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PAR
MARGARET McCULLOCH

LIEN ENTRE LES ÉVÉNEMENTS POTENTIELLEMENT TRAUMATIQUES, LES SYMPTÔMES DU TROUBLE D'ANXIÉTÉ GÉNÉRALISÉE ET LES VULNERABILITÉS COGNITIVES

THE LINK BETWEEN POTENTIALLY TRAUMATIC EVENTS, GENERALIZED ANXIETY DISORDER SYMPTOMS, AND COGNITIVE VULNERABILITIES

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Composition du jury

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Margaret McCulloch

Cette these a été évaluée par un jury composé des personnes suivantes:

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Sommaire

Des études antérieures ont démontré le lien entre l'expérience d'un événement potentiellement traumatique (EPT) et le développement et le maintien des symptômes du Trouble d'Anxiété Généralisée (TAG). Peu de recherches ont toutefois tenté de mieux comprendre ce lien, que ce soit en étudiants divers indicateurs spécifiques d'un EPT ou divers mécanismes du TAG. Le but de cette thèse consiste à vérifier les liens entre différents indicateurs associés à un EPT, les symptômes du TAG et deux vulnérabilités cognitives généralement associés à ces symptômes: l'intolérance à l'incertitude et l'évitement cognitif. L'étude postule la présence de liens significatifs entre, d'une part, la présence d'un EPT antérieur, l'intensité de la réaction vécue pendant l'exposition au EPT et la détresse associée et, d'autres parts, la tendance à s'inquiéter et les symptômes somatiques du TAG. L'étude postule également la présence de liens significatifs entre les mêmes indicateurs d'un EPT et les deux vulnérabilités cognitives énumérés précédemment. Un échantillon de 419 participants a été récruté parmi la population adulte (18-67 ans) dans trois établissements scolaires. Ceux-ci ont répondu à une série de questionnaires évaluant les différentes variables de l'étude. Des corrélations de Spearman, des régressions simples, des analyses de variance et des tests de khi-carré ont été réalisées afin de confirmer les hypothèses de la thèse. L'expérience antérieure d'au moins un EPT correspondant aux critères du DSM-IV et d'une intensité suffisante a été rapportée par 50% de l'échantillon. Les résultats de l'étude ont confirmé nos hypothèses indiquant la présence de liens significatifs entre le vécu d'un EPT, les symptômes du TAG et les vulnérabilités cognitives ciblées. Nos résultats suggèrent que les participants

ayant vécu l'expérience d'un EPT et ceux qui vivent la détresse actuelle associée à l'évènement ont plus tendance à manifester des symptômes du TAG et à présenter les critères du trouble par questionnaire comparativement à ceux qui n'ont pas vécu l'expérience d'un EPT ou qui ne vivent pas de détresse actuelle associée à leur exposition à un EPT. Nos conclusions indiquent que la détresse actuelle associée à l'exposition à un EPT semble être un des facteurs relié aux symptômes du TAG. L'intensité de la réaction vécue pendant l'exposition semble être aussi impliqué, quoique moins fortement relié que la détresse actuelle. La nature corrélationnelle de la thèse suggère d'être prudent quant aux interprétations sur le sens des relations observées. Des pistes visant à approfondir davantage la compréhension du lien entre un événement traumatique et les symptômes et processus du TAG sont suggérées.

Mots clés: Événement potentiellement traumatique; Anxiété Généralisée; facteurs de risque

Abstract

Past research has recognized the link between exposure to potentially traumatic events (PTE) and the development and maintenance of Generalized Anxiety Disorder (GAD) symptomology. The goal of this study was to further our understanding by verifying the relationship between exposure to a PTE, the presence of GAD symptoms, and the implication of two cognitive vulnerabilities: intolerance of uncertainty and cognitive avoidance. It was hypothesized that a significant relationship exists between, on one hand, previous exposure to a PTE, the intensity of the reaction during exposure, and the associated distress, and on the other hand, the tendancy to worry and the somatic symptoms associated with GAD. Moreover, it was hypothesized that a relationship exists between these same indicators of a PTE and the cognitive vulnerabilities listed above. A sample of 419 adult participants completed self-report measures. Previous exposure to at least one PTE was reported by 50% of our sample. The results of the study confirmed the presence of a significant positive relationship between exposure to a PTE, GAD symptomology and the cognitive vulnerabilities listed above. Our results suggest that a person previously exposed to a PTE and experiencing current distress associated with that exposure is more likely to manifest GAD symptomology and fulfill the critieria of GAD than those not previously exposed or those not experiencing current distress. Due to the correlational nature of our study, caution should be exercised when formulating interpretations based on the relationships observed. Suggestions aimed at further expanding our understanding of the relationship between exposure to a PTE and the symptoms and processes of GAD are proposed.

Key words: Potentially traumatic events, Generalized Anxiety Disorder symptoms.

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Introduction

Generalized Anxiety Disorder (GAD) is the most frequently observed anxiety disorder in primary care settings in the United States as well as in other countries (Kessler, Walters, & Wittchen, 2004). Despite the prevalence of this disorder, GAD has been understudied by researchers as compared to other anxiety disorders (Dugas, 2000). According to Dugas, research done on GAD had been mainly centered on descriptive issues and treatment outcomes whereas etiological factors involved in the development and maintenance of GAD were less the foci of past research. Notwithstanding the relative lack of research on the process issues implicated in GAD, several etiological factors have been identified in past studies. Literature reviews (Gosselin & Laberge, 2003; Hudson & Rapee, 2004) identified the genetic and tempermental factors, environmental influences and psychological processes associated with the development and maintenance of GAD. Of particular interest to our research is the influence of external environmental events, specifically potentially traumatic events (PTEs).

