). These predispositions vary in threshold sensitivity and can influence the activation of a range of self-regulatory responses in an attempt to reduce the negative affect associated with detection of threat (Compas, Connor, Osowiechi & Welch, 1997; Conner, Compas, Wadsworth, Harding-Thomsen & Saltzman, 2000). It has been further argued that these early attentional processes can vary between individuals due to an inherent bias towards, or away from, threat (MacLeod & Mathews 1988; Mogg, Bradley, & Williams, 1995).

The most sensitive thresholds operate at the earliest stages of pre-attentive bias and influence the activation of involuntary or conditioned responses that operate outside of awareness and serve a self-regulatory function (Conner, et al., 2000). These self-regulatory processes are internally directed and result in a reduction of experienced negative discomfort in the short-term, but fail to address the external stimulus that initiated the stress-response cycle and may lead to a vicious cycle of escalation as seen in anxiety disorders (Mathews, & MacLeod, 1986). These involuntary processes are conditioned in the main, and can result in the experience of negative affect, reported to adversely impact the ANS, endocrine system and the immune systems collectively (McEwen, 1995).

When both effortful and involuntary processes operate simultaneously, over time the potential for a kindling effect emerges and these processes may operate outside of conscious awareness (See Figure 1).

Figure 1: Non-adaptive Cycle of PTSD Development.
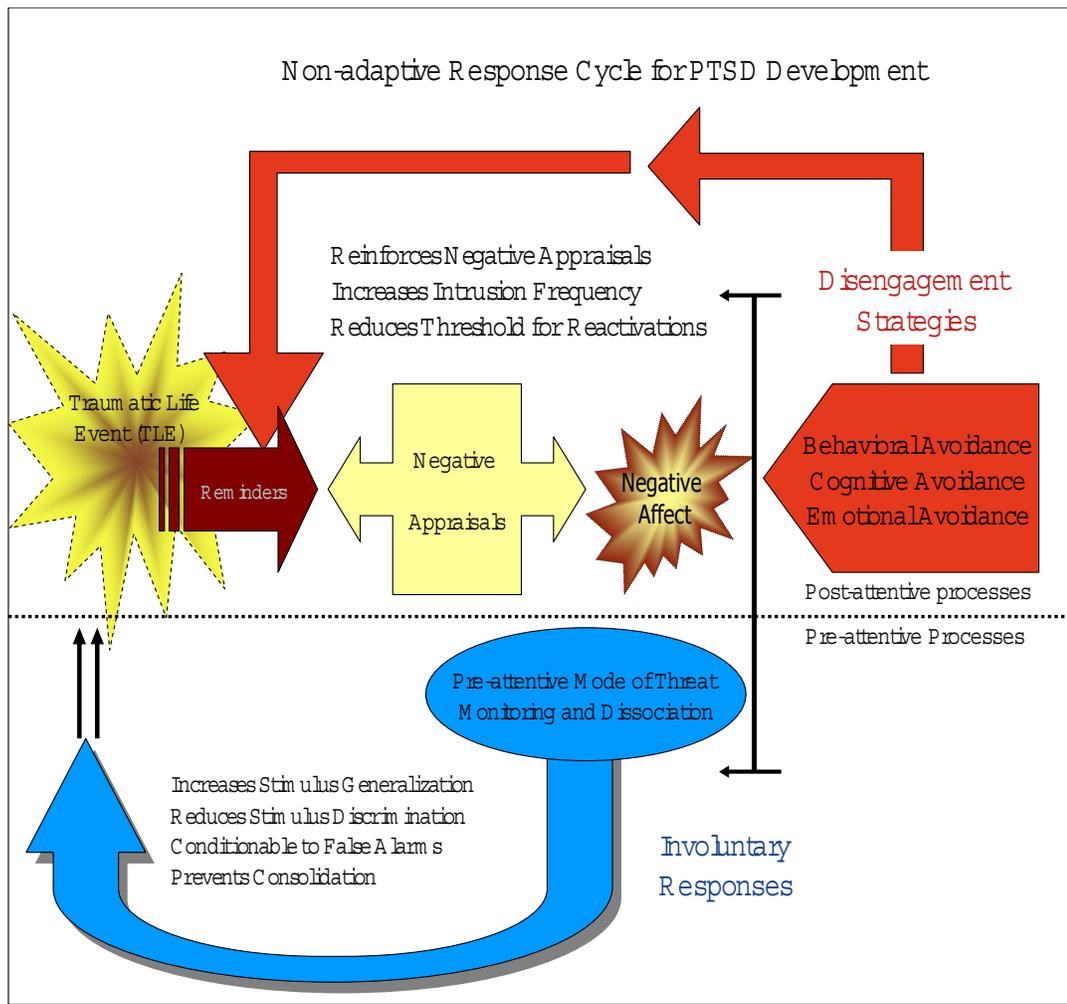
As stated earlier, these disengagement and involuntary responses are activated as a function of stressful transactions designed to buffer the negative effects of psychological strain. With respect to PTSD development, I will summarize how these processes unfold.

After a TLE, the naturally occurring process of consolidation is activated and presents working memory with representations of the event. These reminders are attempting to become integrated into a distributed network of episodic memories that contribute to autobiographical knowledge. However, they are negatively appraised as a source of impending threat to survival (false alarms) and result in the experience of anxiety. This arousal state motivates various non-adaptive self-regulatory mechanisms that paradoxically increase the initial false alarm and result in activation of a hypervigalent threat monitoring sub-system that also uses rapid disengagement strategies to buffer the anticipated aversive effects of anxiety.

Over time, this unstable memory stream develops strong S-S and S-R connections to both the warning signals that were spatiotemporally present prior to the most emotional aspect (hot spot) of the traumatic event (Ehlers et al., 2002) and to new triggers established during the reexperiencing episodes (Charney, Deutch, Krystal, et al., 1993; Keane, Zimering, & Caddell, 1985). Over time, as these reminders increase in frequency, they become increasingly vivid, lacking autonoetic

awareness (i.e., the temporal sense of being here-and-now versus in the past when the event actually occurred; Tulving, 2002), and begin to take on a life of their own. Due to the pre-attentive mechanisms involved, the individual is unaware of the processes and if unabated can contribute to chronic and anxiety and learned helplessness/depression which is the most frequent comorbid condition with this disorder (Ehlers & Clark, 2000).

In summary, I have provided theoretical and empirical foundations to make the case for how negative appraisals of TLE reminders can activate non-adaptive coping mechanisms that disrupt information and emotional processing and therefore maintain and exacerbate a vicious cycle of approach-avoidance behavior. These idiosyncratic perceptual and response styles maintain a sense of current and impending danger/threat that ultimately results in the spontaneous re-experiencing of unwanted memories with the limited ability to intentionally recall various aspects of these memories at will (Ehlers & Clark, 2000).

Furthermore, various treatment protocols targeting these maintaining factors have successfully demonstrated reductions of negative intrusions and enhanced autobiographical knowledge. Treatments have included exposure and cognitive restructuring (Ehlers, Clark, Hackmann, et al., 2005), reformulation of negative thinking (rumination/worry) and threat monitoring treatments without exposure, and cognitive restructuring alone (Wells & Sembi, 2004; Wells, 2001).

Individual Differences Related To These Processes

Mood-congruent (Blaney, 1986; Bower, 1991; Rusting, 1998) and trait-congruent effects (King & Sorrentino, 1988; von Hippel, Hawkins, & Naryan, 1994) influence cognitive processing of emotional stimuli associated with attention, perception, interpretation, and judgment. Research has linked the trait-congruency effects to underlying neurophysiological substrates giving rise to biological accounts of personality (Eysenck, 1967; Gray, 1973, 1982; Bachorowski & Newman, 1985; Nichols & Newman, 1986; Wallace & Newman, 1998). Within this area, the Eysenckian factors of emotional stability-neuroticism and extraversion-introversion have withstood the most rigorous challenges of empirical scrutiny in psychometric and psychophysiological research. The neuroticism dimension is highly associated with negative affect and the extraversion dimension with positive affect (Watson, & Clark, 1988). Additionally, when these dimensions interact an interesting dynamic emerges (McFatter, 1994) termed trait anxiety (Gray, 1982; Speilberger, Gorsuch, & Lushene 1970). This synergistic trait combined with persistent dissociation will be argued in this paper to account of the non-adaptive mechanisms that promote the development of chronic PTSD.

Neuroticism

Neuroticism is considered to be the broadest and most pervasive dimension of personality (Costa & McCrae, 1985; Santor, Bagby & Joffe, 1997) that predisposes individuals to experience

negative emotions and to be emotionally unstable and maladjusted (Goldberg, 1992). It also has strong influences on cognition, self-concept, sense of security, and cultural world view (Watson & Clark, 1984). Individuals who score high on indices of neuroticism may be described as anxious, worried, stressed, angry, hostile, upset, dissatisfied with self, and disgusted (Watson & Clark, 1984). These individuals have been described to be over responsive or reactive to a range of (including mildly stressful) stimuli with a compromised ability to get back to an even keel (Costa & McCrae, 1992; Eysenck & Eysenck, 1975).

Neuroticism has also been described as being highly associated with emotion-focused (Zeidner, 1994), self-blaming and distancing (Bolger, 1990) coping styles. Neuroticism has also accounted for increased levels of subjectively reported state-anxiety or high negative affect (NA) in naturally occurring stressful (college testing) situations (Bolger, 1990; Zeidner, 1994).

The temporal stability of this enduring trait has been documented with test-retest correlations ranging from 0.64 - 0.70 for over 13 years (Watson & Clark, 1984), and 0.40 for over 30 years. Most recently, rank order measures of temporal stability have additionally been reported to be 0.65 – 0.80 for 6 to 12 years and 0.65 for intervals over 25 years. This realization led early researchers (Eysenck, 1967; Gray, 1973) to speculate that underlying genetic and biological mechanisms associated with the autonomic nervous system may contribute

to the stable emotional tendencies of this construct.

Behavior geneticists support this position and have established a strong heritability factor contributed to neuroticism. Twin studies (Shields, 1962) have reported correlations of 0.51 for monozygotic twins reared apart and 0.53 for dizygotic twins reared together. These findings were replicated by Loehlin and Nichols (1976). The largest reported twin study (N=12,898) reported an estimated heritability of 0.50 for males and 0.58 for females in their data set (Floderus-Myrrhed, Pederson, & Rasmusson, 1980). The accumulation of evidence of this sort supports the biological construct theory of neuroticism (Eysenck, 1967).

Hans J. Eysenck (1967) presented a biologically based theory of neuroticism-emotional stability, in which he developed a construct theory, assessment measures, and hypothesized neuroanatomical mechanisms which could account for manifest psychophysiological and behavioral characteristics. Eysenck (1967) suggested differences in neuroticism could be attributed to the responsivity of the sympathetic nervous system, with those high on neuroticims showing greater responsivity. More specifically, the theory was based on the arousal hypothesis: subjects high on neuroticism were predicted to have a reduced absolute threshold for limbic region activation and increased frequency of sympathetic reactivity (See Figure 2).

Most recently, Miller (2003) published the first

comprehensive review of personality in the area of PTSD and argues that neuroticism is a vulnerability factor that predisposes individuals to develop PTSD when exposed to a traumatic event. He further argues that not only is neuroticism a diathesis in the development and maintenance of the disorder, but it also interacts with introversion and conscientiousness in the expression of PTSD as internalizing (anxiety, depression) and externalizing (substance abuse, hostile) behaviors, respectively.

Based on the above, I expect to replicate of this body of research, predicting a positive association between neuroticism and symptom severity.

Introversion

The neo-Pavlovian argument concerning introversion was advanced by the arousal hypothesis of Eysenck (1967). Introversion was theorized to be linked with biological functioning associated with the ascending reticular activating system (ARAS), giving rise to a general arousal throughout the entire brain (See Figure 3). Eysenck (1967) argued that the ARAS was increasingly active in introverts with a reduced activity in extraverts. It was further postulated that as a result of this enhanced brain stem activity, introverts would be less likely to pursue external stimulation due to the increased levels of cortical activation. An additional result of this increased global arousal is increased associative learning (conditionability) of the autonomic nervous system

Figure 2: Limbic System Activity and Neuroticism.

Limbic System Activity
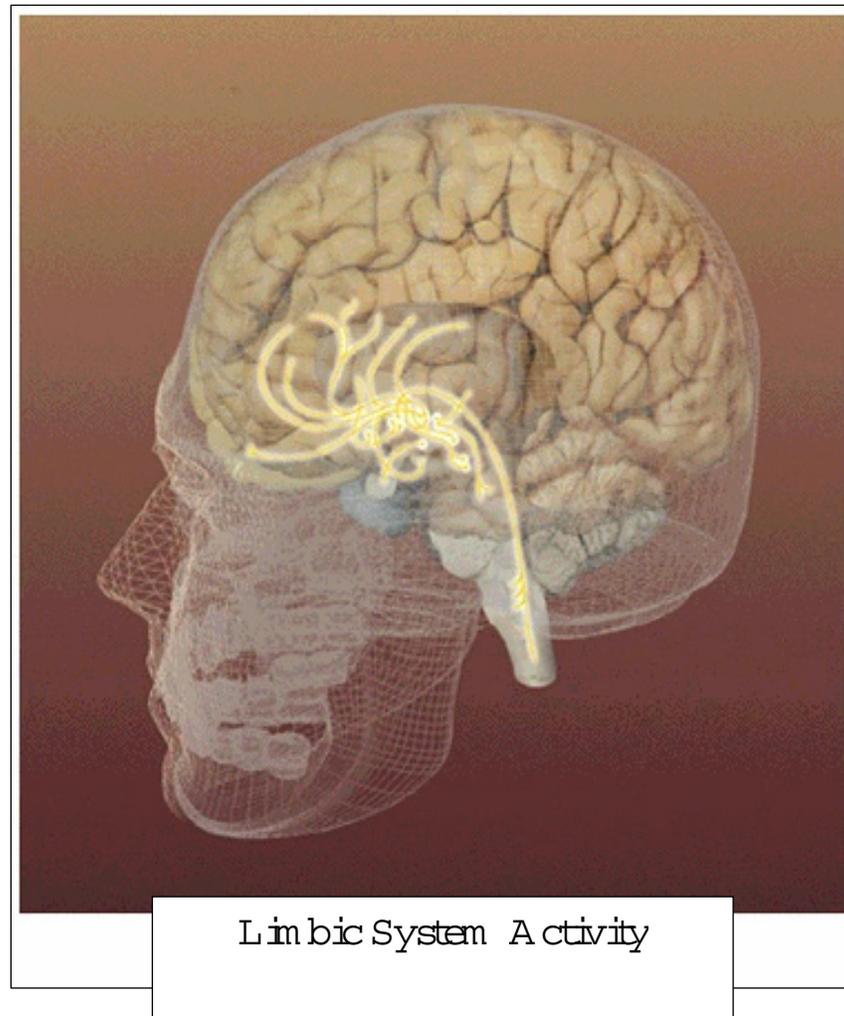
(ANS; Eysenck, 1967). Greater conditionability results in enhanced neural performance during the acquisition of conditioned responses.

Introverts displayed increased accelerative unconditioned heart rate responses when compared to extraverts. Introversion was argued to be responsible for the facilitation of the classical conditioning of parasympathetic rather than sympathetic nervous system activity, due to a lack of this response in the electrodermal parameters of the design (Fredrikson & Georgiades, 1992).

Therefore, as a result of experiencing the negative intrusions associated with TLE's, one would predict that introverts would become more easily conditioned to the anxiety provoking cues that trigger the intrusions. Furthermore, the lack of interpersonal engagement associated with introverts would prevent the individual from engaging in the pursuit of social support that would otherwise facilitate the remission of symptom severity (APA, 1994; Ehlers & Clark, 2000; Ozer et al., 2003).

A positive correlation would therefore be predicted between introversion and PTSD symptom severity.

Trait Anxiety

Although various individual differences have been reported to correlate with the onset, development, and expression of PTSD, previous research assessing moderators have managed to account

Figure 3: Ascending Reticular Activating System Activity and
Introversion.

Ascending Reticular Activation
System (ARAS)
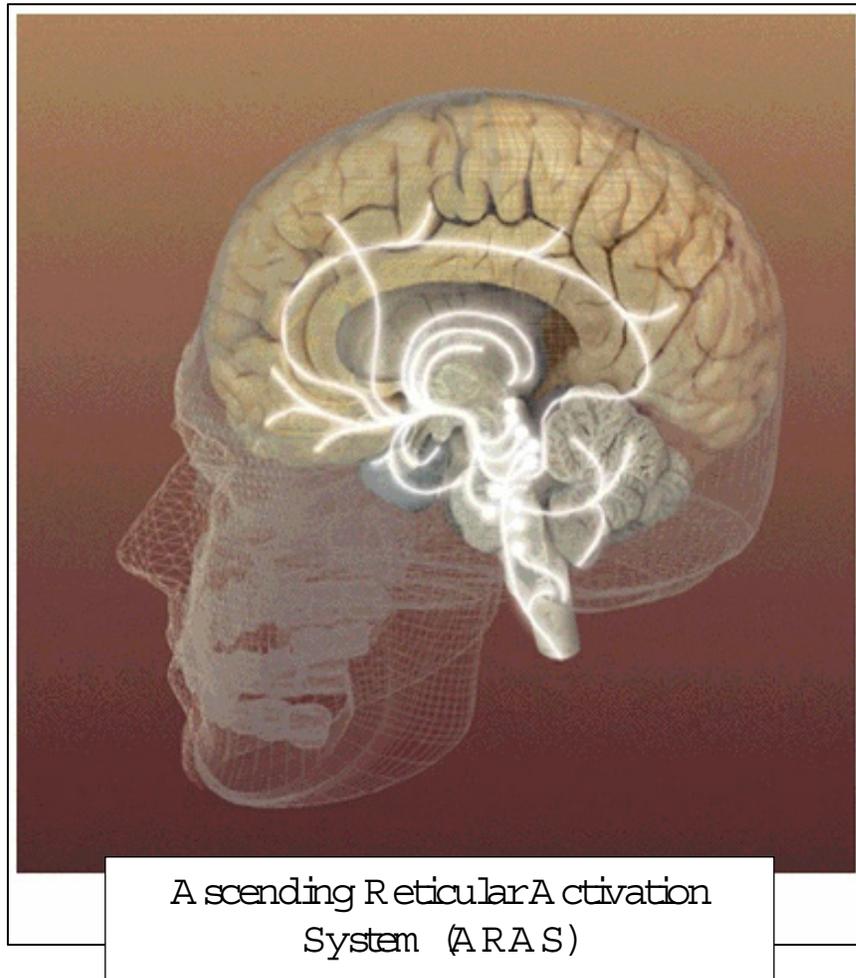
for a meager portion of the variance in this area (Brewin, Andrews, & Valentine, 2000; Ozer, et al., 2003). This led the field in the direction of mediational models that are functional in nature and assess the processes that lead to PTSD severity. These models have emphasized peri-traumatic dissociation, negative appraisals, and non-adaptive coping responses (Ehlers & Clark, 2000). Another option, as Miller (2003) hypothesized in his review, is that the interaction of neuroticism and introversion may prove to have greater predictive validity.