A growing number of studies have investigated the link between the previous exposure to PTEs and the presence of GAD symptomology. These studies have targeted samples in which a population has experienced a natural disaster or a terrorist-related PTE, for example. Ghafoori and colleagues (2009) underscored that much of the past

research has focused on the psychological reactions of Post-traumatic Stress Disorder (PTSD) and depression following a PTE. However, their research on the 9/11 terrorist attack illustrates the increasing interest in investigating the presence of GAD symptomology after a PTE exposure. In fact, Grant, Beck, Marques, Palyo, & Clapp (2008) draw attention to the observation that GAD along with PTSD and Major Depressive Disorder (MDD) are the three disorders that commonly develop following a traumatic event. Our review of the research investigating the link between previous exposure to a PTE and the presence of GAD symptomology has revealed some discrepancy with regards to the findings as well as pertinent future research questions. Our study aimed to better comprehend the role of trauma-related factors with regards to the development and maintenance of GAD symptomology as well as with regards to the cognitive vulnerabilities generally associated with GAD: intolerance of uncertainty and cognitive avoidance.

Intolerance of uncertainty and cognitive avoidance have been identified as two of the cognitive processes implicated in the cognitive-behavioural model of GAD put forth by Dugas, Gagnon, Ladouceur, & Freeston (1998). They suggest that these cognitive processes are central to the development and maintenance of excessive worry. Intolerance of uncertainy and cognitive avoidance were recognized as key process variables related to GAD symptomology with intolerance of uncertainty having a central discriminatory function to distinguish between GAD patients and non-clinical controls. The importance of these cognitive processes or vulnerabilities as well as the absence of

past research studying the relationship between previous exposure to a PTE and these cognitive vulnerabilities led us to further examine this issue.

We formulated two hypotheses in relation to our research queries. Firstly, we hypothesized that a significant relationship exists between, on one hand, previous exposure to a PTE, the intensity of the reaction during the exposure, and the associated distress, and on the other hand, the tendency to worry and the somatic symptoms of GAD. Secondly, we hypothesized that a significant relationship exists between these same indicators of a PTE and intolerance of uncertainty and cognitive avoidance. An enhanced understanding of these relationships may foster prospective treatment planning for individuals with GAD symptomology previously exposed to PTEs.

Initially, the theoretical context related to GAD is presented and our research questions are introduced. Next, our research method is described in detail and our results are then presented. The interpretation of our findings ensues in the discussion and a conclusion follows. Lastly, references as well as appendixes are included.

Theoretical context

In order to provide an overview of GAD, several important aspects of this disorder including diagnostic criteria, epidemiology, comorbidity and the associated consequences are reviewed, as well as the state of past research. The central role of worry is discussed. Etiological factors are considered, particularly the impact of external environmental events. The role of potentially traumatic events, post-traumatic sequelae, and the established link between past trauma and GAD are examined. The cognitive vulnerabilities associated with GAD are discussed, specifically intolerance of uncertainty and cognitive avoidance. Lastly, the research goals of the present study are identified.

Generalized Anxiety Disorder

Descriptive Aspects

Generalized anxiety disorder (GAD) is characterized by the presence of uncontrollable, excessive and pervasive anxiety and worry (American Psychiatric Association, 2000). This apprehensive expectation is present most of the time for a period of at least six months and concerns a certain number of various events or subjects. Associated symptoms usually include restlessness or feeling edgy and keyed up, easily tired, difficulty with concentration, irritability, muscle tension, and sleep disturbance. GAD sufferers experience clinically important distress and impaired functioning in work, social and/or personal domains.

The results of an epidemiological survey in the United States using DSM-IV criteria reported lifetime prevalence for GAD is 5.7% (Kessler, Berglund, Demler, Jin, & Walters, 2005) and 12-month prevalence is 3.1% (Kessler, Chiu, Demler, & Walters, 2005). Using DSM-III and DSM-III-R criteria, Kessler and colleagues (2004) resume that lifetime prevalence of the general population in the United States is between 4% and 7%, 12-month prevalence is between 3% and 5% and current prevalence is between 1.5% and 3% with similiar rates observed in other countries using DSM-III-R criteria. A survey carried out on a community sample in Quebec using DSM-III-R criteria reported lifetime prevalence rates between 9.4% and 13.6% and 6-month prevalence rates between 2.4% to 4.9% (Fournier, Lesage, Toupin, & Cyr, 1997). Freedman and colleagues (2002) reported a higher prevalence of GAD in women, which was consistent with the literature. GAD increases in prevalence after 35 years of age despite its early onset in the teenage years, according to Wittchen and Hoyer (2001).

GAD sufferers have a comorbidity prevalence rate of 92.1% with a lifetime comorbid psychiatric disorder, as indicated by data from the U.S. National Comorbidity Survey Replication (Ruscio et al., 2007). GAD with Major Depressive Disorder (MDD) is the most common type of anxiety-mood comorbidity (Noyes, 2001). In fact, GAD often precedes and predicts negative outcome in depression as well as in other disorders (Ruscio et al.). A GAD sufferer also has a greater risk of developing a comorbid anxiety disorder (Menin, Heimberg, & Turk, 2004). Past research has documented the comorbidity between GAD and PTSD (Engdahl, Speed, Eberly, & Schwartz, 1991;

Hubbard, Realmuto, Northwood, & Masten, 1995; Maes, Mylle, Delmeire, & Altamura, 2000). For example, in a population exposed to a disaster (Green, Lindy, Grace, & Leonard, 1992), GAD had a lifetime prevalence rate of 25% with PTSD. GAD can develop as a primary or a secondary disorder. For example, it often predates or develops in the same year as MDD yet typically develops after the onset of social phobia (Stein, 2001).

Consequences

Along with the clinical symptoms and various comorbid disorders associated with GAD, the consequences of the disorder are potentially numerous and perdure over time, as discussed by Craske, Barlow, & O'Leary (1992). An increased number of distressing minor life stressors as well as impairment in role functionning, in social life and in life satisfaction are associated with the disorder (Roemer, Orsillo, & Barlow, 2004). Exhaustion and despair are the most widespread consequences of GAD, which in turn bring about numerous long-term consequences associated with a person's health: increased use of medication, repeated medical consultations and social consequences such as work absenteeism (Gosselin & Laberge, 2003). In fact, GAD has been linked with numerous medical conditions: dermatologic, arthritic and cardiac problems in males and gastro-intestinal problems, allergies, back pain, migraine, metabolic and neurological disorders in females (Härter, Conway, & Merikangas, 2003). According to a large European community survey (Bernal et al., 2007), GAD is also strongly related to increased risk of suicidal ideation and suicide attempts.

Past research on GAD

Several factors have slowed the progression of research aimed at understanding the etiology of GAD, as maintained by Gosselin & Laberge (2003). Factors such as the changing diagnostic criteria and the past difficulty in determining the prevalence and course of GAD (Kessler et al., 2004) as well as a relative lack of attention from researchers as compared to the other anxiety disorders (Boschen, 2008) have been implicated. Riskind (2005) emphasized the presence and interaction of numerous possible pathways (mechanisms, processes and factors) that predispose a person to anxiety disorders, such as GAD, and precipitate their development, as first suggested by Beck and Emery with Greenberg (1985). Potential pathways which have been explored implicate genetic and tempermental factors, environmental influences, and various psychological processes. A review of the literature concerning the etiological factors as well as various explanatory models of GAD and its central trait, worry, have been proposed in recent years by several authors (see, Gosselin & Laberge; Hudson & Rapee, 2004; Rapee, 2001).

Worry

Before proceding to examine the various factors identified in the explanatory models of GAD, the central role of worry in this disorder warrants discussion. Excessive and uncontrollable worry became the key feature required in the characterization of GAD (American Psychiatric Assocaition, 1994). The content and function of worry and the factors that maintain the worry process have been the focal point of research since

then (Roemer et al., 2004; Tallis & Eysenck, 1994). Macleod, Williams, and Bekerian (1991) encapsulated common characteristics for worry across different authors: worry is a cognitive experience, it is accompanied by emotional distress such as anxiety and it involves a future event which has uncertain consequences. Borkovec, Robinson, Pruzinski, & DePree (1983) put forth the notion that worry includes a series of thoughts or images. The role of worry was more clearly defined by subsequent research distinguishing verbal thought content from visual imagery content during the worrying process (Borkovec & Inz, 1990; Freeston, Dugas, & Ladouceur, 1996). These authors further specified that worry is largely experienced as a negative verbal or linguistic activity (thought-based), as opposed to an imagery-based acitivity.

Etiology of GAD: The Role of Potentially Traumatic Events

Although various etiological factors have been implicated in the development and maintenance of GAD, our study focusses on the impact of external environmental events, specifically the role of PTEs. It is important, however, to underline the significant genetic contribution of 30 to 40% with regards to the variance in anxiety symptoms and disorders, though no firm evidence supports a specific inheritability for GAD (Hudson & Rapee, 2004; Rapee, 2001). Hudson and Rapee also reviewed the environmental factors influencing the development and maintenance of anxiety disorders which include the environmental support of avoidance behaviours, the effects of social environment through modeling and the impact of external environmental events.

The influence of external environmental events includes the impact of negative and/or stressful life events. The literature reviews of the etiology of GAD (Gosselin & Laberge, 2003; Hudson & Rapee, 2004) conclude that the impact of negative life events, as well as the presence of a PTE, has been shown to heighten the risk for an individual to develop GAD. PTEs, a specific subcategory of stressful life events, will be discussed more extensively below. Generally, the impact of negative events has been shown to be more distressing in an individual vulnerable to anxiety than in a nonanxious one (Rapee, Litwin, & Barlow, 1990). Gosselin and Laberge point out that some GAD sufferers associate the onset of the disorder with stressful life events, which could include an accumulation of responsabilities, the birth of children and work or health-related difficulties. Furthermore, the presence of chronic stressors during childhood, such as family difficulties, abuse (physical, verbal or sexual), the loss or separation of a parent as well as role reversal (child takes the role of the parent) have all been implicated in the etiology of GAD (Gosselin & Laberge).

It is worthy of noting that along with the psychological effects, exposure to stress has been shown to have significant and longlasting implications on the physiology of an individual (Hudson & Rapee, 2004). Exposure to early stressful events can lead to increased activity of neurons in the hypothalamic-pituitary-adrenal axis causing changes in its functioning. These changes augment an individual's sensitivity to stress, thus increasing the risk for developing an anxiety disorder. Negative and/or stressful life events, as well as the experience of PTEs, may have a greater impact on those

individuals with a heightened vulnerability to stress. Moreover, an individual's sensitivity to anxiety, described as the fear of anxiety-related physiological sensations, has been generally associated with anxiety disorders (Reiss, Peterson, Gursky, & McNally, 1986). An individual with heightened anxiety sensitivity holds the belief that the experiencing of somatic sensations has harmful or negative implications; these beliefs could lead to the development of fears and possibly other anxiety disorders.

Criteria and Types of Potentially Traumatic Events

Exceedingly stressful life events, referred to as PTEs, must necessarily fulfil the two components of the Criterion A definition of post-traumatic stress disorder (PTSD) (American Psychiatric Association, 2000) to be considered as potentially traumatic (Roemer, Molina, Litz, & Borkovec, 1997b; Brillon, 2005). The first component, the A1 criterion, requires having experienced, witnessed or been confronted with an event(s) which could have involved the threat of death or actual death, serious injury, or threat to one's personal integrity or that of others. The second component, the A2 criterion, entails experiencing an intense reaction of fear and the impression of helplessness or horror at that time. Hence, the person's emotional reactions at the time of the PTE are taken into account by these subjective criteria rather than solely the objective event. Research by Boals & Schuettler (2009), which utilized both the A1 and A2 criteria, suggested that the emotional response to an event (A2) was associated with PTSD more so than the nature of the event (A1).

According to Brillon (2005), there are various types of PTEs. One type involves acts of interpersonal violence including physical assault, sexual assault, armed robbery, war, torture, and kidnapping. A second category of PTEs includes accidents caused by humans and/or technical errors such as car accidents, plane or train accidents, shipwrecks, ecological or nuclear disasters and work accidents, for example. Thirdly, natural catastrophes such as hurricanes, forest fires, earthquakes, tidal waves, floods and tornados are events which are considered as potentially traumatic.