This position is supported by researchers (Gershuny, & Sher, 1998; McFatter, 1994; Waller et al., 1999), who suggest that differential predictions can be made between individuals high on neuroticism and low on extraversion (introverted neurotics) versus those high on neuroticism and high on extraversion (extraverted neurotics). Additional support for this argument comes from the integration of biological perspectives of cognitive traits (Gray, 1973).

Gray (1973), in an extension of Eysenck's (1967) original work, proposed that the interaction between introversion and neuroticism creates a second-order factor structure that results from a 30 degree rotation of these axes, creating a two dimensional space that runs diagonally from introversion-neuroticism to extraversion-stable quadrants (See Figure 3). Anxiety occupies the space between introversion and neuroticism. This second order factor was termed trait anxiety and was hypothesized to be a manifestation of individual

Figure 3: 30° Rotation Between Neuroticism and Introversion
That Create Trait Anxiety.

Behavioral Inhibition System and Behavioral Activation System
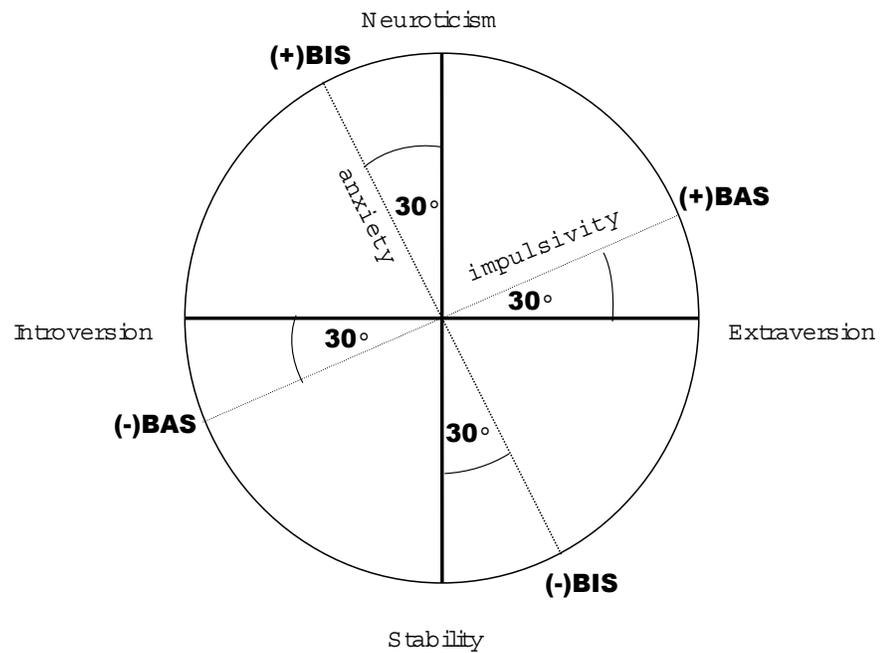
differences of the septo-hippocampal system (SHS), which in turn influences the degree of emotionality experienced by an individual. The SHS, when linked to latent cognitive processes and manifest behaviors, was termed the behavioral inhibition system (BIS). He proposed the BIS to be reactive to non-rewarding, punitive, and innate fear stimuli, the very stimuli that trait anxious individuals selectively process.

It has been hypothesized that the neuronal structures of the limbic system are more or less evolutionary-based mechanisms for survival. This entire lower-order, self-regulatory system of neural circuitry operates in the earliest stages of information processing and functions preconsciously without the necessity of being processed in the association areas of the cortices (Ohman, 1993).

Therefore, I predict that the interaction of introversion and neuroticism will establish incremental validity beyond that of either dimension independently. More specifically, combining both high neuroticism and high introversion will create the composite super ordinate profile of high trait anxiety (Gray, 1982; Speilberger, et al. 1970) which will predict PTSD symptom severity.

Persistent Dissociation

Psychometric research has identified a range of subordinate traits, or facets, of the construct of dissociation

using the Dissociative Experiences Scale (DES; Bernstein &
Putman, 1986), including seven facets (Ray et al., 1992), four
facets (Ray & Faith, 1995), and three facets (Stockdale et al.,
2002). When collapsing the derealization and depersonalization
facets into a single one, most of these results converge upon
the three facets of absorption, depersonalization, and amnesia.

Other researchers have highlighted the fact that the DES
(Bernstein & Putnam, 1986) assesses the number of dissociative
experiences versus their severity (Holmes, et al., 2005). This
position suggests that these facets could be conceptualized
as styles of responding or predispositions to respond to stress
in particular manner. This approach is not unlike the constructs
of state and trait anxiety developed by Speilberger in his State
Trait Anxiety Inventory (Speilberger et al, 1970). Along this
line of reasoning, the construct of interest may be a
predisposition to engage in a particular form of dissociative
coping to stress similar to being either detached or
compartmentalized (Allen, 2001).

Hypothetically, these responses are functionally deployed
as coping strategies in response to trauma, are effective in
reducing anxiety in the short-term, but can adversely impact
the encoding, storage, and retrieval of various aspects of
memory. The more pathological traits of this broad domain
consist of depersonalization (feelings of leaving your body)
and amnesia (Ruiz, Pincus & Ray, 1999). This approach can be
seen in the PTSD literature which discriminates between

dissociation as a peri-traumatic state or as a persistent and habitual response over time deployed to self-regulate aversive reactions to the negative intrusions associated with PTSD devolvement.

Persistent dissociation in response to negative intrusions has been found to be a better predictor of chronic PTSD than peri-traumatic dissociation at four weeks (Murray, 2002) and six months post-exposure (Halligan, Michael, Clark et al., 2003). Dissociation has been demonstrated to be associated with increased negative intrusions in response to a traumatic film regardless of instructions to dissociate or not in an analogue assessment of the development of traumatic memories (Murray, 1997). Lastly, persistent dissociation has been empirically demonstrated to contribute to the development of disorganized trauma memories (Foa, Hearst-Ikeda, 1996) which are linked to symptom severity (Harvey & Bryant, 1999). Likewise, the degree of trauma memory fragmentation can also predict future PTSD symptoms (Amir, Stafford, Freshman et al., 1998; Murray, Ehlers, & Mayou, 2002). Foa and colleagues additionally reported a positive correlation between decreases in fragmentation over time and the reduction of PTSD symptoms (Foa, Molnar, & Cashman, 1995).

These arguments and empirical support provide the logical framework to predict a positive correlation between global dissociation and PTSD symptom severity.

<u>Trait Anxiety and Persistent Dissociation Combined</u>

The development of these arguments concludes with the notion that trait anxiety and persistent dissociation can operate at pre-attentive stages of information processing under times of stress. More specifically, under times of extreme stress, the conditioning of pre-attentive threat detection system leads to the use of dissociation to prevent aversive arousal. In response, a preemptive threat monitoring mode emerges that detects cues and disengages further processing in attempt to preserve the psychological integrity of the organism in a way that is automatic and in direct opposition to adaptive consolidation efforts. The resultant vicious cycle is outside of conscious awareness, is not amenable to self-initiated interventions and leads to the chronic stage of development.

Therefore, I predict that the interaction of neuroticism, introversion and dissociation will better account for PTSD symptom severity than the interaction between introversion and neuroticism, their separate effects, or dissociation by itself.

To the best of my knowledge, this is the first attempt to associate the maintaining factors of PTSD symptom severity to a profile consisting of these superordinate individual difference factors (and subordinate facets, as described below). The facet analyses will be exploratory in nature, but are informed by basic research in the areas of personality, emotions and psychopathology (Wiggins & Pincus, 1994). More specifically,

I will address each factor and the associated logic to support the final segments of my argument that assess whether specific personality-driven behavioral tendencies provide more precision in predicting PTSD symptom severity than the global domains.

Facet Approach

The psychometric logic that under-girds this position suggests that the superordinate level of the personality hierarchy contains the specific variances of each facet, the communal or shared variance between them, and error. Therefore, predictive validity can be enhanced by reducing the specific and communal variances unrelated to the criterion when using these facets as independent variables. Facets will therefore be selected that are empirically related to similar clinical processes, and when none exists, logic prevails. We then combined these individual facets to create a combination facet. This strategy provided the ability to contrast the associations between both the hierarchical levels and PTSD severity (Paunonen, 1998, 2003; Paunonen & Ashton, 2001a, 2001b; Paunonen & Nicol, 2001; Paunonen Rothstein & Jackson, 1999).

Neuroticism

Due to the fact that neuroticism has been demonstrated to be a general vulnerability to distressing disorders and a predisposition to experience negative emotions (Costa & McCrae, 1992; Watson & Clark, 1984), I predict that the neuroticism

facets of anxiety (n_1) and vulnerability to stress (n_6) will be specifically related to PTSD symptom severity.

Introversion

I predict that the specific facets of gregariousness (e_2) and positive emotion (e_6) within the domain of extraversion will be negatively correlated with PTSD symptom severity due to logical connections between these dimensions and both the seeking of social support and the experiencing of negative affect.

Trait Anxiety

Additionally, I predict that the facets of gregariousness (e_2) and positive emotion (e_6) of extraversion and the facets of anxiety (n_1) and vulnerability to stress (n_6) of neuroticism are the core features of trait anxiety, and will therefore have greater predictive validity beyond that established by the global domains of introversion and neuroticism.

Persistent Dissociation

The Dissociative Experiences Scale (Bernstein & Putnam, 1986) is a self-report assessment device commonly used in research and has reliably identified three subordinate facets of the construct of persistent dissociation: absorption, depersonalization, and amnesia (Stockdale, et al., 2002). The common processes of enjoying a good movie or video game and being creatively involved in art work are associated with the facet of absorption. This facet has been recently identified to inflate the association between dissociation and PTSD

severity due to fantasy proneness, and is recommended to be controlled for in regression equations (Candel & Merckelbach, 2004; Merckelbach & Jelicic, 2004; Merckelbach & Muris, 2001).

Depersonalization (feelings of leaving your body) and amnesia have been found to be robust predictors in the development of acute stress disorder (ASD) and severe PTSD (Buckley, Blanchard & Neil, 2000; Gershuny, 1999; Ozer, Best, Lipsey et al., 2003). Furthermore, the amnestic facet has been associated with greater pathology in previous research (Ruiz, Pincus & Ray, 1999) and will be selected as the variable of interest at the facet level. Therefore, I predict that the amnestic sub-facet (d_3) will outperform the effects of global dissociation.

Finally, I predict that the combination-facets that consist of neuroticism (n_1+n_6), introversion (e_2+e_6), and amnesia (d_3) will better account for symptom severity than their independent effects, their pair-wise interactions, and ultimately above and beyond that established by the full global model.

In summary, the following hypotheses will be tested:

Global Analyses

<u>Main Effects:</u>

1. Neuroticism will be positively correlated with PTSD symptom severity, after statistically controlling for confounds.
   Neuroticism = **N** ($n_1+n_2+n_3+n_4+n_5+n_6$)

2.   Extraversion will be negatively correlated with PTSD symptom severity, after statistically controlling for confounds.

      Extraversion = **E** $(e_1+e_2+e_3+e_4+e_5+e_6)$

3.   Dissociation will be positively correlated with PTSD symptom severity, after statistically controlling for confounds.

      Dissociation = **D** $(d_1+d_2+d_3)$

<u>Interactions:</u>

4.   The interaction of introversion and neuroticism will additionally predict PTSD severity beyond either trait alone, after statistically controlling for confounds.
      <u>BIS/Trait Anxiety Pair-wise Prediction</u>
      <u>**N * E**</u>

5.   The interaction of introversion by neuroticism by dissociation will additionally predict PTSD severity beyond any traits alone, and any of their pair-wise interactions, after statistically controlling for confounds.
      <u>Full Global Three-way Prediction</u>
      <u>**N * E * D**</u>

Facet Analyses

<u>Main Effects:</u>

6.   The combination-facet <u>**N**</u> created by summing the facets of anxiety (n_1) and vulnerability (n_6) will be positively correlated with PTSD symptom severity, after statistically controlling for confounds.
      Neuroticism combination-facet <u>**N**</u> = (n_1+n_6)

7.   The combination-facet <u>**E**</u> created by summing the facets of gregariousness (e_2) and positive emotion (e_6) will be positively correlated with PTSD symptom severity, after statistically controlling for confounds.
      Extraversion combination-facet <u>**E**</u> = (e_2+e_6)

8.   The amnesia sub-facet <u>**d**</u> (d_3) will be positively correlated with PTSD symptom severity, after statistically controlling for confounds.
      Amnesia sub-facet <u>**d**</u> = (d_3)

<u>Interactions:</u>

9.   The pair-wise interaction of the combination-facet **_N_** by the combination-facet **_E_** will additionally predict PTSD severity beyond either combination-facet alone, after statistically controlling for confounds.
     <u>BIS/Trait Anxiety Pair-wise Prediction</u>
     Combination-facets **_N_** * **_E_**

10. The three-way interaction of combination-facet **_N_** by the combination-facet **_E_** by sub-facet **_d_** will additionally predict PTSD severity beyond any combination-facets or sub-facet alone, any of their pair-wise interactions, after statistically controlling for confounds.
     <u>Full Facet Prediction</u>
     Combination-facets **_N_** * **_E_** * sub-facet **_d_**

Comparison of Models:

Adjusted R-squared of Full Global Model vs. Full Facet Model

$$\hat{Y} = N + E + D + (\underline{N}*\underline{E}) + (\underline{N}*\underline{D}) + (\underline{E}*\underline{D}) + (\underline{N}*\underline{E}*D)$$

$$\boldsymbol{\hat{Y} = \underline{N} + \underline{E} + \underline{d} + \{(\underline{N}*\underline{E}) + (\underline{N}*\underline{d}) + (\underline{E}*\underline{d})\} + (\underline{N}*\underline{E}*\underline{d})}$$

Chapter III

METHODS

Design:

      This study is of a correlation nature and is based on the acquisition of archival, self-reported data of a retrospective nature collected from 1996-1997. The predictor and criterion measures assessed individual differences in personality domains, trauma exposure, coping styles and PTSD symptoms.

Subjects:

      One hundred and eighty-four participants with an average age of 19.1 (SD=2.13) and who had been exposed to a TLE completed all independent and dependent measures during several group testing sessions and were used for the following analytic strategies (see procedures below). These students had been recruited from a pool of approximately 2,400 Introductory Psychology students in a prior mass screening for willingness to participate in research where they had completed a self-report screening measure of trauma history and PTSD symptomatology (see Appendix C for screening measure). Individuals were then randomly selected to participate in additional research and completed the individual differences and PTSD symptom severity measures. Two hundred fifty-five individuals completed the PDS, but of those individuals only two hundred forty-six fully completed both measures of

individual differences and symptom and severity and were used in the preliminary analyses of this research. Due to the nature of the research questions only those exposed to a TLE (76%; n=184) were selected for final stage of statistical evaluations. The PDS (Foa, Riggs, Dancu & Rothbaum, 1993) was selected based on its direct correspondence with the DSM-IV criteria of PTSD symptoms, was validated on participants who experienced a broad range of traumatic events, and has the capacity to produce both a degree of diagnostic severity classification and a continuous symptom severity index of PTSD symptomatology.

Procedure:

    Participants indicating willingness at an earlier group screening were invited to participate in the more comprehensive follow-up assessment, as described below.

Human Use Procedures:

    Participation in this investigation was voluntary, in full accordance with human use guidelines, and rewarded with 3 hours of credit towards Introductory Psychology grades. Only participants who agreed at the initial group screening to participate in the follow-up 3 hour assessment study were contacted for possible inclusion in the study. Further inclusion criteria consisted of ages ranging from 18-35. Participants were briefly informed as to the purpose of the investigation, the assessment nature of the study, and the

procedures required for participation (See Appendix E).
Participants were notified that credit slips for their time
and participation would be submitted toward their Introductory
Psychology grade once the assessment battery was completed and
returned to study personnel.

All participants received a written and verbal explanation
of the study's aims and received a consent form which clearly
delineated all relevant aspects of the study in addition to
potential risks and benefits. All participants who volunteered
to participate were provided written consent to participate
in the research investigation (See Appendix F). Prior to
completion of the battery, participants were informed that the
investigator would be available throughout the duration of the
study to answer any questions or concerns related to any of
the assessment measure, the consent form, or potential side
effects which they may have in response to completing assessment
items of a potentially sensitive nature. Additionally,
participants were informed that referrals to mental health
professionals and/or agencies would be provided for any
difficulties a subject may be experiencing (See Appendix F).
Moreover, all participants in the study were provided with
written referral information in the event such information might
prove useful.

Assessment:

A comprehensive assessment battery was administered to

more fully examine the interrelationships between individual differences in introversion, neuroticism, dissociation, symptom severity of PTSD. All of the following self-report measures were given to the one hundred eight-four participants.