Post-traumatic sequelae

Research on the traumatic sequelae across cultures and types of traumatic exposure has increased considerably in recent years according to a meta-analysis by Ozer, Best, Lipsey, & Weiss (2003). These researchers indicate that since the 1970's, the experience of a traumatic event has been linked to the development of PTSD as well as other psychopathology, specifically anxiety and depressive symptomology. These findings have been corroborated by additional recent research (Acierno et al., 2007; Bolton, O'Ryan, Udwin, Boyle, & Yule, 2000; Brown, Fulton, Wilkeson, & Petty, 2000). Thus, PTSD is not an inevitable result of exposure to a PTE. In fact, Ozer and colleagues highlight the discrepancy between the lifetime prevalence of exposure to a PTE, which is over 50%, and the lifetime prevalence of PTSD, which is about 7%. Their results sustain the presence of substantial personal variability in psychological reactions to PTEs. Rubonis and Bickman (1991) reviewed the relationship between disaster occurrence and psychopathology outcome for 52 studies and found that general anxiety

had the highest prevalence rate amongst other symptom domains such as PTSD or depression.

The development of anxiety and depressive symptomology other than PTSD in the aftermath of trauma exposure has been further supported by recent research. Grant and colleagues (2008) studied motor-vehicle accident survivors and their results suggested that GAD, PTSD and MDD were distinguishable, although highly correlated, constructs. These disorders share some overlapping symptomology, such as sleep disturbance, irritability, and fatigue. Despite these similitudes, they maintain that GAD consists of a unique collection of symptomology and a distinct reaction to trauma exposure, even in the presence of the other two disorders. Their research underscores the independence of GAD from other disorders as well as the importance of considering other psychopathology aside from PTSD following traumatic exposure.

Attention has been focussed on the search for factors explaining the symptom differences between victims (Brewin, Andrews, & Valentine, 2000). A large proportion of this variability is unexplained by specific predictors such as the pretrauma factors identified in previous studies (e.g., characteristics of the individual, prior adjustment difficulties). Rather, factors distinctive to the combination of the person exposed and the nature of the exposure are determinant of the posttraumatic symptoms. The subjective psychological responses to the exposure, including the intensity of an individual's reaction and their appraisal of the event, are considered as significant contributors to

posttraumatic sequelae. Martin and Marchand (2003) investigated peritraumatic predictors of PTSD symptoms. Their results indicated that peritraumatic dissocation as well as negative emotional reactions are frequently the strongest predictors of PTSD symptoms in empirical studies. Dixon and her colleagues (1993) studied peripheral victims of disaster and their findings suggested that an emotional connection to the victims or the personalization of a traumatic event may also be contributing factors.

Literature on Past Trauma and GAD

The research of Roemer and associates (1997b) sustains the link between a PTE and the etiology of GAD as individuals with GAD are significantly more likely than nonanxious controls to report exposure to a variety of traumatic events. In a non-clinical sample, 53% of participants with GAD reported past exposure to a traumatic event compared to 30% of non-anxious participants. In a clinical sample, 52% of GAD patients reported a past traumatic event compared to 21% of the control group. The role of past trauma in the development and maintenance of GAD has been explored in some studies to date. Beck & Emery with Greenberg (1985) suggested that exposure to a single PTE might be sufficient for the development of GAD. Zuellig, Newman, Alcaine, & Behar (1999: see Borkovec, Alcaine, & Behar, 2004) reported significantly higher rates of childhood PTSD in GAD than in panic disorder, thereby suggesting a certain specificity between PTEs and GAD. A greater frequency of past traumatic events has been reported by individuals with GAD (Roemer et al.). These authors evoke studies which have supported the prevalence of GAD in victims of various PTEs, such as rape,

combat and disasters. Similarly, Ghafoori and colleagues (2009) draw attention to the small but growing body of literature exploring the link between disaster-related trauma exposure and the subsequent prevalence of GAD. Elevated levels of GAD symptomology were observed among survivors of disaster-related trauma such as volcanic eruptions (Shore, Tatum, & Vollmer, 1986), hurricanes (Acierno et al., 2007), oil spills (Palinkas, Downs, Peterson, & Russell, 1993), floods (Green et al., 1992), and terrorist attacks (Ghafoori et al., 2009; Jordan et al., 2004; Neria et al., 2008). For example, one-year prevalence of GAD was elevated (19.4%) in a sample of primary care patients who were confronted with disaster-related loss following the 9/11 terrorist attacks (Neria et al.). A recent genetic association study of GAD (Koenen et al., 2009) examined gene-disorder relations within a sample exposed to hurricanes. They found that GAD was more than twice as prevalent in their sample at six months (6.8%) as compared to the 12-month rate in the general population (3.1%). The findings of Ghafoori and associates support the idea that the experiences of rescue and recovery workers, whom are likely to have extended exposure to perceived threat and contact with the victims, are associated with GAD symptomology.

Borkovec and colleagues (2004) summarize theories which propose that past trauma plays a causal role in chronic anxious apprehension and excessive perceptions of the world as a dangerous place. In fact, one could envisage past trauma as possibly leading to various cognitions which, in turn, could lead to the development of GAD symptomology. For example, we believe that the uncertainty associated with future

events in an individual having experienced a past trauma and anticipating future threat and/or danger could possibly encompass a tendency to be intolerant of uncertainty, to worry and to manifest various other GAD symptoms. In fact, recent research of hurricane survivors in Florida (Acierno et al., 2007) studied the prevalence and major risk factors associated with GAD in victims of repeated hurricane exposure due to growing evidence that GAD is among the most common disorders following disasters and other traumatic events along with PTSD and MDD. Their results showed that GAD was 50% more prevalent than PTSD following hurricane exposure and that previous exposure to a PTE was a risk factor for the development of GAD. According to these researchers, this was possibly due to the nature of the hurricane season which exposes inhabitants to recurring potential threats over an extended time frame thus possibly increasing vigilance and apprehension in the form of worry behaviours. In such scenarios, we believe that it would be possible for certain cognitive vulnerabilities associated with worry, such as intolerance of uncertainty and/or cognitive avoidance (as discussed in more detail below), to potentially play a role in the development and maintenance of GAD symptomology. However, these authors maintain that the symptoms of GAD could have predated the traumatic sequelae reported, thus necessitating more longitudinal research in order to ascertain a causal link. Likewise, although Borkovec and collaborators sustain that GAD sufferers may have more traumatic histories than is the case with other anxiety disorders, they reported that no studies, as of 2004, had explored if the PTE occurred before or after the onset of GAD. Conversely, according to the preliminary findings of a more recent study in which

94.8% of GAD sufferers had experienced a PTE, age of first trauma exposure was compared to age of onset of GAD and results show that trauma exposure preceded GAD onset in 65.2 % of the cases (Brawman-Mintzer, Monnier, Wolitzky, & Falsetti, 2005). It is relevant to also consider the possibility that an anxious individual could develop a hypersensitivity to perceived danger in their environment, or regard ambiguous situations as threatening, despite the absence of past exposure to a PTE. This hypersensitivity to perceived danger could render vulnerable an individual who then could develop GAD following exposure to a PTE.

Previous studies (Lubit, Rovine, Defrancisci, & Eth, 2003; Kar & Bastia, 2006) have shown that trauma in children can lead not only to the development of PTSD but also to a variety of other psychopathology, including GAD. Leitenberg, Greenwald, and Cado's (1992) research suggests that the experience of early childhood trauma may induce the development of avoidant coping strategies with the long-term negative consequences of increased psychopathology. However, Zlotnick and colleagues (2008) suggest that specific disorders are associated with PTEs that occur in childhood as opposed to PTEs occurring later in life. Their results show that GAD is twice as likely to occur after a first PTE experienced in adulthood as opposed to a first PTE experienced in childhood. Research with youth hurricane survivors (La Greca, Silverman, & Wasserstein 1998; Weems et al., 2007) indicates that trait anxiety was the strongest and most reliable predictor of reactions to a PTE. Their research suggests that youths with pre-existing high trait anxiety are less able to cope with a PTE and are more likely to

have post-traumatic symptomology, including worry associated with GAD, even with low exposure experiences. Once again, this could suggest that specific individual vulnerabilities might predispose a person to react to exposure to a PTE by developing GAD symptomology.

Roemer and colleagues (1997b) have identified the necessity of further research in order to explore the specific link between a PTE, worry and GAD. In fact, little is known about the impact of PTEs and the resulting psychological processes which are implicated in GAD (Brawman-Mintzer et al., 2005). Weems and collaborators (2007) underline that previous studies have supplied incomplete information concerning the cognitive aspects of anxiety disorder symptoms, such as worry, that may develop following a disaster.

Cognitive Vulnerabilities Associated with GAD

Danger Schema

The impact of stressful life events and exposure to PTEs may be better understood in light of the theoretical formulation of Beck & Emery with Greenberg (1985) pertaining to anxiety and the etiology of GAD. Their cognitive approach entails the formulation of exaggerated appraisals of threat-related information, resulting in fear and anxiety. The recurring amplified appraisals lead to the development of distorted danger schemas which guide information processing (attention, interpretation and memory of threatening stimuli) to create fearful thoughts and images. When these

schemas are activated by real or anticipated threat, incoming information is distorted leading to the overestimation of the degree and severity of the threat. One could presume that exposure to a PTE could lead to exaggerated appraisals of threat-related information and a corresponding danger schema. At the same time, individuals also underestimate their ability to manage threatening information and tend to overuse compensatatory self-protective strategies, such as cognitive, affective or physical avoidance. These strategies decrease anxiety in the short-term but deter further processing of threat-related information due a reduced emotional reaction (Beck & Clark, 1997). Interestingly, a recent schematic model proposed by Foa, Ehlers, Clark, Tolin, and Orsillo (1999) postulates two underlying schemas implicated in post-traumatic stress which concord with the above mentionned comprehension of GAD: the world is viewed as an entirely dangerous place and the individual sees themself as totally incompetent.

Explanatory Model of GAD

Dugas and colleagues (1998) developed an explanatory model which suggests the presence of four cognitive vulnerabilities related to excessive worry in the development and maintenance of GAD: intolerance of uncertainty, maladaptive beliefs about worry, negative orientation towards problem-solving and cognitive avoidance. Further research has corroborated the importance of these vulnerabilities and their role and function in worry and GAD (Bredemeier & Berenbaum, 2008; Wells, 2004; Robichaud & Dugas, 2005; Sexton & Dugas 2007, respectively). In relation to past exposure to a PTE, intolerance of uncertainity and cognitive avoidance are two of the

cognitive vulnerabilities targeted in this study, due to the substantiating information discussed below.

Intolerance of Uncertainty

Bredemeier and Berenbaum (2008) draw attention to the considerable amount of research data supporting the important function of intolerance of uncertainty in the etiology and maintenance of worry and GAD as well as the growing evidence substantiating a causal relationship. Past research has shown that intolerance of uncertainty is associated with excessive worry in both nonclinical and clinical populations (Dugas, Freeston, & Ladouceur, 1977; Dugas et al., 1998). It is the most significant predictor compared with the other cognitive vulnerabilities previously mentionned (Buhr & Dugas, 2006; Dugas, Marchand, & Ladouceur, 2005b). Clinical research has shown that patients with GAD are more intolerant of uncertainty than patients with other anxiety disorders (Lachance, Ladouceur, & Dugas, 1999) although recent studies are suggesting that this construct may play a role in several anxiety disorders (Carleton, Sharpe, & Asmundson, 2007). A provoked increase in intolerance of uncertainty in experimental studies has been associated with an increase in worry (Ladouceur, Gosselin, & Dugas, 2000). de Bruin, Rassin, & Muris (2006) suggest that intolerance of uncertainty predicts worry during uncertain tasks based on the results of their studies using experimental manipulation of intolerance of uncertainty. Decreases in intolerance of uncertainty usually precede decreases in levels of worry in cognitive-behavioural therapy for GAD (Dugas & Ladouceur, 2000).