Individual Differences:

Personality: Five Factor Model (NEO-PI-R; Costa & McCrae, 1989).

Due to the utility of being able to assess both global and specific traits (Paunonen, Rothstein, & Jackson, 1999), and being stable across instruments and raters (McCrae & Costa, 1987), the NEO-PI-R (Costa & McCrae, 1992) was selected as the measure of personality. The NEO-PI-R (Costa & McCrae, 1992) is a 240 item instrument with well established convergent validity with the neuroticism (N) and extraversion (E) scales (McCrae & Costa, 1985) of Eysenck's EPQ (Eysenck & Eysenck, 1985). The personality dimensions of interest for this particular experiment were introversion and neuroticism; each of which has six additional facets that were also of interest.

The global factor of neuroticism (N) has both communal and specific variances which can be partitioned into the following sub-facets: (n_1) anxiety, (n_2) angry hostility, (n_3) depression, (n_4) self-consciousness, (n_5) impulsiveness, and (n_6) vulnerability to stress. For this particular study the facets of (n_1) anxiety, and (n_6)-vulnerability to stress were of interest.

The global factor of extraversion (E) has both communal

and specific variances which can be partitioned into the following sub-facets: (e_1) warmth, (e_2) gregariousness, (e_3) assertiveness, (e_4) activity, (e_5) excitement seeking, and (e_6) positive emotions. For this particular study the facets of (e_2) gregariousness and (e_6) positive emotions were of interest.

<u>Dissociation: The Dissociative Experiences Scale (DES, Bernstein & Putman, 1986)</u>.

The DES is a 28 item self-report measure with items on an analog scale form 1-100, with 1 representing rarely and 100 representing most frequently. The items are tallied and divided by 28 to achieve an average global score ranging from 1-100. The scale has good temporal stability and internal consistency, convergent and discriminant validity, using both clinical and non-clinical samples. The DES was used to assess both the global domain and a sub-facet in subsequent statistical analyses.

The global factor of dissociation (D) has both communal and specific variances which can be partitioned into the following three sub-facets: (d_1) absorption, (d_2) depersonalization and (d_3) amnesia (Stockdale, et al., 2002). For this particular study the facet of (d_3) amnesia were of interest.

Symptom Severity:

<u>PTSD Symptom Severity: Posttraumatic Stress Diagnostic Scale (PDS; Foa, Riggs, Dancu, & Rothbaum, 1993)</u>.

The PDS is directly based on DSM-IV diagnostic criteria

for PTSD and was validated on a sample of participants who experienced a wide range of traumatic exposures including: military combat or war zone exposure (27.8%); sexual assault (21.4%); non-sexual community violence (19.8%); accident of fire (18.5%); life-threatening illness (4.4%); sexual abuse (3.6%); other (3.6%) and natural disaster (0.8%). The psychometric qualities of the PDS strongly support its use in the assessment of PTSD caseness and symptom severity (Foa, et al., 1996). This is established by having degrees of severity with a range from 0-51 that is portioned into four levels (e.g., 0-10 <u>mild</u>, 11-21 <u>moderate</u>, 22-35 <u>moderate/severe</u>, and 36-51 <u>severe</u>), of symptom severity. Specifically, substantial overlap between DSM-IV (APA, 2000) PTSD diagnoses and the <u>severe</u> range (36-51) of the PDS were reported with a sensitivity of 88.6% and specificity of 90.2% were obtained on a sample of participants who were assessed six months after exposure to a TLE, with only slightly lower levels found in the immediate post TLE months. The PDS was also found to possess high levels of internal consistency, temporal stability, and convergent validity (Foa, Riggs, Dancu, & Rothbaum, 1993).

<u>Data Analysis</u>:

Identical hierarchical regression equations were developed with forced blocks to enter variables in this specific order: confounds; three main effects; one a priori two-way interaction; two remaining pair wise interactions; and the final three-way

interaction. The outcomes of these separate statistical analyses provide the framework to assess both the unique and interactive effects of adding variables at different hierarchical levels (e.g., domain and facet level) in relation to predictability. This approach is well suited for model development because it offers the simultaneous ability to assess both the between effects of variables at one level and the combined impact within these variables relative to another level.

Finally, I will compare models to determine which model accounts for the majority of the criterion variance associated with PTSD symptom severity.

Model 1: Gender differences, fantasy proneness, TLE type, TLE frequency, and TLE duration have each been identified as confounds and were controlled for by entering them into block 1. The forced entry of the domains of neuroticism, introversion and dissociation occurred in block 2. The forced entry of the predicted pair-wise interaction between the domains of neuroticism and introversion occurred in block 3. The remaining pair-wise interactions of the domains of introversion, neuroticism and dissociation(N * D and E * D) were then forced to determine if any predictive variance beyond that established by the independent effects, or a priori predictions of blocks 1-3 occurred in block 4. The three-way interaction of neuroticism, introversion and dissociation was forced in block 5 to determine whether incremental validity could be established

beyond that of block 4.

Model 2: Gender differences, fantasy proneness, TLE type, TLE frequency, and TLE duration have been identified as confounds and were controlled for by entering them into block 1. The forced entry of the predicted pair-wise interaction of combination-facets **_N_** and **_E_** were carried out in block 2. The a priori, pair-wise interaction of the combination-facets **_N_** and **_E_** *in block 3.* The remaining pair-wise interactions of combination-facet **_N_** by sub-facet **_d_** and combination-facet **_E_** by sub-facet **_d_** were then forced **to** determine if any predictive variance beyond that established by the confounds, the main effects, or a priori predictions of blocks 1-3 occurred in block 4. The three-way interaction of combination-facet **_N_** by the combination-facet **_E_** by sub-facet **_d_** was forced into block 5 to determine whether incremental validity could be established beyond that of block 4.

The Adjusted R^2 values between the competing models were compared to determine which approach accounted for more of the criterion variance of PTSD symptom severity.

Chapter IV

RESULTS

Global Model: Table 1 presents means and standard deviations on all independent variables and PTSD symptom severity. Figure 5 presents the distribution of PTSD symptom severity used to identify for any potential outliers. As no outliers were detected, the following analyses were carried out below.

This series of hierarchical, forced-block regression analyses assessed to what degree the main and interactive effects of neuroticism (N), extraversion (E) and dissociation (D) were associated with PTSD symptom severity. The potential confounds were initially entered and consisted of gender, fantasy proneness, TLE type, TLE frequency, and TLE duration in **Block 1**; main effects of the three predictor variables in **Block 2**; the a priori two-way interaction of neuroticism and extraversion in **Block 3**; remaining two-way interactions (N x D, E x D) in **Block 4**; and three-way interaction in **Block 5**.

In **Block 2** the forced entry of all the independent variables (N, E and D) tested hypotheses 1-3 which were tested as main effects and to determine whether their combined influences established incremental validity beyond that of the control block (See Table 2 for regression results for Hypotheses 1-5).

Hypothesis #1 predicted that neuroticism would be positively associated with PTSD symptom severity after

Table 1: Descriptive Statistics for all independent variables and PTSD symptom severity.

	Symptom Severity	Neuroticism	Extraversion	Dissociation
N	184	184	184	184
Mean	13.50	108.16	125.90	14.11
SD	12.50	10.31	13.19	9.90
Range	51	62	87	48
Min	0	87	92	0
Max	51	149	179	48

Figure 5: Frequency Distribution of PTSD Symptom Severity.

Histogram

Mean = 13.5
Std.Dev.= 12.503
N = 184
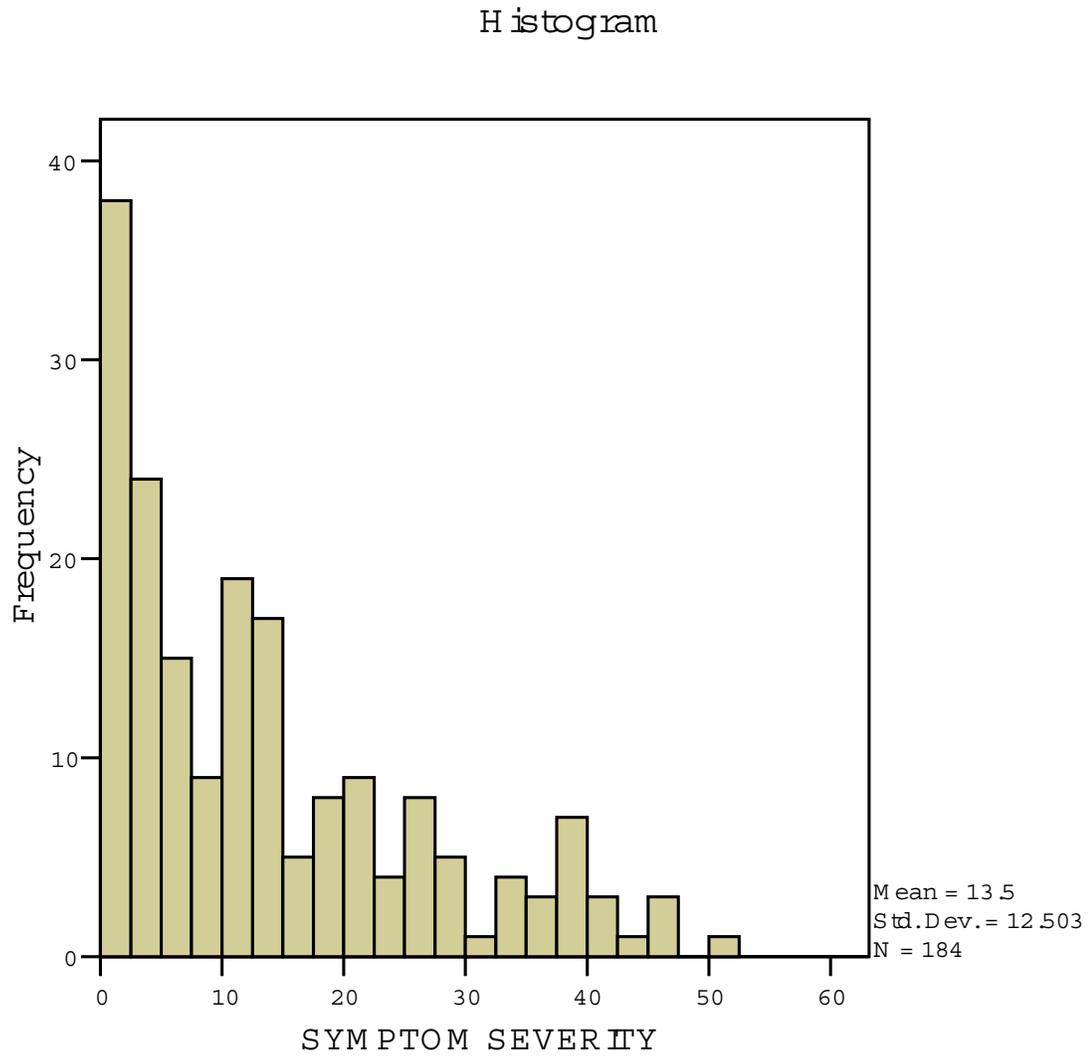
Table 2: Summary of Regression Results for Hypotheses 1-5,
Global Model Approach, while controlling for Gender, o-1
fantasy, TLE type, TLE frequency and TLE duration.

Excluded Variables

Block		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
2	NEUROTICISM (N)	.05	.64	.52	.05	.81
	EXTRAVERSION (E)	.03	.38	.70	.03	.83
	DISSOCIATION (D)	.18	2.68	.00	.20	.95
3	N X E	-.57	-.71	.47	-.05	.00
4	N X D	1.85	2.26	.01	.19	.00
	E X D	-.85	-1.06	.29	-.08	.00
5	N X E X D	.43	.22	.83	.02	.00

Global Model Summary

Block	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
						Change Statistics			
1	.51	.26	.23	10.95	.26	10.24	6	177	.00
2	.53	.29	.25	10.84	.03	2.23	3	174	.07
3	.54	.29	.25	10.86	.00	.49	1	173	.48
4	.56	.31	.26	10.76	.02	2.51	2	171	.04
5	.56	.31	.26	10.74	.01	1.60	1	170	.83

statistically controlling for potential confounds. This hypothesis was not supported, β=.05, ns.

Hypothesis #2 predicted that extraversion would be negatively associated with PTSD symptom severity after statistically controlling for potential confounds. This hypothesis was not supported β=.03, ns.

Hypothesis #3 predicted that dissociation would be positively associated with PTSD symptom severity after statistically controlling for potential confounds. This hypothesis was supported, β=.18, p<.01, indicating high dissociation is associated with greater severity.

The only supported effect in **Block 2** was that dissociation significantly predicted PTSD symptom severity. There was no incremental significance established beyond the first block (control variables) for these entries, Δ adjusted R^2=.03, ns; total adjusted R^2=.25, F(3,174)=2.5, ns.

Hypothesis #4 predicted that in **Block 3** the two-way interaction of neuroticism and introversion (trait anxiety) would predict PTSD severity above and beyond that established by each of the traits alone after statistically controlling for potential confounds. This hypothesis was not supported, Δ adjusted R^2=.00, ns; total adjusted R^2=.25, F(1,173)=.50, ns.

The remaining pair wise interactions within **Block 4** were assessed to determine whether their individual or combined influences established a significant increment in prediction of symptom severity beyond that previously established in the

third block. Of the two entries, the neuroticism by dissociation interaction predicted PTSD symptom severity, $\beta=1.8$, $p<.01$, indicating high N and high D are associated with greatest severity, which established incremental validity for these remaining pair wise entries, Δ adjusted $R^2=.03$, $p<.04$; total adjusted $R^2=.27$, $F(2,171)=3.4$, $p<.04$.

Hypothesis #5 predicted that in **Block 5** the full interaction of neuroticism by introversion by dissociation would predict PTSD severity beyond that established by any of their independent effects, pair-wise interactions, and statistical control of potential confounds. This hypothesis was not supported, Δ adjusted $R^2=.02$, *ns*; total adjusted $R^2=.26$, $F(1,170)=$ns.

In summary, the significant findings within this global approach were the main effect for dissociation and the two-way interaction of neuroticism and dissociation. This **N x D** interaction established incremental validity and accounted for predictive variance beyond that established in prior and subsequent entries (full three-way interaction) in this series of analyses.

Facet Model: Table 3 presents means and standard deviations on all independent variables and PTSD symptom severity. The secondary Hypotheses 6-10 relate to whether the specific combinations of facets could better predict outcome than their global domains. The potential confounds were

Table 3: Descriptive Statistics for all independent variables
and PTSD symptom severity.

	Symptom Severity	Combo-FacetN	Combo-FacetE	d3 - amnesia
N	184	184	184	184
Mean	13.50	34.28	39.98	6.73
SD	12.50	5.62	6.32	7.96
Range	51	35	36	48
Min	0	22	24	0
Max	51	57	60	48

initially entered in **Block 1**, as before; main effects of the three facet-level variables in **Block 2**; the a priori two-way interaction of combination-facets **_N_** and **_E_** in **Block 3**; remaining two-way interactions in **Block 4**; and three-way interactions in **Block 5**.

In **Block 2** three entries were made for testing Hypotheses 6-8 which were assessed as main effects of the three facet-level variables (**_N_**, **_E_** and **_d_**) and whether their combined influence established incremental validity beyond that of the control block (See Table 4 for regression results for Hypotheses 6-10).

Hypothesis #6 predicted that the combination-facet **_N_** created by summing the facets of anxiety (n_1), and vulnerability (n_6) would be positively associated with PTSD symptom severity after statistically controlling for potential confounds. This hypothesis was not supported $\beta=-.06$, ns.

Hypothesis #7 predicted that the combination-facet **_E_** created by summing the facets of gregariousness (e_2) and positive emotion (e_6) would be positively associated with PTSD symptom severity after statistically controlling for potential confounds. This hypothesis was not supported $\beta=-.03$, ns.

Hypothesis #8 predicted that the sub-facet **_d_** (amnesia-d_3) would be positively associated with PTSD symptom severity after statistically controlling for potential confounds. This hypothesis was supported, $\beta=.14$, $p<.04$, indicating that high amnesia is associated with greater severity.

Only the sub-facet **_d_** significantly predicted PTSD symptom

Table 4: Summary of Regression Results for Hypotheses 6-10, Facet
Model Approach, while controlling for Gender, o-1 fantasy,
TLE type, TLE frequency and TLE duration.

Excluded Variables

Block		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
2	Combo-Facet N	.06	.75	.45	.06	.85
	Combo-Facet E	-.03	-.47	.64	-.04	.78
	d3 - amnesia	.14	2.08	.04	.16	.93
3	N by E	-.13	-.21	.84	-.02	.01
4	N by d3	.77	1.93	.06	.15	.03
	E by d3	-.33	-.62	.54	-.05	.02
5	N by E by d3	-3.62	-1.35	.18	-.10	.00

Block	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.51	.26	.23	10.96	.26	10.20	6	177	.00
2	.53	.28	.24	10.91	.02	1.56	3	174	.20
3	.53	.28	.24	10.94	.00	.04	1	173	.84
4	.54	.30	.24	10.88	.02	1.93	2	171	.16
5	.55	.30	.25	10.86	.01	1.85	1	170	.18

Facet Model Summary

severity of these predictions in **Block 2**. There was no incremental influences beyond block 1 for these entries, Δ adjusted R^2=.02, *ns*; total adjusted R^2=.24, $F(3,174)$=1.6,ns.

Hypothesis #9 predicted that in **Block 3** the a priori pair-wise interaction of the combination-facet **N** and the combination-facet **E** would establish incremental validity beyond that established by either of the combination-facets or sub-facet alone, after statistically controlling for potential confounds. This hypothesis was not supported, Δ adjusted R^2=.00, *ns*; total adjusted R^2=.24, $F(1,173)$=.04, *ns*.

The remaining two-way interactions (**N** x **d and E** x **d**) were assessed in **Block 4** to determine whether their interactions predicted symptom severity, and whether the combined influences of both accounted for a significant increment in predictive variance within **Block 4**.