Intolerance of uncertainty is described as a predisposition to react negatively, on an emotional, cognitive and behavioural level, to an uncertain event, independent of the probability of the occurrence of the event and of the consequences associated with the event (Dugas, Gosselin, & Ladouceur, 2001). With regards to uncertain events, subjects with high levels of intolerance of uncertainty report being more concerned, making more threatening interpretations and having more information processing biases than those with low levels of intolerance of uncertainty (Dugas et al., 2005a). This elevated tendency to interpret uncertainty as threatening leads some individuals to worry and apprehend unpredictable events as having negative consequences. Berenbaum, Bredemeier, and Thompson (2008) identified the desire for predictability as a core feature of the intolerance of uncertainty construct. Gosselin and collaborators (2008) consider intolerance of uncertainty as a propensity to regard uncertainties as unacceptable and they have identified several cognitive and behavioural manifestations resulting from this tendency. According to these authors, the propensity to regard uncertainties as unacceptable is reflected by three dimensions: intolerance of the unexpected, the need for certainty or predictability and intolerance of the possibility that a negative event may occur. Six specific cognitive and behavioural factors result from an individual's intolerance of uncertainty: overestimation of the probability that a negative event will occur, control, reassurance, avoidance, worry and doubt. A general tendency towards intolerance of uncertainty is possibly present in GAD sufferers previously exposed to a PTE. More specifically, behavioural manifestations and/or the use of certain strategies might be associated to a greater extent with these individuals. For

example, overestimation of the probability that a negative event may occur is a possible manifestation due to previous exposure to one or more fearful events.

Cognitive Avoidance

Cognitive avoidance appears to be related to excessive and uncontrollable worry (Dugas et al., 2005b). Worry is principally experienced as negative verbal activity based in thought, as opposed to being imagery-based (Borkovec & Inz, 1990; Freeston et al., 1996). The high verbal content of worry constitues a cognitive avoidance strategy used to elude more arousing mental images of external and internal threat-related stimuli, according to Borkovec and colleagues (2004). Borkovec, Ray, & Stöber (1998) conclude that worry functions to increase verbal thoughts, thus avoiding the mental images associated with a threatening stimulus, and therefore lowering physiological arousal. According to Foa and Kozak (1986), the absence of physiological arousal implies that the worrier is not fully accessing the fear structure and is therefore unable to emotionally process the threatening stimuli and add corrective meaning. The functional effects of repeated exposure through corrective meaning are reduced and this can lead to an increase in the anxious meanings related to those stimuli (Wells & Papageorgiou, 1995). Studies (Brawman-Mintzer et al., 2005; Roemer et al., 1997b) have suggested that some individuals who do not develop a PTSD after exposure to a PTE may begin to or continue to use worry as a cognitive avoidance strategy to avoid distress or arousal associated with the experience. This self-protective strategy may lead to the cycle of worry and the maintenance of anxiety implicated in GAD.

The concept of cognitive avoidance has been extended to include five cognitive avoidance strategies: thought suppression, thought substitution, distraction, avoidance of threatening stimuli and the transformation of mental images into verbal thoughts (Gosselin et al., 2002). In one study intended to explore the subjective perceptions of the function of worry among worriers, Borkovec and Roemer (1995) found that worry about minor issues was utilized to avoid more emotionally distressing topics. GAD sufferers significantly rated that distraction from more emotional topics was a reason for their worries. Concerning the emotional topics from which GAD sufferers want to be distracted, Roemer, Molina, and Borkovec (1997a) found that injury, health and illness issues were infrequent worry topics for them despite that they reported a greater frequency of past physical trauma than controls. Therefore, GAD sufferers can be distracted from disturbing thoughts related to prior traumatic events as these thoughts are to be avoided as they confirm that the world is potentially dangerous (Borkovec & Roemer). As past research points to the use of cognitive avoidance in GAD sufferers previously exposed to a PTE, it will be of interest to further corroborate this finding.

Research Goals of Present Study

In light of past research supporting a pathway linking past exposure to a PTE and GAD symptomology, the goal of the present study was to verify the relationship between the exposure to a PTE, the presence of GAD symptomology, and the cognitive vulnerabilities involved in the development and maintenance of the symptoms of GAD. It is hypothesized that a significant relationship exists between previous exposure to a

PTE (presence or absence of exposure to a PTE, intensity of the reaction during the exposure, and associated distress) and current manifestations of worry and somatic symptoms associated with GAD criteria. It is further hypothesized that a significant relationship exists between previous exposure to a PTE (presence or absence of exposure to a PTE, intensity of the reaction during the exposure, and associated distress) and current manifestations of intolerance of uncertainty and cognitive avoidance.

Before proceding to discuss our methodology, it is important to bear in mind the distinction between participants from our sample fulfilling GAD criteria versus patients clinically diagnosed with GAD. Our study used an analogue research approach thus targeting a population without clinical status. The advantages and utility of using analogues as opposed to clinical populations are discussed by Borkovec & Rachman (1979). According to these authors, analogue research can serve to provide the answers to specific questions, bring new information to light and create new concepts. They maintain that the nature and the intensity of the target problem to be studied are the crucial variables to consider, as opposed to solely relying on the clinical status of the participants as a necessary criteron. In fact, those in psychiatric care are liable to be a biased and unrepresentative sample of the disorder in the general population. In light of this information, the participants in our sample fufilling GAD criteria could provide important information about the general population, despite the absence of a clinical diagnosis. Therefore, any mention of the participants in our study fulfilling GAD criteria refer to analogues who have not received a clinical diagnosis to our knowledge.

Method

Initially, a description of the sample and an account of the procedures involved in the study are provided. The various self-report measures assessing exposure to PTEs, GAD symptomology and the presence of cognitive vulnerabilities are then identified and described. All modifications to the self-report measures as well as the translation of specified measures are explained.

Participants

A sample of 419 adult Canadians (72% women) participated in the study. Participants were aged between 18 and 67 years (M = 23.17 years, SD = 6.68). Francophones comprised 55% of the sample whereas 45% were Anglophones. Concerning the civil status of the sample, the majority of the participants were single (72.3%) whereas 16.2% were in common-law relationships, 4.8% were married, 2.1% were divorced, separated or widowed and 4.5% had failed to provide the information. Recruitment was conducted on a voluntary basis amongst students at three educational establishments in Sherbrooke, Quebec. Students from various disciplines attending the University of Sherbrooke, Bishop's University and the Eastern Townships' Vocational Education Centre took part in the study. University students enrolled in classes of psychology (58%), social work (12%), biology (7%), administration (5.3%) and sociology (4%) as well as vocational education students (14%) comprised the sample.

Fifty-three percent of the participants had previously obtained a college/CEGEP diploma whereas 27% had a high school leaving diploma, 14% had a university diploma and the remaining 2.5% of the sample had other types of diplomas.

Procedures

All students were recruited in their respective classes. Autorisation was obtained beforehand from the professors and the school administrators. To begin with, students were informed verbally of the nature of the study, the confidentiality of their answers and the voluntary basis of their participation. The same information was subsequently presented in the informed consent document which the participants were requested to read and sign before proceeding to complete the self-report measures. The students were also asked to complete a form requesting basic demographic data. The self-report measures described below were handed out and completed within class time. The administration of the test battery took approximately 30 to 45 minutes. The researcher remained available to answer questions and/or receive comments pertaining to the self-report measures, the informed consent and the study in general. The questions asked by the participants included queries concerning the specific self-report measures (e.g., "Can I refer to the same traumatic experience more than once?"; "Does the traumatic event have to have happened during the last seven days?"). Students handed in their completed documents as soon as they had finished. The informed consent document was collected separately from the questionnaire booklet. The vast majority of the sample was recruited directly by the researcher (n = 369). The remaining participants were recruited in class

by the professor in the absence of the researcher, and the self-report measures were exceptionally completed outside of class. Data were double entered in order to limit the risk of data entry errors.

Measures

Potentially Traumatic Events

Two measures were used to evaluate the presence, intensity and subjective distress of PTEs. The Traumatic Events Questionnaire (TEQ; Vrana & Lauterbach, 1994) is a self-report measure which assesses the frequency, type, severity and current subjective distress with regards to nine specific types of PTEs previously identified in the literature as potentially eliciting posttraumatic symptoms. Examples of specific types of traumatic events include: natural disasters such as tornados and earthquakes, violent crime such as rape or robbery and physical and sexual abuse as a child or as an adult. Two residual categories are included in order to assess other events that were not previously mentioned as well as any PTE that was considered too disturbing by the participants to name. For each event endorsed, the participants are asked to indicate the number of times the event occurred as well as their age at the time. Furthermore, the participants are asked to rate the severity of the event (the extent to which they were injured, if applicable) and the intensity of their associated distress (at the time of the event as well as currently) on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*severely* or *extremely*). For those participants who endorse more than one event, they are asked to indicate which event was the most traumatic. Those who didn't endorse any

of the items in the scale are asked to describe the most traumatic event, if any, which had happened to them.

The TEQ was slightly modified to better suit the needs of the present study and to adhere to the criteria of the DSM-IV for PTEs as previously described. Two supplementary questions, as well as additional segments to three existing questions, were added. The question "Did you feel helpless at that time?" was added to assess a participant's impression of helplessness for each category of PTE. In questions #6, #7, and #8, "What was the event?" was added so as to better comprehend the PTEs reported. In order to explicitly assess a participant's perception of threat to another person's life, the question "Did you feel your life was threatened?" was modified to the following: "Did you feel that your life, or someone else's life, was threatened?" In order to assess a participant's perception of fearfulness, "How traumatic was this for you at that time?" was modified to the following: "How traumatic or fearful was this for you at that time?" The question "How traumatic is this for you now?" was modified to "How traumatic or fearful is this for you now?" As well, the specific questions describing possible types of sexual abuse were removed in questions #4 and #5 and replaced with a more general request: "Please specify the type of abuse (physical or sexual)". When applicable, the 7-point Likert scale identified above was equally utilized with these modifications.

Psychometric properties of the TEQ indicate a good reliability score (α = .72) (Lev-Wiesel & Daphna-Tekoa, 2007). In the current sample, the TEQ demonstrated

adequate internal consistency (α = .69). As a French translation was non-existent, the measure was translated for use with a francophone population. The TEQ was translated from English to French by the researcher who is bilingual. The grammatical quality of the French version was verified by an independent Francophone doctoral student. Using the data of the present study, the internal consistency of the translated measure was verified and it possesses adequate internal consistency (α = .71).

The Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1997) is a 22-item self-report questionnaire assessing posttraumatic symptomology. Respondants are requested to indicate a specific stressful life event and to rate their related subjective distress within the past week. Each item is scored on a 4-point Likert scale (0 = *not at all*, 1 = *a little bit*, 2 = *moderately*, 3 = *quite a bit* and 4 = *extremely*). Subjective distress is rated with items such as: "Any reminder brought back feelings about it"; "I was jumpy and easily startled"; "I had dreams about it". As the participants in our study were requested to complete the IES-R immediately following the completion of the TEQ, they were asked to rate their subjective distress in relation to the most traumatic event they had previously reported in the TEQ. High levels of internal consistency (α = .79 – .94) and test-retest validity (*r* = .89 – .94) were noted (Weiss & Marmar). The IES-R demonstrated excellent internal consistency in this sample (α = .94). The French version, Échelle d'Impact de l'Événement-Révisée (Brunet, St. Hilaire, Jehel, & King, 2003), possesses good psychometric qualities with good internal consistency (α = .81– .93) and satisfactory test-retest reliability (α = .71– .76) (Brunet et al.). The current sample also

demonstrated excellent internal consistency (α = .94) for the French version of the measure.