The interaction of combination-facet **N** by sub-facet **d** approached significance, β=-.76, *p*<.06, indicating that high **N** by high **d** may be associated with greater severity. There was no significant increment in prediction beyond Block 3 for the remaining pair wise entries, Δ adjusted R^2=.02,*ns*; total adjusted R^2=.24, $F(2,171)$=ns.

Hypothesis #10 predicted that in **Block 5** the three-way interaction of combination-facet **N,** combination-facet **E** and sub-facet **d** would establish incremental validity above and beyond that established by any of their independent effects, pair-wise interactions, and statistical control of the

potential confounds. This hypothesis was not supported, Δ adjusted $R^2 = .01$, ns; total adjusted $R^2 = .25$, $F(1,170) = ns$.

In summary, the only significant findings within this facet approach were the main effect for sub-facet **_d_**, and the combination-facet **_N_** by sub-facet **_d_** interaction. There were no significant increments in prediction for this entire series of analyses.

As neither of these models provided compelling evidence to support the original hypotheses, an evaluation of the partial correlation matrix of the remaining facets from all five factors and PTSD symptom severity, controlling for potential confounds was carried out (see Table 5). A conservative method of reducing the p value by half ($p < .025$) was chosen to lessen the probability for capitalizing on chance in selecting two additional variables for further consideration. This procedure produced competence-c_1 ($r = -.21$, $p < .01$) and trust-a_1 ($r = 18$, $p < .02$) as facets to be used in combination with amnesia-d_3 (found to be significantly related to PTSD symptom severity in the previous analyses) for these final regressions.

The variables of competence and trust are not only significantly correlated with severity, but they also appear to be theoretically related to a recently identified social cognitive theory (see Discussion). This theory reasons that individuals exposed to a TLE will develop severe symptoms to the degree that the psychological meaning of the TLE violates their core beliefs about relations between the self and world.

Table 5: Partial Correlation Matrix of remaining facets while controlling for Gender, o-1 fantasy, TLE type, frequency and duration (bold denotes *p*<.025).

	n1 – anxiety	n2 – hostility	n3 - depression	n4 - self-conscious	n5 – impulsive	n6 - vulnerable
Correlation	-.08	.06	-.09	.06	.17	.01
Significance (2-tailed)	.28	.44	.23	.42	.03	.92
df	176	176	176	176	176	176
	e1 – warmth	e2 – gregarious	e3 - assertiveness	e4 – activity	e5 - excitement seeking	e6 – positive emotion
Correlation	.15	-.01	.12	.01	-.10	-.05
Significance (2-tailed)	.04	.91	.12	.93	.18	.47
df	176	176	176	176	176	176
	o1 – fantasy Control variable	o2 – aesthetics	o3 – feelings	o4 – actions	o5 – ideas	o6 - values
Correlation		.14	.07	.07	-.16	-.04
Significance (2-tailed)		.07	.37	.36	.04	.59
df		176	176	176	176	176
	a1 – trust	a2 – straight forward	a3 – altruism	a4 - compliance	a5 – modesty	a6 – tender minded
Correlation	.18	.11	-.03	.09	.06	.06
Significance (2-tailed)	.02	.17	.70	.24	.43	.45
df	176	176	176	176	176	176
	c1 - competence	c2 – order	c3 – dutiful	c4 -achievement striving	c5 - self-discipline	c6 - deliberation
Correlation	-.21	-.01	.16	.12	.12	.08
Significance (2-tailed)	.01	.85	.03	.11	.12	.31
df	176	176	176	176	176	176

Dependence (low competence) on external provisions by a benevolent world (high trust) may represent a core belief that could significantly become damaged by the meaning of a TLE (Janoff-Bulman, 1992).

Exploratory Model: Table 6 presents means and standard deviations on all independent variables and PTSD symptom severity.

The following analyses using competence-c_1, trust-a_1 and amnesia-d_3 were carried out similarly to the previous regression analyses. The only changes were that all of the pair-wise interactions of competence-c_1, trust-a_1 and amnesia-d_3 were all entered in step 3 (as there was no a priori prediction with respect to the two-way interactions as there were for trait anxiety). The potential confounds were initially entered in **Block 1**, followed by; main effects of competence-c_1, trust-a_1, and amnesia-d_3 in **Block 2**; all three pair wise interactions in **Block 3**; and final three-way interaction in **Block 4** (See Table 7 for regression results for Exploratory Model). **Block 2** consisted of the main effects for competence-c_1, trust-a_1 and amnesia-d_3. Each of main effects significantly predicted PTSD symptom severity independently; competence-c_1, $\beta = -.21$, $p < .01$; trust-a_1, $\beta = .16$, $p < .02$; and amnesia-d_3, $\beta = .14$, $p < .04$, indicating low competence, high trust and high amnesia are each independently associated with greater severity. The combined

Table 6:   Means and standard deviations on all independent
           variables, PTSD symptom severity and degree of severity.

	Symptom Severity	a1 – trust	c1 - competence	d3 - amnesia
N	184	184	184	184
M ean	13.50	20.03	20.34	6.73
SD	12.50	2.80	3.04	7.96
Range	51	17	19	48
M in	0	14	12	0
M ax	51	31	31	48

Table 7: Regression Results for competence, trust and amnesia,
while controlling for Gender, o-1 fantasy, TLE type,
frequency and duration.

Excluded Variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	c1 - competence	-.17	-2.68	.01	-.20	.96
	a1 - trust	.16	2.37	.02	.18	.88
	d3 - amnesia	.14	2.08	.04	.16	.93
2	c1 by a1	-.66	-1.77	.08	-.13	.03
	a1 by d3	.00	.01	1.0	.00	.01
	c1 by d3	-.07	-.16	.87	-.01	.02
3	c1 by a1 by d3	5.28	1.53	.13	.12	.00

Exploratory Model Summary

Block	R	R Squar	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.51	.26	.23	10.96	.26	10.20	6	177	.00
2	.56	.32	.28	10.59	.06	5.23	3	174	.00
3	.58	.33	.29	10.58	.01	1.04	3	171	.38
4	.58	.34	.29	10.54	.01	2.35	1	170	.13

influences of these independent effects led to a significant increment in prediction beyond the level previously established by the control block, Δ adjusted R^2=.06, *ns*; total adjusted R^2=.28, $F(3,174)$=5.2, *p*<.001.

Block 3 consisted of three pair-wise interactions for competence-c_1, trust-a_1 and amnesia-d_3. None of the interactions within this block significantly predicted PTSD symptom severity. Therefore, their combined influences did not establish a significant increment in prediction beyond the separate main effects found in Block 2, Δ adjusted R^2=.01, *ns*; total adjusted R^2=.28, $F(3,171)$= 1.0, ns.

Block 4 consisted of the full three-way interaction for competence-c_1, trust-a_1 and amnesia-d_3. The effect of this final block was nonsignificant, indicating that the full compliment of variables did not account for predictive variance above and beyond Block 3. The Δ adjusted R^2=.01, *ns*; total adjusted R^2=.29, $F(1,170)$=2.4, ns.

Final Comparison

The Adjusted R^2 differences between the Global Model, Facet Model and the post-hoc Exploratory Model were then observed to determine which model attained the highest degree of predictive validity. The Facet Model had an adjusted R^2=.25, the Global Model had an adjusted R^2=.27, and the Exploratory Model had an adjusted R^2=.29. All models had a control block which accounted for 23% with meager differences between them.

Chapter V

DISCUSSION

This present study investigated whether or not neuroticism, extraversion, and dissociative tendencies would enhance the predictability of PTSD severity, while controlling for potential confounds. A corollary hypothesis was also developed and suggested that the combination of specific facet level predictors, in place of the super ordinate personality domains, would enhance the degree of prediction. Of the ten hypotheses generated by the current investigation, only the main effects of both dissociation variables were supported. Although a marginal independent effect of neuroticism disappeared when potentially confounding variables were controlled, both global and facet neuroticism did interact with the robust influence of dissociation and will be discussed below.

After introducing limitations of the study and a brief review of the original a priori global and facet models and their (largely negative) results, the rationale for the development and interpretation of the post hoc exploratory model will be presented. Implications for potential future directions in light of the limitations and current findings will then be addressed.

<u>Limitations</u>

The present research has several limitations in its attempt to identify predictors of PTSD development. Issues of internal and external validity associated with design and method and sample characteristics will be addressed, closing with potential remedies in a future extension. Specifically, the cross-sectional design, sample restrictions and statistical method will be addressed.

The primary limitation is one imposed by retrospective, self-report methods of surveying subjects in a cross-sectional design. Although cost and time efficient, these strategies at times severely limit the ability to generalize beyond those sampled as in this case. Although criteria of controlling for potential confounding characteristics of the subject and the TLE were included, we can still only draw correlational conclusions.

The additional convenience of access to a non-clinical college sample is also a blessing and a curse. This sample was characterized by restricted range in age (mean 19.1, SD=2.13) and PTSD severity. Previous research suggests that level of education (proxy for IQ, and working memory) is a buffer or resiliency factor for PTSD (Brewin, & Beaton, 2002). College students generally exist in an insulated environment and have increased access to institutional support and resources that could prevent PTSD development after TLE exposure. In addition, these data were acquired from a cohort of the previous decade and may not reflect trends unique to the current zeitgeist.

Finally, the use of hierarchical regressions limited the ability to statistically test the differences of the three models generated by this research. Structural equation modeling or other nested designs offer the ability to statistically determine the fit of the data with various goodness of fit indices and would have been better suited for this type of model development.

We must therefore interpret this study's findings with caution. Thus, the findings of the present study are limited to college samples and may not generalize to samples with differing age, education, and symptom severity characteristics. The following discussion will be generated within the context of these limitations.

The major prediction of this study was based on the hypothesis that trait anxiety promotes fear conditioning that in turn escalates acute symptoms to chronic PTSD. The present results do not support this argument and suggest another interpretation involving the potential for a core belief structure to operate with neuroticism to initiate the negative appraisals. Furthermore, it may not be trait anxiety, but lack of extinction learning that drives the fear network and escalates acute symptoms to the chronic level of progression (See Figure 6). I will address this issue in terms of model development below.

Global Model:

This model predicted that the interaction of extraversion

Figure 6: Core Beliefs and Cycle of PTSD Development

Core Beliefs and PTSD Devlopment

Prevents Consolidation
Inhibits Fear Extinction Learning
Increases Intrusion Frequency
Promotes Fear Conditioning
Increases False Alarms

Traumatic Life
Event (TLE)

FEAR

Reminders

N

Negative

Appraisals

Anxiety

(CS)

(CR)

Disengagement
Strategy

d_3
Cognitive Avoidance

Post-attentive processes

Pre-attentive Processes

Illusion of Control Lost

C_1 / a_1

PREDICTABLE SAFETY
competence and trust reflected

Emotional Meaning For Well-Being

and neuroticism in conjunction with dissociation would most strongly predict PTSD severity. Based on this central hypothesis, a statistical model was developed that assessed both independent and combined influences of the first two variables in combination with dissociation.

Extraversion was not independently related to PTSD severity. This is perhaps surprising, given that extraversion was assumed to be a proxy for seeking of social support which has been shown to be related to PTSD and its recovery. Future research would usefully include a direct measure of social support and support-seeking behavior.

On the other hand, neuroticism was marginally associated with symptom severity. However, after statistical control of potential confounding variables, that association became non-significant. Several researchers (Englehard, van den Hout & Kindt, 2003) argue that neuroticism overlaps with most distress-related symptoms such as PTSD and loses its relationship to other constructs when distress covariance is statistically controlled. This appears to be what happened in the current analyses when the types of TLE, frequency of TLE exposures, and TLE duration (likely related to general distress) were introduced as control variables in Block 1 of all the regression analyses. A prospective longitudinal approach that assesses pre- and post-TLE levels of neuroticism, with measures of general distress (e.g., anxiety and depression) used as covariates would provide a better assessment

of the potential role of neuroticism in the development of PTSD severity.

Dissociation has often been reported to have a robust relationship with the onset and maintenance of PTSD (Ozer, Best, Lipsey et al., 2003). In the present study, this finding was replicated as the relationship was statistically significant, both before and after statistical control of potential confounds. Dissociation was also observed to be highly associated with exposure to a TLE (see Appendix B for results of ANOVAs on all independent variables by contrasting the 184 participants who had experienced a TLE and a separate group of 62 who had no history of a TLE). This raises the rival possibilities that (a) exposure to a traumatic event may lead to increases in dissociative processes, (b) pre-existing dissociation can increase the likelihood of more severe PTSD symptoms upon TLE exposure, or (c) pre-existing dissociation can increase the likelihood of a TLE exposure. The first possibility converges with consensus in field and was assumed by the theoretical and empirical arguments presented in the Introduction, suggesting that dissociation is a coping strategy in response to trauma. The second possibility remains plausible as premorbid tendencies may preclude one to engage in the various forms of dissociation, but can only be tested in a prospective design. The third alternative of dissociation leading to exposure to TLEs remains a rival hypothesis (Merckelbach, Horselenberg & Schmidt, 2002). Again, a prospective study that assesses types

and levels of dissociation prior to exposure to a TLE is needed in order to provide stronger evidence to support or rule out any of these three hypotheses.

The model developed in this research rested on the argument that trait anxiety was responsible for the escalation of chronic impairment because of attentional bias to threat. More specifically, neurotic individuals high on introversion were theorized to rapidly develop a non-adaptive fear conditioning mechanism that would be deployed under extremely stressful conditions and would thus predict the highest levels of PTSD severity. This prediction was not supported as this association accounted for a minor (and statistically nonsignificant) contribution to prediction. Although not predicted, the remaining pair-wise interaction of neuroticism by dissociation established incremental validity. This suggests that the influence of neuroticism may only emerge under conditions where dissociation is also prominent. In terms of PTSD, this could mean that, as reminders of the TLE occur and elicit dissociative strategies, neuroticism fosters the negative appraisals which lead to maintenance and/or escalation of PTSD symptoms. Again, prospective research assessing these variables before and after TLE exposure would be needed to provide stronger evidence for this possibility.

The final prediction suggested that dissociation would significantly enhance the predictability of the neuroticism by extraversion interaction above and beyond the main effects

and two-way interactions. The addition of this interaction added nothing new to the model and hence did not establish incremental validity.

These results run counter to the central hypothesis that conceptualized trait anxiety (N+ by E-) as the construct most likely to account for the onset and maintenance of chronic PTSD. Furthermore, dissociation was predicted to add to this vulnerability, which over time could become more persistently deployed. These constructs operating together were conceptualized to promote the development of TLE reminders to spontaneous and unwanted negative intrusions that lead to pathology. There are two possible interpretations of the three-way interaction being nonsignificant. (a) Dissociation may carry all of the variance and when interacting with extraversion becomes suppressed. It is interesting to note such a process is a centralizing theme in trauma-related disorders such as borderline personality disorder, eating disorders of the bulimic type, dissociative disorders, and acute stress disorder. (b) Another perspective may be that the limitations imposed by our sample (college students, low number meeting PTSD criteria) restricted our ability to test our hypotheses. These elements again could be explored with a longitudinal prospective study assessing the independent variables at various stages of symptom and disorder development, including significant numbers of participants who eventually develop clinically severe PTSD.

Facet Model:

    This model predicted that any substitution of specific facets in place of the global domains would enhance the precision of the Global Model. For this model, the combination-facet _**N**_ created by summing the facets of anxiety (n_1) and vulnerability (n_6), along with combination-facet _**E**_ created by summing the facets of gregariousness (e_2) and positive emotion (e_6) and the amnestic sub-facet _**d**_ were used. A parallel hierarchical regression evaluated both independent and incremental influences of these variables in relation to PTSD symptom severity.

    The independent effect of both combination-facets was not statistically significant, both prior to and after controlling for potential confounds. Paralleling the results from the tests of the Global Model, the amnestic-**d_3** was significantly related by itself and approached significance when interacting with the combination-facet _**N**_. This further strengthens the notion that the influence of dissociation on PTSD severity is robust and is maintained at the facet level of analysis. Dissociation as a construct may also represent an indication of PTSD severity, as it is well represented in the B cluster of the disorder.

    It is important to discuss why the interaction between combination-facet _**N**_ by amnestic-**d_3** did not establish incremental validity as the global interaction did. The global domain of dissociation contains the summation of the sub-facets

absorption, depersonalization, and amnesia. This may suggest that absorption or depersonalization is necessary to influence this interaction, and the amnestic-d_3 sub-facet has limited influence in conjunction with combination-facet **_N_**. As it was argued above, depersonalization would most likely be the best candidate, as absorption is highly associated with creativity and normal functioning. A replication that deploys depersonalization in place of the amnestic-d_3 sub-facet could test this rival hypothesis.

The final test of the three-way interaction was nonsignificant, echoing the previous possibility that extraversion may be suppressing the interaction between neuroticism and dissociation. Because of the lack of support for several of the predicted relationships, detailed post hoc analysis of the remaining 25 facets was conducted to determine whether variables missed by our theoretical conceptualization could be identified.

<u>Exploratory Model</u>:

An examination of the partial correlation matrix (controlling for the potential confounds) with a conservative alpha adjustment to prevent chance findings was used to identify additional variables for a post hoc analysis. This selection strategy identified two candidate variables: competency (c_1) and trust (a_1). These variables were all obviously significant as main effects by virtue of the selection process, but failed

to establish any significant interaction effects or incremental validity.

Post hoc analyses significantly accounted for the most overall predictive variance. This model accounted for six percent beyond the control block, which is twice the amount seen for global factors. These results taken together, although not statistically tested for significance of difference, suggest that this post hoc analysis at least rivaled the previous models to a degree and may provide an insight into PTSD development.

The theory of shattered assumptions (Janoff-Bulman, 1992) suggests that our assumptive worlds, although illusory, provide meaning and predictability that sustains us in our everyday lives. These core schemas provide an ability to determine cause and effect relationships in our environments and so direct our behaviors. Three common assumptions that are violated by TLE's are (a) the world is benevolent, (b) the world is meaningful, and (c) the self is worthy and competent.

Although Janoff-Bulman (1992) offers a social-cognitive perspective on how and why core assumptions can be shattered, she neglects to address the clinical insights into how this process might translate into how TLE reminders lead to PTSD development. Our two post hoc facets seem to relate closely to her three assumptions. Competency is related to locus of control (Costa & McCrae, 1992). Low competency is related to an external locus of control and low self esteem. Similarly,

high trust relates to beliefs that the environment will provide rewards if you are a good person. An individual who has an external locus of control and believes that the environment is based on benevolent contingencies may be at the highest risk for a TLE shattering those core beliefs. Such a person would therefore be predicted to experience a higher degree of negative appraisals and negative affect.

These arguments suggest that the combination of traits of trust and competence may reflect specific attitudes within a hierarchy of one's overall belief system that are particularly related to chronic PTSD development. If this belief system is damaged by TLE's that cannot be reconciled without restructuring the core assumptions upon which it is based on, then the integration of these traumatic experiences in memory will be prevented and symptomatology will worsen.

Given this conceptual framework, these results may be suggesting that belief structures exist within the personality hierarchy at the deepest level, and personality domains, facets, and specific behaviors may all be reflections of this system. Speculatively, an individual low on competence (low self-esteem and an external locus of control) (c_1) with an increased sense of external trust (a_1) may be at special risk for developing symptoms (See Figure 5). Minorities who traditionally have low competence and are dependent on the environment to provide resources due to low SES status may be at special risk, and is in agreement with the current literature of higher incidence

of PTSD among ethnic minorities (Schwartz, Bradley, Sexton, et al., 2005).

Future Directions:

As previously stated above, a potential solution that addresses the bulk of the limitations of the present study would be to construct a prospective design that pretests groups who are at risk for trauma exposure (e.g., emergency workers or military combatants) during their initial training and prior to trauma exposure and again longitudinally after exposure. Emergency room personnel are one of the highest (civilian) risk categories for TLE exposures (Laposa & Alden, 2003) and for those exposed, 95% report post-exposure experience of negative intrusions (Genest, Levine, Ramsden & Swanson, 1990). This population would therefore be an ideal selection pool for sampling procedures.

The clinical implications for treatment are in accord with recent findings in disaster management strategies that caution against the use of debriefing strategies, as clients tend to get worse then better(Bison, Jenkins, Alexander, & Banister, 1997). These immediate interventions may disrupt the natural process of extinction learning that would otherwise occur and put these individuals at additional risk. In terms of these data, one option may be to non-invasively assess belief structures associated with competence and trust as possible

vulnerabilities to be followed up after natural healing takes place.

In conclusion, the present investigation has generated two options for future research. One could incorporate the recommendations outlined in the limitations section of this discussion and replicate the original models. The additional possibility to explore potential hierarchical relationships between core beliefs, attitudes, feelings, and behaviors that are conceptually-related to just-world belief systems also remains an option. Both alternatives may add to the literature on potential vulnerabilities that promote PTSD development.

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Appendix A

Epistemology of PTSD

General Stress Models

Stress is a term commonly used in our society and has been traced to its etymological roots in Latin: defined as "to injure, molest or strain" (Kahn & Byosiere, 1992; p. 573). The construct of psychological stress has both a general lay understanding and a scientific one. This scientific understanding has evolved (Aldwin, 1994; Mason, 1975) from it's original classification as an adaptive response to maintain internal homeostasis (Cannon, 1935) to our contemporary view of stress as a transaction between an individual's appraisal of threat and subsequent deployment of coping behaviors that moderate the potential effects of harm (Lazarus & Folkman, 1984).

A commonly used early usage of "stress" in the 18th and 19th centuries was in the discipline of physics (mechanics); researchers were concerned with the effects that external load forces had on the change in size and shape of various objects when subjected to this force. Load represented the external force impinging upon the object of interest, and stress referred to the internal resistant force that opposed the load. Strain represented the ratio of change within the object of interest as result of this process.

This terminology found its way into experimental

psychology via biology and medicine in the early 20th century. Osler (1910) was the first to use the term in the medical diagnosis of angina pectoris (chest pains), which was considered to be a physical breakdown in response to cardiovascular stress. Walter Cannon (1935) referred to his experimental subjects exposed to cold, low blood sugar, loss of blood and excitement as being exposed to stress. Hans Selye (1955), as a medical student in endocrinology, observed a similar response for animals and human patients diagnosed with a variety of disorders and concluded that there was a general response to stress. This response included enlargement and discoloration of adrenal glands, shrinking of thymus and lymph nodes, and development of bloody ulcers. Selye noted three stages in this stress response process as initial alarm, resistance, and finally exhaustion (possibly leading to death), which became known as the General Adaptation Syndrome (GAS; Selye, 1955). This syndrome was a theorized to be a natural stress response cycle with explanations for depletion of resources with continuous challenge.

The GAS model was based on an animal model and neglected to account for the differences in cognitive-affective behaviors during exposure to stressful conditions in humans. This need was met in the resulting paradigm shift to that of adaptation to stress being captured in a cognitive-transactional model(Lazarus & Folkman, 1984), where both the properties of the individual and the qualities of the stressor transact and

determine outcomes that are motivated by survival-oriented adaptive mechanisms of self-regulation, or homeostasis (Cannon, 1935). Within this framework one can determine both the outcome of strain, or deviation from homeostasis, as the transaction between individual differences of the organism and qualitative characteristics of the specific source of the stimulus.

The portion of the outcome determined by the individual is governed by a three-stage appraisal process, which consists of primary appraisals, secondary appraisals and reappraisals (Lazarus & Folkman, 1984). Subsequent to the detection of a source of potential harm, the primary appraisal mechanism is activated and determines the value of the potential stressor as being life threatening, harmful, annoying, challenging or inert. The resulting value of this appraisal becomes the input for the secondary appraisal (for the sake of discussion we will assume that the value is threatening in this scenario). This process is likened to a cost-benefit analysis between perceived accessible resources and anticipated external demands exacted by the potential threat (Derryberry & Reed, 1994). Subsequently, self-regulating processes are initiated as a form of coping to ameliorate the stressor/threat. Finally, the outcome of the self-regulatory function is reappraised (second iteration of primary appraisal) to determine whether the stressor remains a threat or has been disposed of (inert). Based on the output of this process, additional coping processes are deployed, or disengaged and restored.

In this transactional model it is not only the individual differences of the organism that account for variability of outcome, but the quality of the stressor with respect to harm or survival value and can vary on a continuum from daily hassles, on the one hand, to traumatic life events at the extreme end (Aldwin, 1994).

Daily hassles, are exemplified by interpersonal exchanges, time constraints etc. Minor life events are characterized by transactions that tax an individual such as traffic tickets, arguments with neighbors, etc. Major life events classified as stressors having major impacts include such events as changing careers, relocating a family to another region, and incarceration. These types of events and were the catalysts for the first stressful life events scale (Holmes & Rahe, 1967).

Traumatic life events are characterized by victim reactions of horror, helplessness, and extreme fear (APA, 1994) and are classified as the most extreme forms of stress. Traumatic stressors, or traumata, have the capacity to elicit a variety of clinical stress responses that are dependent on both the individual differences and vulnerabilities (e.g., developmental stage, attentional bias, coping style, vulnerability to stress etc.) of those exposed and objective traumata qualities such as frequency, intensity and type (Aldwin, 1994).

Historical Accounts of PTSD

Initial accounts of traumatic stress were documented in London, associated with victims of railway accidents who presented with anxiety, memory dysfunction, sleep disturbances, limb pain and perceptual difficulties (Erichsen, 1866; Page, 1885) known as "Railway Spine Syndrome." Physicians speculated that injury to the spine and/or spinal chord led to the clinical signs and symptoms of this disorder. However, the lack of observable physical injury left practitioners confused with respect to the etiology and treatment of this phenomenon (Lamprecht & Sack, 2002).

American physicians, unaware of the accounts in England, were also treating the debilitative effects of U.S. Civil War. Combatants exhibited emotional irritability and hypervigilant sympathetic arousal, which was attributed to cardiac dysfunction (Myers, 1870; Da Costa, 1871). This medical syndrome became known as "Irritable Heart," "Soldier's Heart," and "Da Costa's Syndrome." Injured soldiers were noted to practically go numb, become irritable and have reoccurring images of the combat experiences (Da Costa, 1871).

In Germany, Oppenheim published his seminal monograph *The Traumatic Neurosis* in 1889 (Lamprecht & Sack, 2002)and argued that the excitability of the cardiac nervous system observed in Irritable Heart Syndrome (Da Costa, 1871) was not of a physiological origin, but was a response of the cerebral cortex to traumatic stress. This hypothesis was supported by observations of many cases lacking physical evidence of cardiac

disease, which was in line with the earlier findings by Page (i.e., no signs of spinal lesions; 1885). Emil Kraepelin was, influenced by the writings of Oppenheim and argued that the psychological strains associated with traumatic exposure had to do with mental fear and/or shock and coined the term of "Fright Neurosis" (Lamprecht & Sack, 2002).

At this time in France, Janet (1907) theorized the phenomenon of hysteria to be a psychological response of traumatic stress. Janet (1907) introduced the concept of separating consciousness, or dissociation, as a defense mechanism that protected the ego from reexperiencing the "vehement emotions" of traumatic incidents. Janet (1907) postulated that the dissociative process prevented the emotional memory from being processed into the appropriate memory store and led to the posttraumatic dysfunction.

As a consequence of World War I many soldiers were diagnosed with "Shell Shock" (Myers, 1915, 1940). The symptoms were attributed to the traumatic stress and emotional shock of combat. During wartime, it was difficult for many senior military soldiers to accept this diagnosis, and they preferred to stigmatize those suffering as cowards, traitors and deserters (Lamprecht & Sack, 2002). As a result, 306 British and Commonwealth soldiers were executed on the orders of senior military officers; German soldiers reportedly executed 25 of their own (van der Kolk, Weisaeth, & Van der Hart, 1996). These executions were rationalized as being a consequence of treason

for being insubordinate, deserting, or for a sign of cowardice. These men were reported being in a state of confusion and were unable to perform all the duties asked of them (van der Kolk, Weisaeth, & Van der Hart, 1996).

Germans dealt with PTSD as a vulnerability of moral judgment. PTSD was considered to be an artifact of the secondary gain of compensation. The thought was that compensation-seeking behaviors enhanced weak, or vulnerable, moral convictions, and as a result a moratorium on injury-related litigation for compensation was enacted in Germany (van der Kolk, Weisaeth, & Van der Hart, 1996).

This approach was later challenged by an Armed Forces psychiatrist Kardiner's (1941) conceptualization of "Traumatic Neurosis." Traumatic events were considered to be rare occurrences outside the range and experience of normal human functioning. As a result, traumatic responses were considered to be a normal reaction to rare and deleterious situations, which only occurred in acute transient states. The notion of chronic and disabling factors was not even considered to be a plausible alternative.

Kardiner's (1941) influence was all but incorporated during World War II. Army psychiatry became more sophisticated, and psychological disorders were being more commonly diagnosed and treated (Jones & Wessely, 2003). During this era, clinicians noted the correlation between witnessing horrific events of combat and the deleterious effects on a minority of combatants

(Kardiner, 1941).

The advent of "Combat Fatigue" ushered in a clinical interest into the risk factors for the development of this battlefield phenomenon which by the beginning of the Korean War led army psychologists to develop a battery of psychological evaluations as part of the protocol for enlistment screening (Saul, 1945)

In the early 1970's, our country was involved in the Vietnam Conflict which created a societal upheaval. Several psychologists predicted that the emotional strain exacted by the combat would have a lasting impact on the Veterans Administration's ability to service returning soldiers (Horowitz, & Solomon, 1975). This reality came to fruition in the mid 1970's with misdiagnosis (and subsequent pharmacologic treatment) of PTSD in Vietnam veterans as various forms of psychosis, most notably paranoid schizophrenia (Haley, 1974).

Because of the recognition of the symptoms of the combat veterans and research on sexual assault victims, the APA developed a panel to asses the overlap of these trauma-related populations and develop recommendations with respect to formal diagnoses of those similar syndromes (Yehuda & MacFarlane, 1995).

As result of this panel, the APA included PTSD as a formal diagnosis in the DSM-III (1980). When PTSD was introduced, there was much controversy as to what the cause of the disorder

was. However, the diagnosis filled an important gap in psychiatric theory and practice. The thrust of the diagnosis as a normal reaction to an extreme event shifted the previous focus from the causing agent being an individual weakness to a ubiquitous environmental factor. The key to understanding the scientific basis and clinical expression of PTSD was the concept of the trauma and not the individual.

Initially, a traumatic event was defined as a catastrophic stressor that was outside the range of usual human experience (APA, 1987). Originally, an event was only considered traumatic if it dealt with war, torture, rape, Holocaust, atomic bombings and natural disasters (earthquakes, hurricanes, and volcano eruptions, and human-made disasters like factory explosions, airplane crashes, and automobile accidents). Traumatic exposure was clearly different from the very painful stressors that constitute the normal changes in life such as divorce, failure, rejection, serious illness, and financial changes. The latter were previously considered to contribute to the development of Adjustment Disorders. This classification between traumatic and other stressors was based on the assumption that the adaptive capacities of most people are likely to be overwhelmed when confronted by traumatic stressors. However, most people do have the ability to cope with ordinary stress.

Due to the codification of PTSD in DSM-III (APA, 1987), the focus shifted from vulnerability, or weakness, to the rare

and infrequent exposure to trauma that was outside the realm
of normal experience. Epidemiological support for this notion
referenced a 1% lifetime prevalence rate for PTSD (Helzer,
Robins & McEvoy, 1987). This initial finding was controverted
by the subsequent work of Breslau and colleagues (Breslau et
al., 1991) in a nationwide survey that reported over half of
the U.S. population was exposed to a traumatic event but that
only 10-20% went on to develop persistent symptoms of PTSD.

These findings challenged the antiquated thought that PTSD
is a natural response to traumatic exposure and that most people
exposed will develop PTSD. There was a need to broaden the
notion of what constituted a traumatic event, to recognize that
it occurred within the realm of normal experiences, and that
only a minority of those exposed will go on to develop
symptomatology (Yehuda & McFarlane, 1995). This ushered in
a broadening of what constituted traumatic exposure and
redirected the observations of the psychological strain to
dysfunctional processes, i.e., an inability to cope with the
stress (Miller, 2003). This goal was accomplished with the
modifications of the initial diagnostic criteria of DSM-III
(APA, 1987) with the advent of DSM-IV (APA, 1994) which led
to our current formulation of this disorder.

Current Diagnostic Criteria of DSM-IV (APA, 1994)

The first criterion (A1) operationalizes traumatic
exposure as involving s the direct personal experience, or the
witnessing or learning, of an event that involves actual or

threatened death or, serious injury to the physical integrity to self or others. In addition, the unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or loved one is necessary for inclusion. In addition, (A2) the person's response to the event must involve intense fear, helplessness, or horror.

Criterion B introduces the first cluster (5 sub-criteria) of symptoms include persistent re-experiencing via recurrent and intrusive recollections of the event (Criterion B1) or recurrent distressing dreams during which the event is replayed (Criterion B2). In rare instances, the person may experience dissociative states that last from few seconds to hours or even days, during which components of the event are relived and the person behaves as though he/she is experiencing the event at that moment (Criterion B3). Intense psychological distress (Criterion B4) or physiological reactivity (Criterion B5) may also be present. One of these five symptoms must be clearly evident to receive a positive diagnosis (APA, 1994).

The cluster of criterion C has seven sub-criteria of which three must be met for diagnosis. This cluster is represented by the persistent avoidance of stimuli associated with the trauma and a general numbing of responsiveness. The individual engages in deliberate efforts to avoid thoughts, feelings, or conversations about the traumatic event (Criterion C1) or to avoid activities, situations, or people who arouse recollections of it (Criterion C2). This avoidance of reminders

may include amnesia for an important aspect of the traumatic event (Criterion C3). Diminished responsiveness to the external world, referred to as "psychic numbing" or "emotional anesthesia," usually begins soon after the traumatic event. The individual may complain of having markedly diminished interest or participation in previously enjoyed activities (anhedonia) (Criterion C4), of feeling detached or estranged from other people (Criterion C5), or of having markedly reduced ability to feel emotions (especially those associated with intimacy, tenderness, and sexuality; alexethymia; Criterion C6). The individual may have a sense of foreshortened future (e.g., not expecting to have a career, marriage, children, or a normal life span) (Criterion C7).

Criterion D is the arousal/hypervigalence symptom cluster with five sub-criteria, of which two must be met for full diagnostic consideration. These symptoms may include difficulties falling or staying asleep due to recurrent nightmares associated with reliving the traumatic (Criterion D1), hyper-vigilance (Criterion D4), and exaggerated startle response (Criterion D5). Some individuals report irritability or outbursts or anger (Criterion D2) or difficulty concentrating or completing tasks (Criterion D3).   Criterion E addresses the temporal dimension or course of the disorder. Criteria must be met at least 30 days post exposure. Prior to this point, acute stress disorder (ASD) may be diagnosed based on presentation.

Criterion F dictates that upon meeting all previous criteria, there must be clinically significant impairment in social, occupational, or other important areas of functioning.

Appendix B

ANOVAs

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
NEUROTICISM	Between Groups	124.95	1	124.95	1.11	.29
	Within Groups	27445.91	244	112.48		
	Total	27570.87	245			
EXTRAVERSION	Between Groups	178.68	1	178.68	1.04	.31
	Within Groups	41836.53	244	171.46		
	Total	42015.21	245			
Combo-facet$N$	Between Groups	45.66	1	45.66	1.42	.23
	Within Groups	7822.08	244	32.06		
	Total	7867.74	245			
Combo-facet$E$	Between Groups	13.66	1	13.66	.34	.56
	Within Groups	9873.15	244	40.46		
	Total	9886.82	245			
c_1 - competence	Between Groups	.64	1	.64	.07	.80
	Within Groups	2360.17	244	9.67		
	Total	2360.81	245			
a_1 - trust	Between Groups	2.62	1	2.62	.35	.56
	Within Groups	1845.17	244	7.56		
	Total	1847.79	245			
DES	Between Groups	1106.82	1	1106.82	12.04	.00
	Within Groups	22426.71	244	91.91		
	Total	23533.53	245			
d_1 - absorption	Between Groups	1531.83	1	1531.83	6.64	.01
	Within Groups	56330.10	244	230.86		
	Total	57861.93	245			
d_2 - depersonalization	Between Groups	594.12	1	594.12	5.46	.02
	Within Groups	26549.47	244	108.81		
	Total	27143.60	245			
d_3 - amnesia	Between Groups	274.26	1	274.26	4.66	.03
	Within Groups	14356.11	244	58.84		
	Total	14630.36	245			

Appendix C

PTSD Screening Device

First Name & Last Initial_____   Date_____

Would you be willing to participate in an additional 2-3 hour assessment study for additional credit?

  (Circle one)   Yes / No   If Yes: _____
                                                            Local Phone Number

      This form will ask about some potentially sensitive issues. Please note that any information you may provide will be coded so that your name will be not be associated with any of the following information in any way. Only coded information will be stored in locked, secure files at The Stress and Anxiety Disorders Institute at PSU.

INSTRUCTIONS:

A.   Some people have been exposed to one or more traumatic stressor(s) in their lives. Traumatic stressors involve direct personal experience of an event that involves actual or threatened death or serious injury, or other threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate.

After experiencing such an event, some individuals may experience heightened levels of anxiety/distress, and/or intense fear, helplessness, or horror. These responses to traumatic events may occur either immediately following the event(s), or sometimes not until months or years after the event had occurred.

      Please read the following list of events carefully. Have you experienced any of the following events?

      If you haven't experienced a given event(s), please circle No next to each event.

      If you have, please circle Yes, and then indicate how old you were at the time of the event, as well as how long the event lasted. Please be as specific as you possible can (i.e. "10 minutes", "8 hours", "3 days", "2 weeks" or "4 years").

_____

1.	Car, train or airplane accident	No	Yes
2.	Industrial or work-related accident	No	Yes
3.	Loss of home or family member by fire	No	Yes

4.	Loss of home or family member by flood	No	Yes
5.	Loss of home or family member by tornado or hurricane	No	Yes
6.	Loss of home or family member by earthquake	No	Yes
7.	Serious threat or harm to family member or close friend	No	Yes
8.	Unexpected death of family member or close friend	No	Yes
9.	Seeing another person seriously injured or dying due to an accident or violence	No	Yes
10.	Near drowning	No	Yes
11.	Being seriously burned	No	Yes
12.	Being captive	No	Yes
13.	Being kidnapped	No	Yes
14.	Military Combat	No	Yes
15.	Physical assault	No	Yes
16.	Physical abuse	No	Yes
17.	Sexual assault	No	Yes
18.	Rape	No	Yes
19.	Sexual abuse or incest	No	Yes
20.	Childhood molestation (unwanted touching, fondling; exposure to sexual stimuli)	No	Yes
21.	Other (specify)_____	No	Yes

Note: If you have not experienced any of the above events, you do not need to answer the questions which follow.

B.   If you have experienced one or more of these events, which event from the above list do you feel has been the most upsetting to you?

Item Number of the most upsetting event:_____ (from 1 - 21 above)

C.   Please complete the following sections in respect to difficulties or experiences associated with the most distressing event which you identified in Section B.

1.	Where you prepared for this event(s)?	No	Yes
2.	Was the event frightening, scary, shameful, gruesome, or disgusting to you?	No	Yes
3.	Were you physically injured by this event?	No	Yes
4.	Did you think you life was in danger?	No	Yes
5.	Were you alone during any of this event?	No	Yes

6.   Did you feel as if there was something you
      could have done to stop this event?   No   Yes
7.   Have you ever talked to anyone about this event?   No   Yes
8.   If you never talked to anyone about it,
      did you ever feel you would like to have done so?   No   Yes

After the Event(s):

 9.   Did you find yourself to be more moody and emotional?   No   Yes
10.   Did you find yourself experiencing more physical
      ailments or difficulties not directly related to the event(s)? No   Yes
11.   Did you find yourself engaging in more self-destructive
      and/or impulsive behaviors?   No   Yes
12.   Did you feel permanently damaged after the event?   No   Yes
13.   Did you experience a loss or a change in your previously
      held belief system?   No   Yes
14.   Did you find yourself socially withdrawing from others?   No   Yes
15.   Did you find yourself feeling constantly threatened?   No   Yes
16.   Did you interpersonal relationships change for the worse?   No   Yes
17.   Did you find yourself feeling greater anger and hostility? No   Yes
18.   Did you find that aspects of your personality
      significantly began to change?   No   Yes

D.   Sometimes people experience unpleasant symptoms as a result of the kind of
event(s) which you have indicated on this form. A list of commonly experienced
symptoms is described below. Please indicate the degree to which you have been bothered
by each symptom as a result of the most distressing event that you identified in section B
within the past 3 Month Period using the scale provided.

Not at all	A little bit	Moderate	Quite a bit	Extremely
1	2	3	4	5

1.   Repeated, disturbing memories, thoughts, or images
      of the stressful experience?
2.   Repeated, disturbing dreams of the stressful experience?
3.   Suddenly acting or feeling as if the stressful experience
      were happening again (as if you were reliving it?)
4.   Feeling very upset when something reminded you of
      the stressful experience?
5.   Having physical reactions (e.g., heart pounding, trouble
      breathing, sweating) when something reminded you of the
      stressful experience?

Not at all	A little bit	Moderate	Quite a bit	Extremely
1	2	3	4	5

6. Avoiding thinking about or talking about your stressful experience or avoiding having feelings related to it?

7. Avoiding activities, situations, or certain people because they reminded you of your stressful experience?

8. Trouble remembering important parts of the stressful experience?

9. Loss of interest in activities that you used to enjoy?

10. Feeling distant or cut off from other people?

11. Feeling emotionally numb, or being unable to have loving feelings for those close to you?

12. Feeling as if your future will somehow be cut short?

13. Trouble falling or staying asleep?

14. Feeling irritable or having angry outbursts?

15. Having difficulty concentrating?

16. Being "super alert", or watchful or on guard?

17. Feeling jumpy or easily startled?

E. How long have you experienced the symptoms which you endorsed in Section D?

_____ Months   OR   _____ Years

F. Using the following scale, please circle the number which best reflects the amount of interference you experienced in the last 3 month period as a result of the symptoms you have endorsed above.

No Interference	Mild Interference	Moderate Interference	Marked Interference	Severe Interference
0 - 1	2 - 3	4	5 - 6	7 - 8

G. Has there ever been a period following the event in which you experienced even greater levels of distress and interference than you have in the last 3 month period?

   a. Yes / No   (Circle One)

If Yes:

   b. When was the interference the worst? (Please approximate the dates)

   FROM : _____   TO :

c. Using the following scale, please circle the number which best reflects the amount of interference you experienced when the symptoms were at their worst.

No Interference	Mild Interference	Moderate Interference	Marked Interference	Severe Interference
0 - 1	2 - 3	4	5 - 6	7 - 8

Thank you for completing this form. If you are currently experiencing difficulty as the result of experiencing a traumatic event, a number of referral options are available. Please feel free to contact Larry Michelson, Ph.D. or Sandra Testa, M.S. at The Stress & Anxiety Disorders Institute at 863-6019 if you wish to discuss treatment options or your reactions to this questionnaire.

Appendix D

Telephone Interview

To participate, we'd like to ask you to come in and pick up a packet of questionnaires which will require approximately 3 hours or less for you to complete. In order to make participating in our study as convenient as possible for you, you can actually come in at your convenience and pick up the packet and complete the questionnaires at home or wherever you are most comfortable. Then, simply return your completed questionnaires and we will sign you credit slip for 3 credits toward your Psych 002 class.

Do you have any questions with that so far?

Okay, do you have a pencil?

Please write this information down as it will necessary in order to know where to pick up your packet and where to return it.

The packets will be available in room 546, and if no one is there just walk into the office to get your packet. The packets will be in a big box which contains a lot of yellow envelopes. Just take one of the envelopes from the box.

If this room happens to be unavailable (i.e., do not disturb on the door), try room 422. A number of staff are usually there and there is box there containing packets.

It is important to remember to take just one, particularly because only those people we call are eligible to participate so anyone completing the packet that we haven't called to notify them of their eligibility will not be able to get credit for completing the packets.

Any questions so far?

Okay. I also wanted to let you know that it is best to try to come in and pick up your packet, complete it, and return it to us at your earliest convenience to ensure that you get your 3 credits for your Psych 002 class before the study fills up. Therefore, please pick up your packet as soon as you are able and simply return it by following the directions which are included in your packet. This sheet is clearly labeled and contains information as to the best times to come in to ensure a staff member is available to sign your credit slip and give you a copy for your records.

As I previously mentioned, as soon as you return your packet and we sign the credit slips, they will be submitted to the department immediately.

You will also find additional information pertaining to the study enclosed in the packet. All information will be very clearly marked as to what you keep for your records

and the information you are to return which is stapled together in one large packet.

The forms for you include an explanation of the study, consent forms, and a debriefing form. These explain the nature and purpose of the study. If you have any questions at all however, please follow the information in the packet by calling the people running the study. They have included their names and telephone numbers and would be happy to explain any aspect of the study, the consent forms, and/or any referral information in the event you have experienced a trauma event(s) and are experiencing any difficulties as a result. So again, if you have any questions whatsoever with the study, any of the forms, or any personnel issues, just contact the people indicated in the packet for more information.

Any questions?

Okay. Well thank you for spending this time with me over the phone to discuss the study. Since I've covered a lot, I just want to quickly review the main things you'll need to do to participate.

First, just to double check, are you going to participate in this study this semester?

(If No :)   Refer to previous description of "No"

(If Yes :)   Okay. Just come in anytime between 9-5:00 from Monday - Friday to pick up your packet. Go to room 546 to get it. If this room has a do not disturb sign on the door, go to room 422 to get your packet.

Try to complete the packet as soon as possible and return it by following the "Return" information which is provided in the packet. This includes a schedule of the best times to bring it in to have your credit slips and your copy of the consent form signed and returned to you. If at all possible, please try to return the packet within 7-10 days after picking it up. Does this sound okay?

Do you have any questions with anything I've reviewed with you? Okay. Just to make sure you can reach someone in the meantime if you have any questions related to the study, please write down this name and telephone number. You may contact her for anything questions at all related to the study. (Sandra Testa; 863-6021 or 466-6611 after 6:30 pm.).

Thank you for offering to participate in the study and for talking with me on the telephone. The packets are available now so you may pick one up at your earliest convenience. Okay. It's been nice talking with you. Goodbye.

Appendix E

Purpose of Investigation:

<u>"Life Experiences and Mood in College Students"</u>

The primary aim of this study is to examine the relationships between life experiences such as a stressful or traumatic event with mood states such anxiety, depression, personal belief systems and personality characteristics. This study is based on college students who have volunteered to participate in this investigation. All students who participate will receive three hours of credit for their time and cooperation in completing the assessment battery.

Students with and without stressful life histories will be compared with each other to better ascertain the effects which such events may have on important dimensions of overall well-being. Additionally, related effects on the quality of an individual's everyday functioning will be examined. Further, a clearer delineation of the broader impact which stressful/traumatic life events may have on an individual will be ascertained through the comparison to persons who have no had such experiences. Therefore, in addition to gaining a clearer understanding of the effects which stressful/traumatic events may have on an individual, this study will allow for recommendations which may facilitate the development of even more effective treatments which target stressful/traumatic events, it related symptomatology, and its impact on an individual's overall state of well-being.

Thank you in advance for your invaluable assistance in helping to further the understanding of these important dimensions. If you would like additional information on the nature and purpose of this investigation, please feel free to contact Sandra Testa, M.S. at The Stress and Anxiety Disorders Institute at (814) 863-6019.

Appendix F

Informed Consent

Title of Investigation: "Life Experiences and Mood in College
Students"

Investigators: Larry K. Michelson, Ph.D., Professor of Psychology,
Sandra M. Testa, M.S.

Date: August 1, 1996

This is to certify that I,_____, hereby agree to participate as a volunteer in a scientific investigation as an authorized part of the education and research program of the Pennsylvania State University under the supervision of Dr. Larry K. Michelson.

The investigation and my part in it have been defined and fully explained to me by Dr. Michelson or his designate, and I understand his/her explanation. A copy of the procedures of this investigation and a description of any risks and discomforts has been provided to me and has been discussed in detail with me.

I have been given the opportunity to ask questions I may have had and all such questions and inquiries have been fully answered to my satisfaction. I understand that I am free to decline to answer specific items on the questionnaires. I understand that any data or answers that I have provided will remain strictly confidential with regard to my identity.

I understand that in the event of injury resulting from this investigation, neither financial compensation nor free medical treatment is provided for such an injury, and that further information on this policy is available from the Senior Vice President for Research and Dean of the Graduate School, 114 Kern Graduate Building (814)865-6331.

I further understand that I am free to withdraw my consent and terminate my participation at any time.

Study Description

I, the undersigned, have been informed of the investigative nature of this study. More specifically, the purpose of this study being conducted by Dr. Michelson is to understand more fully the relationship between life experiences and events with mood states such as anxiety and depression. I understand that the study will require the completion of an assessment battery, followed by telephone interview with the investigative personnel.

As a participant in this study, I understand that I will have the right to decline to answer or complete any part of the questionnaires which are given to me. The assessments include measures of anxiety, fear, depression, personality characteristics, personal beliefs, trauma and abuse experiences, and general symptoms. I understand that if I experience any elevations of anxiety or depression as a result of completing these forms, that I may speak

with Dr. Michelson and/or his designate(s) at any time during or after my participation in this study. I also understand that if I wish to receive referrals for private professionals to assist in helping me to deal with any stressors which I feel are still problematic, referral options will be made available to me. I understand that I am free to contact Dr. Michelson or Sandra Testa at (814)863-6019 at any point during this investigation to answer any questions or concerns that I may have regarding the nature of this study or with respect to my role as a participant.

Risks and Benefits

Some of the questions in the assessment are of a sensitive nature. There is a small risk that filling out the questionnaires will temporarily increase my anxiety. However, if I am upset by answering any of the questions, I can call Dr. Michelson or his designate(s), who will be pleased to speak with me about my concerns. I understand that the purpose of this investigation is to gather information regarding the relation between life events and mood. I understand that I will receive one credit for each hour that I participate in this investigation, (approximately two-three hours). I also understand that if I would like assistance in dealing with a life stressor which I feel is problematic; Dr. Michelson will provide referrals to the appropriate professionals. I understand that I am free to contact Dr. Michelson or his designate(s) to address questions or provide referrals at any time during or after the investigation.

Confidentiality:

I understand that any information about me obtained from this research, including answers to questionnaires, will be kept strictly confidential. Such information, which will carry personally identifying material, will be kept in locked and secure files. It has been explained to me that my identity will not be revealed in any description or publication of this research. Therefore, I consent to such publication for scientific purposes.

Voluntary Consent:

I, the undersigned, have read the preceding or it has been read to me, and I understand its contents, and that my questions regarding the study have been answered by Dr. Michelson or his designate. I will receive a copy of this consent form. My signature below means I fully agree to participate in the study.

_____   _____
Date   Date of Birth

_____
Subject's Signature

Appendix G

NEO -PI-R

Name_____   Date_____

Instructions:

This questionnaire contains 240 statements. Read each carefully. For each statement indicate the response which best represents your opinion according to the following scale:

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Enter "0"   if the statement is definitely false or your <u>strongly</u> disagree

Enter "1"   if the statement is mostly false or you disagree

Enter "2"   if the statement is about equally true or false, or if you cannot decide, or if you are neutral on the statement

Enter "3"   if the statement is mostly true or you agree

Enter "4"   if the statement is definitely true or you <u>strongly</u> agree

There are no "right" or "wrong" answers, and you need not be an "expert" to complete this questionnaire. The purpose of this questionnaire will be best served if you describe yourself and state your opinions as accurately as possible.

Please read each item carefully and indicate the one response that best corresponds to your level of agreement or disagreement. Please answer every item.

1. _____   I really like most people I meet.

2. _____   I have a very active imagination.

3. _____   I often feel tense and jittery.

4. _____   I shy away from crowds of people.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. _____ I keep my belongings neat and clean.

6. _____ Aesthetic and artistic concerns aren't very important to me.

7. _____ I'm an even-tempered person.

8. _____ I am dominant, forceful and assertive.

9. _____ Without strong emotions, life would be uninteresting to me.

10. _____ I'm pretty good about pacing myself so as to get things done on time.

11. _____ Sometimes I feel completely worthless.

12. _____ I don't get much pleasure from chatting with people.

13. _____ I try to keep all my thoughts along realistic lines and avoid flights of fancy.

14. _____ I rarely feel fearful or anxious.

15. _____ I try to perform all the tasks assigned to me conscientiously.

16. _____ I like to have a lot of people around me.

17. _____ I am sometimes completely absorbed in music I am listening to.

18. _____ I often get angry at the way people treat me.

19. _____ I sometimes fail to assert myself as much as I should.

20. _____ I have a clear set of goals and work toward them in an orderly fashion.

21. _____ I rarely experience strong emotions.

22. _____ I have sometimes experienced a deep sense of guilt or sinfulness.

23. _____ I'm known as a warm and friendly person.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

24. _____ I have an active fantasy life.

25. _____ I work hard to accomplish my goals.

26. _____ I am easily frightened.

27. _____ I usually prefer to do things alone.

28. _____ Watching ballet or modern dance bores me.

29. _____ I am not considered a touchy or temperamental person.

30. _____ I am not a very methodical person.

31. _____ How I feel about things is important to me.

32. _____ I tend to blame myself when anything goes wrong.

33. _____ Many people think of me as somewhat cold and distant.

34. _____ I pay my debts promptly and in full.

35. _____ I don't like to waste my time daydreaming.

36. _____ I am not a worrier.

37. _____ I really feel the need for other people if I am by myself for long.

38. _____ Certain kinds of music have an endless fascination for me.

39. _____ I waste a lot of time before settling down to work.

40. _____ I am known as hot-blooded and quick-tempered.

41. _____ In meetings, I usually let other do the talking.

42. _____ I have a low opinion of myself.

43. _____ I try to do jobs carefully, so they won't have to be done again.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

44. _____ I really enjoy talking to people.

45. _____ I enjoy concentrating on a fantasy or daydream and exploring all its possibilities, letting it grow and develop.

46. _____ I often worry about things that might go wrong.

47. _____ Sometimes I'm not as dependable or reliable as I should be.

48. _____ Poetry has little or no effect on me.

49. _____ It takes a lot to get me mad.

50. _____ I have often been a leader of groups I have belonged to.

51. _____ I experience a wide range of emotions or feelings.

52. _____ I strive to achieve all I can.

53. _____ Sometimes things look pretty bleak and hopeless to me.

54. _____ I find it easy to smile and be outgoing with strangers.

55. _____ If I feel my mind starting to drift off into daydreams, I usually get busy and start concentrating on some work or activity instead.

56. _____ Frightening thoughts sometimes come into my head.

57. _____ When I make a commitment, I can always be counted on to follow through.

58. _____ I'd rather vacation at a popular beach than an isolated cabin in the woods.

59. _____ I am intrigued by the patterns I find in art and nature.

60. _____ I often get disgusted with people I have to deal with.

61. _____ I would rather go my own way than be a leader of others.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

62. _____   I like to keep everything in its place so I know just where it is.

63. _____   I seldom pay much attention to my feelings of the moment.

64. _____   I rarely feel lonely or blue.

65. _____   I have strong emotional attachments to my friends.

66. _____   As a child I rarely enjoyed games of make believe.

67. _____   I never seem to be able to get organized.

68. _____   I am seldom apprehensive about the future.

69. _____   I prefer jobs that let me work alone without being bothered by anyone.

70. _____   Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.

71. _____   I am a productive person who always gets the job done.

72. _____   Other people often look to me to make decisions.

73. _____   I seldom notice the moods or feelings that different environments produce.

74. _____   Too often, when things go wrong, I get discouraged and feel like giving up.

75. _____   I take a personal interest in the people I work with.

76. _____   I tend to be somewhat fastidious or exacting.

77. _____   I would have difficulty just letting my mind wander without control or guidance.

78. _____   I have fewer fears than most people.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

79. _____ I enjoy reading poetry that emphasizes feelings and images more than story lines.

80. _____ I strive for excellence in everything I do.

81. _____ I find it easy to empathize to- feel myself what others are feeling.

82. _____ I am seldom sad or depressed.

83. _____ I am easy-going and lackadaisical.

84. _____ I'm pretty set in my ways.

85. _____ I seldom feel self-conscious when I'm around people.

86. _____ I often crave excitement.

87. _____ I believe that most people are basically well-intentioned.

88. _____ I often enjoy playing with theories or abstract ideas.

89. _____ I have trouble resisting my cravings.

90. _____ I have never literally jumped for joy.

91. _____ I believe letting students hear controversial speakers can only confuse and mislead them.

92. _____ I often get into arguments with my family and co-workers.

93. _____ I feel I am capable of coping with most of my problems.

94. _____ When I do things, I do them vigorously.

95. _____ I think it's interesting to learn and develop new hobbies.

96. _____ In dealing with other people, I always dread making a social blunder.

97. _____ I go out of my way to help other if I can.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

98. _____ I have sometimes done things just for "kicks" or "thrills".

99. _____ I enjoy solving problems or puzzles.

100. _____ I rarely over indulge in anything.

101. _____ I have sometimes experienced intense joy or ecstasy.

102. _____ I believe that laws and social policies should change to reflect the needs of the changing world.

103. _____ I often feel helpless and want someone else to solve my problems.

104. _____ I have a leisurely style in work and play.

105. _____ I think most of the people I deal with are honest and trustworthy.

106. _____ It doesn't embarrass me too much if people ridicule or tease me.

107. _____ I like to be where the action is.

108. _____ I enjoy working on "mind-twister"-type puzzles.

109. _____ When I am having my favorite foods, I tend to eat too much.

110. _____ I try to be courteous to everyone I meet.

111. _____ I am not a cheerful optimist.

112. _____ I believe we should look to our religious authorities for decisions on moral issues.

113. _____ I keep a cool head in emergencies.

114. _____ I often feel as if I'm bursting with energy.

115. _____ Once I find the right way to do something, I stick to it.

116. _____ At times I have been so ashamed I just wanted to hide.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

117. _____ I find philosophical arguments boring.

118. _____ Some people think I'm selfish and egotistical.

119. _____ I have little difficulty resisting temptation.

120. _____ Sometimes I bubble with happiness.

121. _____ I believe that the different ideas of right and wrong that people in other societies have may be valid for them.

122. _____ When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.

123. _____ I tend to be cynical and skeptical of others' intentions.

124. _____ My work is likely to be slow and steady.

125. _____ I often try new and foreign foods.

126. _____ I often feel inferior to others.

127. _____ I love the excitement of rollercoasters.

128. _____ I would rather cooperate with others than compete with them.

129. _____ I sometimes lose interest when people talk about very abstract, theoretical matters.

130. _____ I sometimes eat myself sick.

131. _____ I don't consider myself especially "light-hearted".

132. _____ I believe that loyalty to one's ideals and principles is more important than "open-mindedness".

133. _____ I believe that most people will take advantage of you if you let them.

134. _____ I can handle myself pretty well in a crisis.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

135. _____ I usually seem to be in a hurry.

136. _____ I prefer to spend my time in familiar surroundings.

137. _____ I feel comfortable in the presence of my bosses or other authorities.

138. _____ Some people think of me as cold and calculating.

139. _____ I wouldn't enjoy vacationing in Las Vegas.

140. _____ I have little interest in speculating on the nature of the universe or the human condition.

141. _____ I am always to keep my feelings under control.

142. _____ I am a cheerful, high-spirited person.

143. _____ Most people I know like me.

144. _____ I consider myself broad-minded and tolerant of other people's lifestyles.

145. _____ It's often hard for me to make up my mind.

146. _____ My life is fast-paced.

147. _____ On a vacation, I prefer going back to a tried and true spot.

148. _____ I'm hard-headed and tough-minded in my attitudes.

149. _____ If I have said or done the wrong thing to someone, I can hardly bear to face them again.

150. _____ I'm attracted to bright colors and flashy styles.

151. _____ I have a lot of intellectual curiosity.

152. _____ Sometimes I do things on impulse that I later regret.

153. _____ I generally try to be thoughtful and considerate.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

154. _____ I rarely use words like "fantastic!" or "sensational!" to describe my experiences.

155. _____ I think that if people don't know what they believe in by the time they're 25, there's something wrong with them.

156. _____ When everything seems to be going wrong, I can still makes good decisions.

157. _____ I am a very active person.

158. _____ If I don't like people, I let them know it.

159. _____ I follow the same route when I go someplace.

160. _____ When people I know do foolish things, I get embarrassed for them.

161. _____ I tend to avoid movies that are shocking or scary.

162. _____ I have a wide range of intellectual interests.

163. _____ I seldom give in to my impulses.

164. _____ I laugh easily.

165. _____ I believe that the "new morality" or permissiveness is no morality at all.

166. _____ I am pretty stable emotionally.

167. _____ If necessary, I am willing to manipulate people to get what I want.

168. _____ I'd rather not talk about myself and my achievements.

169. _____ I'm known for my prudence and common sense.

170. _____ At times I have felt bitter and resentful.

171. _____ I don't mind bragging about my talents and accomplishments.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

172. _____ I think things through before coming to a decision.

173. _____ I would rather keep my options open than plan everything in advance.

174. _____ I try to be humble.

175. _____ I keep myself informed and usually make intelligent decisions.

176. _____ I am not crafty or sly.

177. _____ Even minor annoyances can be frustrating to me.

178. _____ I don't take civic duties like voting very seriously.

179. _____ Once I start a project, I almost always finish it.

180. _____ I always consider the consequences before I take action.

181. _____ Political leaders need to be more aware of the human side of their policies.

182. _____ I'm not compulsive and cleaning.

183. _____ I feel that I am no better than other, no matter what their condition.

184. _____ I have trouble making myself do what I should.

185. _____ I couldn't deceive anyone even if I wanted to.

186. _____ At times I bully or flatter people into doing what I want them to.

187. _____ I enjoy parties with lots of people.

188. _____ I pride myself on my shrewdness in handling people.

189. _____ I like being part of the crowd at sporting events.

190. _____ I'd really have to be sick before I'd miss a day of work.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

191. _____ My first reaction is to trust people.

192. _____ Over the years I've done some pretty stupid things.

193. _____ Being perfectly honest is a bad way to do business.

194. _____ Social gatherings are usually boring to me.

195. _____ If someone starts a fight, I'm ready to fight back.

196. _____ I'm not known for my generosity.

197. _____ I would rather praise others than be praised myself.

198. _____ When a project gets too difficult, I'm inclined to start a new one.

199. _____ In conversations, I tend to do most of the talking.

200. _____ I'm not as quick and lively as other people.

201. _____ I don't find it easy to take charge of a situation.

202. _____ When I've been insulted, I just try to forgive and forget.

203. _____ I'm a superior person.

204. _____ I tend to assume the best about people.

205. _____ I have a very high opinion of myself.

206. _____ I rarely make hasty decisions.

207. _____ I think of myself as a charitable person.

208. _____ I adhere strictly to my ethical principles.

209. _____ I believe all human beings are worthy of respect.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

210. _____ When I start a self-improvement program, I usually let it slide after a few days.

211. _____ I pride myself on my sound judgment.

212. _____ I am efficient and effective at my work.

213. _____ I don't feel like I'm driven to get ahead.

214. _____ I would rather be known as "merciful" than as "just".

215. _____ Sometimes I cheat when I play solitaire.

216. _____ I'm better than most people and I know it.

217. _____ I have a lot of self-discipline.

218. _____ I have a good deal of faith in human nature.

219. _____ I have sympathy for others less fortunate then me.

220. _____ Occasionally I act first and think later.

221. _____ We can never do to much for the poor and the elderly.

222. _____ I spend a lot of time looking for things I've misplaced.

223. _____ I can be sarcastic and cutting when I need to be.

224. _____ I often do things on the spur of the moment.

225. _____ Sometimes I make changes around the house just to try something different.

226. _____ I would hate to be thought of as a hypocrite.

227. _____ Odd things – like certain scents or the names of distant places – can evoke strong moods in me.

0	1	2	3	4
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

228. _____ I plan ahead carefully when I go on a trip.

229. _____ I hesitate to express my anger even when its justified.

230. _____ I often come into situations without being fully prepared.

231. _____ Sometimes I trick people into doing what I want.

232. _____ Human need should always take a priority over economic considerations.

233. _____ I'm something of a "workaholic".

234. _____ I'm hardheaded and stubborn.

235. _____ I think twice before I answer a question.

236. _____ I'm suspicious when someone does something nice for me.

237. _____ I'm a very competent person.

238. _____ I have no sympathy for panhandlers.

239. _____ I don't seem to be completely successful at anything.

240. _____ There are so many little jobs that need to be done that I sometimes ignore them all.

Appendix H

DES SCALE

Name_____ Date_____

Directions: This questionnaire consists of twenty-eight questions about experiences that you may have had in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you and circle the number at the appropriate place, as shown in the example below.

Example:

0% ——10——20——30——40——(50)——60——70——80——90——100%
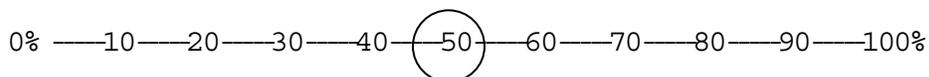
1. Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%
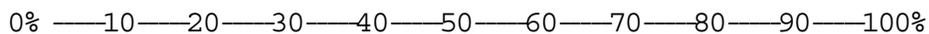
2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was just said. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

3. Some people have the experience of finding themselves in a place and having no idea how they got there. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%
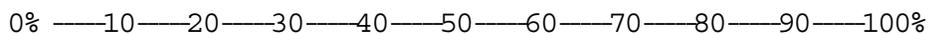
4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

5. Some people have the experience of finding new things among their belongings that they do not remember buying. Mark the line to show what percentage of the time this happens to you.

    0% ----10----20----30----40----50----60----70----80----90----100%

6. Some people sometimes find that they are approached by people that they do not know who call them by another name or insist that they have met them before. Mark the line to show what percentage of the time this happens to you.

    0% ----10----20----30----40----50----60----70----80----90----100%

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. Mark the line to show what percentage of the time this happens to you.

    0% ----10----20----30----40----50----60----70----80----90----100%

8. Some people are told that they sometimes do not recognize friends or family members. Mark the line to show what percentage of the time this happens to you.

    0% ----10----20----30----40----50----60----70----80----90----100%

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Mark the line to show what percentage of the important events in your life you have no memory for.

    0% ----10----20----30----40----50----60----70----80----90----100%

10. Some people have the experience of being accused of lying when they do not think that they have lied. Mark the line to show what percentage of the time this happens to you.

    0% ----10----20----30----40----50----60----70----80----90----100%

11. Some people have the experience of looking in a mirror and not recognizing themselves. Mark the line to show what percentage of the time this happens to you.

    0% ----10----20----30----40----50----60----70----80----90----100%

12. Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

13. Some people sometimes have the experience of feeling that their body does not seem to belong to them. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

18. Some people sometimes find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

19. Some people find that they sometimes are able to ignore pain. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.). Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

25. Some people sometimes find evidence that they have done things that they do not remember doing. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

26.   Some people sometimes find writing, drawings, or notes among their belongings that they must have done but cannot remember doing. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

27.   Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

28.   Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Mark the line to show what percentage of the time this happens to you.

0% ——10——20——30——40——50——60——70——80——90——100%

Appendix I

PDS-Revised

PART 1

Many people have lived through or witnessed a very stressful and traumatic event at some point in their lives. Below is a list of traumatic events. Put a checkmark on the line next to ALL of the events that have happened to you or that you have witnessed.

1. _____ Serious accident, fire, or explosion (i.e. an industrial, farm, car, plane or boating accident)

2. _____ Natural disaster (i.e. tornado, hurricane, flood, or major earthquake)

3. _____ Non-sexual assault by a family member or someone you know (i.e. being mugged, physically attacked, shot, stabbed, or held at gunpoint)

4. _____ Non-sexual assault by a stranger (i.e. being mugged, physically attacked, shot, stabbed, or held at gunpoint)

5. _____ Sexual assault by a family member or someone you know (i.e. rape or attempted rape)

6. _____ Sexual assault by a stranger (i.e. rape or attempted rape)

7. _____ Military combat or a war zone

8. _____ Sexual contact when you were younger than 18 with someone who was 5 or more years older than you (i.e. contact with genitals, breasts)

9. _____ Imprisonment (i.e. prison inmate, prisoner of war, hostage)

10. _____ Torture

11. _____ Life-threatening illness

12. _____ Other traumatic event: Please specify on the lines below.

_____

_____

PART 2

If you marked more than one traumatic event in Part 1, put a checkmark next to the event that bothers you the most. If you marked only one traumatic event in Part 1, mark the same one below.

1. _____ Accident

2. _____ Disaster

3. _____ Non-sexual assault/someone you know

4. _____ Non-sexual assault by a stranger

5. _____ Sexual assault/someone you know

6. _____ Sexual assault/stranger

7. _____ Combat

8. _____ Sexual contact under 18 with someone older

(If Yes: How old were you? _____)

9. _____ Imprisonment

10._____ Torture

11._____ Life-threatening illness

12._____ Other:_____

****

13. On the lines below, briefly describe the traumatic event you marked above.

_____

_____

_____

Below are several questions about the traumatic event you just described above.

14.   Did the most distressing event you indicated in item #14 occur on more than one occasion?

Yes / No   (Circle One)

If NO: Skip to question #15

If YES: a)   When did the most distressing event you identified in item #13 first occur?

_____
Approximate month / Year
or
Season (i.e. spring, summer, fall, winter) / Year

b)   Approximately how many times did it occur?

_____
(Best approximation)

c)   How old were you when it first happened? _____

d)   How old were you when it last occurred? _____

15.   How long ago did the event which was the most distressing happen (or last occur)?

_____
Please be as specific as possible (i.e. approximate number of weeks, months or years)

****
For the following questions, circle Y for YES and N for NO.

During the traumatic event:

16.   Y   N   Were you physically injured?

17.   Y   N   Was someone else physically injured?

18.   Y   N   Did you think that your life was in danger?

19.   Y   N   Did you think that someone else's life was in danger?

20.   Y   N   Did you feel helpless?

21.   Y   N   Did you feel terrified?

PART 3

Below is a list of problems that people sometimes have after experiencing a traumatic event. Read each one carefully and circle the number (0-3) that best describes how often that problem has bothered you IN THE PAST MONTH. Rate each problem with respect to the event which you indicated bothers you the most (i.e. from item #14).

    0   Not at all or only one time
    1   Once a week or less/once in a while
    2   2 to 4 times a week/half the time
    3   5 or more times a week/almost always

22. 0   1   2   3   Having upsetting thoughts or images about the traumatic event that came into your head when you didn't want them to

23. 0   1   2   3   Having bad dreams or nightmares about the traumatic event

24. 0   1   2   3   Reliving the traumatic event, acting or feeling as if it was happening again

25. 0   1   2   3   Feeling emotionally upset when you were reminded of the traumatic event (i.e. feeling scared, angry, sad, guilty, etc.)

26. 0   1   2   3   Experiencing physical reactions when you were reminded of the traumatic event (i.e. breaking out in a sweat, heart beating fast)

27. 0   1   2   3   Trying not to think about, talk about, or have feelings about the traumatic event

28. 0   1   2   3   Trying to avoid activities, people, or places that remind you of the traumatic event

29. 0   1   2   3   Not being able to remember an important part of the traumatic event

30. 0   1   2   3   Having much less interest or participating much less often in important activities

31. 0   1   2   3   Feeling distant or cut off from people around you

32. 0   1   2   3   Feeling emotionally numb (i.e. being unable to cry, or unable to have loving feelings)

33. 0   1   2   3   Feeling as if your future plans or hopes will not come true (i.e. you will not have a career, marriage, children, or a long life)

34. 0   1   2   3   Having trouble falling or staying asleep

35. 0   1   2   3   Feeling irritable or having fits of anger

36. 0   1   2   3   Having trouble concentrating (i.e. drifting in and out of conversations, losing track of a story on television, forgetting what you read)

37. 0   1   2   3   Being overly alert (i.e. checking to see who is around you, being uncomfortable with your back to a door, etc)

38. 0   1   2   3   Being jumpy or easily startled (i.e. when someone walks up being you)

****

39. How long have you experienced the problems that you reported above?

_____
Please be as specific as possible (i.e. approximate number of weeks, months or years)

40. How long after this event (or when it first occurred) did these problems begin?

_____
Please be as specific as possible (i.e. approximate number of weeks, months or years)

PART 4

Indicate below if the problems you rated in Part 3 have interfered with any of the following areas of your life DURING THE PAST MONTH. Circle Y for YES and N for NO.

41.   Y   N   Work

42.   Y   N   Household chores and duties

43.   Y   N   Relationships with friends

44.   Y   N   Fun and leisure activities

45.   Y   N   Schoolwork

46.   Y   N   Relationships with your family

47.   Y   N   Sex life

48.   Y   N   General satisfaction with life

49.   Y   N   Overall level of functioning in all areas of your life

NOTE: IF YOU ENDORSED NO PROBLEMS IN PARTS 3 & 4, PLEASE SKIP
        TO QUESTION 51 BELOW.

50.   Since you began experiencing the problems you endorsed in Part 3, has there ever
        been a period of at least one month or more in which you were virtually symptom-free
        and non-distressed by recollections of the traumatic event?

        No / Yes   (Circle One)

            If YES: a)   Approximately when was this period? _____
                           From when to when?

                      b)   Briefly explain what was going on for you around the
                           time you began having the symptoms after the relatively
                           symptom-free period (i.e. whether you experienced
                           additional traumatic events (if so, what type), and/or whether
                           you experienced significant life stressors (i.e. interpersonal,
                           career, etc.))

                           _____

                           _____

                           _____

PART 5

---

51. Regardless of whether you experienced any problems (as described in Part 3) in the
     last month as a result of the event which has been most bothersome to you (complete
     appropriate item a. or b. below):

     a)   If you experienced no problems in the past month as a result of the most
          bothersome event:

Has there ever been a period of time in which you had problems similar to those described in Part 3?

Yes / No   (Circle One)

IfNO :   Skip to question #78

IfYES :   When did you experience problems/greater problems?

_____
Approximate month / Year
or
Season (i.e. spring, summer, fall, winter) / Year

a)   If you have had problems in the past month :

Has there ever been a period of time in which you experienced significantly greater problems than you have had in the past month?

Yes / No   (Circle One)

IfNO :   Skip to question #78

IfYES :   When did you experience problems/greater problems?

_____
Approximate month / Year
or
Season (i.e. spring, summer, fall, winter) / Year

PART 6

Note: Please complete this section with respect to the <u>time period in which you experienced the greatest distress as a result of the most bothersome event (i.e. rate the following problems for the time period identified in #51 a. or b. above)</u>.

Read each of the following commonly experienced symptoms following traumatic events very carefully and circle the number (0-3) that best describes how often that problem has bothered you during the time indicated in 51 a. or b.

52.   0   1   2   3   Having upsetting thoughts or images about the traumatic event that came into your head when you didn't want them to

53. 0   1   2   3   Having bad dreams or nightmares about the traumatic event

54. 0   1   2   3   Reliving the traumatic event, acting or feeling as if it was happening again

55. 0   1   2   3   Feeling emotionally upset when you were reminded of the traumatic event (i.e. feeling scared, angry, sad, guilty, etc.)

56. 0   1   2   3   Experiencing physical reactions when you were reminded of the traumatic event (i.e. breaking out in a sweat, heart beating fast)

57. 0   1   2   3   Trying not to think about, talk about, or have feelings about the traumatic event

58. 0   1   2   3   Trying to avoid activities, people, or places that remind you of the traumatic event

59. 0   1   2   3   Not being able to remember an important part of the traumatic event

60. 0   1   2   3   Having much less interest or participating much less often in important activities

61. 0   1   2   3   Feeling distant or cut off from people around you

62. 0   1   2   3   Feeling emotionally numb (i.e. being unable to cry, or unable to have loving feelings)

63. 0   1   2   3   Feeling as if your future plans or hopes will not come true (i.e. you will not have a career, marriage, children, or a long life)

64. 0   1   2   3   Having trouble falling or staying asleep

65. 0   1   2   3   Feeling irritable or having fits of anger

66. 0   1   2   3   Having trouble concentrating (i.e. drifting in and out of conversations, losing track of a story on television, forgetting what you read)

67. 0   1   2   3   Being overly alert (i.e. checking to see who is around you, being uncomfortable with your back to a door, etc)

68. 0   1   2   3   Being jumpy or easily startled (i.e. when someone walks up being you)

PART 7

Indicate below if the problems you have experienced in the last one month period which you rated above have interfered with any of the following areas of your life DURING THE TIME in which you experienced the greatest distress (period indicated in 51 a. or b.) a or b.

69.	Y	N	Work
70.	Y	N	Household chores and duties
71.	Y	N	Relationships with friends
72.	Y	N	Fun and leisure activities
73.	Y	N	Schoolwork
74.	Y	N	Relationships with your family
75.	Y	N	Sex life
76.	Y	N	General satisfaction with life
77.	Y	N	Overall level of functioning in all areas of your life

---
PART 8

If you have experienced more than one very stressful or traumatic event, please review the list below and identify the second most distressing event which you have experienced? (NOTE: If you identified only one stressful event in Part 1 of this questionnaire, please skip to the end).

1. _____ Accident

2. _____ Disaster

3. _____ Non-sexual assault/someone you know

4. _____ Non-sexual assault by a stranger

5. _____ Sexual assault/someone you know

6. _____ Sexual assault/stranger

7. _____ Combat

8. _____ Sexual contact under 18 with someone older

                               (If Yes: How old were you? _____)

9. _____ Imprisonment

10. _____ Torture

11. _____ Life-threatening illness

12. _____ Other: _____

****

79. On the lines below, briefly describe the traumatic event you marked above.

_____

_____

_____

_____

Below are several questions about the traumatic event you just described above.

80. Did this second most distressing event occur on more than one occasion?

    Yes / No   (Circle One)

        If NO: Skip to question #81

      If YES: a)   When did the second most distressing event you identified in item #13 first occur?

                           _____

                                  Approximate month / Year
                                         or
                        Season (i.e. spring, summer, fall, winter) / Year

                  b)   Approximately how many times did it occur?

                           _____

                                    (Best approximation)

                  c)   How old were you when it first happened? _____

d)   How old were you when it last occurred? _____

81. How long ago did this event occur (or last occur)?

_____

Please be as specific as possible (i.e. approximate number of weeks, months or years)

****
For the following questions, circle Y for YES and N for NO.

During this second most stressful event:

82.   Y   N   Were you physically injured?

83.   Y   N   Was someone else physically injured?

84.   Y   N   Did you think that your life was in danger?

85.   Y   N   Did you think that someone else's life was in danger?

86.   Y   N   Did you feel helpless?

87.   Y   N   Did you feel terrified?

PART 9

Below is a list of problems that people sometimes have after experiencing a traumatic event. Read each one carefully and circle the number (0-3) that best describes how often that problem has bothered you IN THE PAST MONTH. Rate each problem with respect to the event that you indicated is the second most bothersome to you.

0   Not at all or only one time
1   Once a week or less/once in a while
2   2 to 4 times a week/half the time
3   5 or more times a week/almost always

88. 0   1   2   3   Having upsetting thoughts or images about the traumatic event that came into your head when you didn't want them to

89. 0   1   2   3   Having bad dreams or nightmares about the traumatic event

90. 0   1   2   3   Reliving the traumatic event, acting or feeling as if it was happening again

91. 0   1   2   3   Feeling emotionally upset when you were reminded of the traumatic event (i.e. feeling scared, angry, sad, guilty, etc.)

92. 0   1   2   3   Experiencing physical reactions when you were reminded of the traumatic event (i.e. breaking out in a sweat, heart beating fast)

93. 0   1   2   3   Trying not to think about, talk about, or have feelings about the traumatic event

94. 0   1   2   3   Trying to avoid activities, people, or places that remind you of the traumatic event

95. 0   1   2   3   Not being able to remember an important part of the traumatic event

96. 0   1   2   3   Having much less interest or participating much less often in important activities

97. 0   1   2   3   Feeling distant or cut off from people around you

98. 0   1   2   3   Feeling emotionally numb (i.e. being unable to cry, or unable to have loving feelings)

99. 0   1   2   3   Feeling as if your future plans or hopes will not come true (i.e. you will not have a career, marriage, children, or a long life)

100. 0   1   2   3   Having trouble falling or staying asleep

101. 0   1   2   3   Feeling irritable or having fits of anger

102. 0   1   2   3   Having trouble concentrating (i.e. drifting in and out of conversations, losing track of a story on television, forgetting what you read)

103. 0   1   2   3   Being overly alert (i.e. checking to see who is around you, being uncomfortable with your back to a door, etc)

104. 0   1   2   3   Being jumpy or easily startled (i.e. when someone walks up being you)

****

105. How long have you experienced the problems that you reported above?

_____

Please be as specific as possible (i.e. approximate number of weeks, months or years)

106. How long after this event (or when it first occurred) did these problems begin?

_____

Please be as specific as possible (i.e. approximate number of weeks, months or years)

PART 10

Indicate below if the problems you rated in Part 6 have interfered with any of the following areas of your life DURING THE PAST MONTH. Circle Y for YES and N for NO.

107.   Y   N   Work

108.   Y   N   Household chores and duties

109.   Y   N   Relationships with friends

110.   Y   N   Fun and leisure activities

111.   Y   N   Schoolwork

112.   Y   N   Relationships with your family

113.   Y   N   Sex life

114.   Y   N   General satisfaction with life

115.   Y   N   Overall level of functioning in all areas of your life

NOTE: IF YOU ENDORSED NO PROBLEMS IN PARTS 9 & 10, PLEASE SKIP
         TO THE END.

116.   Since you began experiencing the problems as a result of this second most
        bothersome event, has there ever been a period of at least one month or more in
        which you were virtually symptom-free and non-distressed by recollections of the
        traumatic event?

        No / Yes   (Circle One)
            If YES: a)   Approximately when was this period? _____
                      From when to when?

b)   Briefly explain what was going on for you around the time
you began having the symptoms after the relatively
symptom-free period (i.e. whether you experienced
additional traumatic events (if so, what type), and/or whether
you experienced significant life stressors (i.e. interpersonal,
career, etc.))

_____

_____

_____

PART 11

117. Regardless of whether you experienced any problems (as described in Part 3) in the
last month as a result of the event which has been most bothersome to you (complete
appropriate item a. or b. below):

a)   If you experienced no problems in the past month as a result of the most
bothersome event:

Has there ever been a period of time in which you had problems similar to those
described in Part 3?

Yes / No   (Circle One)

If NO :   Skip to question #118

If YES :   When did you experience problems/greater problems?

_____
Approximate month / Year
or
Season (i.e. spring, summer, fall, winter) / Year

b)   If you have had problems in the past month:

Has there ever been a period of time in which you experienced significantly
greater problems than you have had in the past month?
Yes / No   (Circle One)

If NO :   Skip to question #118

If YES: When did you experience problems/greater problems?

_____
Approximate month /Year
or
Season (i.e. spring, summer, fall, winter) /Year

PART 12

Note: Please complete this section with respect to the time period in which you experienced the greatest distress as a result of this second most bothersome event (i.e. rate the following problems for the time period identified in #117 a. or b. above).

Read each of the following commonly experienced symptoms following traumatic events very carefully and circle the number (0-3) that best describes how often that problem has bothered you during the time indicated in 51 a. or b.

118. 0   1   2   3   Having upsetting thoughts or images about the traumatic event that came into your head when you didn't want them to

119. 0   1   2   3   Having bad dreams or nightmares about the traumatic event

120. 0   1   2   3   Reliving the traumatic event, acting or feeling as if it was happening again

121. 0   1   2   3   Feeling emotionally upset when you were reminded of the traumatic event (i.e. feeling scared, angry, sad, guilty, etc.)

122. 0   1   2   3   Experiencing physical reactions when you were reminded of the traumatic event (i.e. breaking out in a sweat, heart beating fast)

123. 0   1   2   3   Trying not to think about, talk about, or have feelings about the traumatic event

124. 0   1   2   3   Trying to avoid activities, people, or places that remind you of the traumatic event

125. 0   1   2   3   Not being able to remember an important part of the traumatic event

126. 0   1   2   3   Having much less interest or participating much less often in important activities

127. 0   1   2   3   Feeling distant or cut off from people around you

128. 0   1   2   3   Feeling emotionally numb (i.e. being unable to cry, or unable to have loving feelings)

129. 0   1   2   3   Feeling as if your future plans or hopes will not come true (i.e. you will not have a career, marriage, children, or a long life)

130. 0   1   2   3   Having trouble falling or staying asleep

131. 0   1   2   3   Feeling irritable or having fits of anger

132. 0   1   2   3   Having trouble concentrating (i.e. drifting in and out of conversations, losing track of a story on television, forgetting what you read)

133. 0   1   2   3   Being overly alert (i.e. checking to see who is around you, being uncomfortable with your back to a door, etc)

134. 0   1   2   3   Being jumpy or easily startled (i.e. when someone walks up being you)

PART 13

Indicate below if the problems you have experienced in the last one month period which you rated above have interfered with any of the following areas of your life DURING THE TIME PERIOD YOU INDICATED IN #117.

135.   Y   N   Work

136.   Y   N   Household chores and duties

137.   Y   N   Relationships with friends

138.   Y   N   Fun and leisure activities

139.   Y   N   Schoolwork

140.   Y   N   Relationships with your family

141.   Y   N   Sex life

142.   Y   N   General satisfaction with life

143.   Y   N   Overall level of functioning in all areas of your life

END: Thank you for your detailed attention to this very important questionnaire

Appendix J

Debriefing

<u>"Life Experiences and Mood in College Students"</u>

Thank you for your time and participation in this study. The primary focus of this investigation is to carefully examine the long term effects of traumatic events on an individual in terms of anxiety, depression, deeply held beliefs or "schemas", personality traits, and satisfaction in interpersonal relationships. Differences between traumatized individuals who develop Post Traumatic Stress Disorder (PTSD) will be examined with those that do not have PTSD to identify the potential buffering effects that specific belief systems, parental attachments, and personality characteristics may have for individuals. Important aspects of the various types of trauma will also be examined to ascertain whether specific types of trauma are associated with a higher incidence of PTSD.

If you have experienced a very stressful or traumatic event and would like a referral, have any questions or concerns as a result of this study, or have any additional questions or concerns, please contact Sandra Testa, M.S. or Larry Michelson, Ph.D. at (814)863-6019/6021, who would be pleased to speak with you.

Your credit slip for participation in this study will be submitted immediately after you turn in the fully completed packet of questionnaires to an available research assistant according to the procedures indicated in the section of the cover letter entitled "Packet Return Procedures".

Thank you in advance for your time and consideration for agreeing to participate in this study and for completing the assessment battery.

CURRICULUM VITAE

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THE PENNSYLVANIA STATE UNIVERSITY, DEPARTMENT OF
PSYCHOLOGY, University Park, Pennsylvania. APA approved doctoral program in
clinical psychology.
M.S. awarded: December, 1995
PhD. awarded: August, 2006

1998 - 2000   APA APPOVED PSYCHOLOGY PREDOCTORAL INTERNSHIP:
North Chicago Veterans Medical Center, North Chicago, IL.
Under the supervision of a licensed psychologist, functioned as a junior psychologist.
Duties consisted of individual and group psychotherapy; development of treatment plans;
medical liaison and outreach activities for a variety of veteran clients. Cognitive-
behavioral, eye movement desensitization and reprocessing (EMDR), hypnotic and
integrative approaches to treatment, addressed the following issues: PTSD, substance
abuse, personality, housing and vocation. 2,000+ hours of service and 850+ hours of client
contact/supervision. Volunteered for additional 200+ at Evanston Vet Center.

2001 - 2002   PROGRAM DIRECTOR: Adult Case management Services,
Steinway Child & Family Services Inc., Long Island City, NY.
Contemporary community psychology treatment model that offered wrap-around service
delivery in addressing the unique psychosocial needs of clients who suffered with serious
and persistent mental illnesses (SPMI). Clientele resided within the Queensboro
Catchment Area of New York City. Duties consisted of program development; regulatory
compliance; budget evaluation; individual and group supervision of clinical staff;
development of partnerships with local hospitals, medical centers, mental health agencies
and community organizations; providing training lectures associated with SPMI,
HIV/AIDS, dually diagnosed and traumatized populations.

2001 - 2002   ASSISTANT PROJECT COORDINATOR: Project Liberty/911, New
York City Department of Public Health, NY, NY. Federal Emergency Management
Agency funded, disaster-recovery program developed by the New York State Office of
Mental Health. Duties consisted of reporting to project coordinator and attending monthly
administrative meetings at Project Liberty Headquarters. Provided direct services as crisis
service provider; grief services for surviving family on supportive cruises to Ground Zero
with the presentation of a memorial flag and urn (with soil from Ground Zero); outreach
services to under-served citizens on subways, transportation hubs and housing projects in
high-impact areas located in Brooklyn, Queens, Bronx and Harlem. 1000+ hours of direct
services provided.