GAD Symptoms

Two measures were used to evaluate the tendency to worry and the other GAD symptoms. The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) was used to assess the tendency to engage in excessive and uncontrollable worry. Sixteen items are rated on a 5-point Likert scale ranging from 1 (*not at all typical*) to 5 (*very typical*). Examples of these items include: "My worries overwhelm me"; "Many situations make me worry"; "I never worry about anything". The PSWQ has good internal consistency (α = .86 – .95), good test-retest reliability (*r* = .74 – .93*)* as well as good convergent and discriminant validity (Molina & Borkovec, 1994). The current sample demonstrated excellent internal consistency (α = .94). The French version, Questionnaire d'Inquiétudes de Penn State (QIPS; Gosselin, Dugas, Ladouceur, & Freeston, 2001) shows excellent internal consistency (α = .82 – .92), very good test-retest reliability (*r* = .92) and very good convergent validity with other measures of worry and anxiety (Gosselin et al.). The French version demonstrated excellent internal consistency in the current sample (α = .92).

A second measure, the Questionnaire sur l'Inquiétude et l'Anxiété (QIA; Dugas et al., 2001) was used to assess the somatic symptoms of GAD, along with the other symptoms of GAD required to fulfill the diagnostic criteria of the DSM-IV (American

Psychiatric Association, 2000). The QIA is an 11-item self-report measure rated by participants on a 9-point Likert scale (0 = *not at all, never, no difficulty* to 8 = *very severely, everyday, extreme difficulty*). The first item solicits the most frequent worry topics ("What subjects do you worry about most often?"). The remaining items assess the diagnostic criteria including the six somatic symptoms of GAD such as muscle tension and fatigue, as well as excessive worry, difficulty controlling worry, and the extent of the interference with one's life. The instrument presents good validity and shows satisfactory test-retest reliability (nine weeks, agreement = .79) (Dugas et al.). The English translation, The Worry and Anxiety Questionnaire (WAQ; Dugas et al.), shares similar psychometric properties with the QIA. The current sample demonstrates excellent internal consistency for the QIA (α = .90) as well as for the English translation of the measure (α = .91).

Cognitive Vulnerabilities

Two instruments were used to assess the cognitive vulnerabilities targeted in the study. The Inventaire d'Intolérance à l'Incertitude (III; Gosselin et al., 2008) measures the tendency of an individual to consider the uncertainties in life as unacceptable. This self-report measure has 45 items which are divided into two distinct parts. Part A groups together items measuring an individual's tendency to be intolerant of uncertainty, for exemple, "I have difficulty accepting that the future is uncertain" and "I find it unbearable not to have guarantees in life". Part B groups together items measuring six cognitive and behavioural manifestations of this intolerance, such as control and

reassurance ("I prefer to control everything in order to decrease uncertainties"; "When I am uncertain, I need to be reassured by others"). Items are rated on a 5-point Likert scale (1 = *not at all typical* to 5 = *completely typical*). For the purposes of our study, the scores used in our analyses were derived from combining the scores of Part A and Part B to generate one score. The III shows excellent internal consistency (Part A: α = .96; Part B: α = .97), good convergent validity as well as adequate temporal stability after a 5-week interval (Part A: r = .96; Part B: r = .75) (Gosselin et al.). The current sample also demonstrated excellent internal consistency (Part A: α = .95; Part B: α = .97). The English translation, the Intolerance of Uncertainty Inventory (IUI), was completed by two bilingual doctoral students using a back translation method. The IUI is in the process of being validated and the preliminary results show comparable properties to the francophone version (Carleton, Gosselin, & Asmundson, 2009). The internal consistency of the IUI was verified using the data of the present study. The IUI shows excellent internal consistency for Part A (α = .93) and for Part B (α = .97).

The Questionnaire d'Évitement Cognitif (QEC; Gosselin et al., 2002) is a 25-item self-administrated measure of five cognitive avoidance strategies related to worry and GAD, such as distraction and thought suppression. Examples of these items include "I often do things to distract myself from my thoughts" and "There are things that I try not to think about". The items are rated by participants on a 5-point Likert scale (1 = *not at all typical* to 5 = *completely typical*). This instrument possesses excellent internal consistency (α = .92 – .95), very good test-retest reliability at four weeks (r = .81),

adequate criterion-related validity and convergent validity (Gosselin et al.). Using the current sample, the internal consistency of the measure was excellent (α = .96). The English translation, The Cognitive Avoidance Questionnaire (CAQ; Sexton & Dugas, 2008) demonstrates excellent internal consistency (α = .95), good test-retest reliability over a 5-week interval (r = .85) and evidence of convergent and divergent validity (Sexton & Dugas). As demonstrated in the current sample, the internal consistency of the translated measure was excellent (α = .96).

Results

The results of the preliminary analyses are initially discussed along with a detailed description of selected variables retained for use in our study, in order to facilitate the comprehension of the main analyses. A summary of these variables is presented in Appendix A. Descriptive statistics for several variables used in the study are presented in Table 1. Additional descriptive data are presented in Table 2 and 3 regarding the types of PTEs reported by the participants based on their age and sex. These elements were not considered in the main analyses of our study yet provide more precise information about our sample. Subsequently, the results of the main analyses, including correlations, regressions, analyses of variance and chi-square tests, are detailed and explained.

Preliminary Analyses

Prior to carrying out the main statistical analyses, the data were screened to verify whether statistical assumptions were met and to determine whether the data were suitable for further analyses (see Tabachnick & Fidell, 2007, for a review of the screening procedures). The assumption of normality, linearity, homogeneity of variance, multicollinearity and singularity were met for all the data. Preliminary analyses were conducted in order to gain a sense of the basic characteristics of the sample in terms of past traumatic experiences and the presence of GAD symptoms. As our method included the recruitment of participants of different languages, preliminary analyses (t tests) were

performed in order to detect the presence of significant differences between the Francophones and the Anglophones in relation to our measures of GAD symptomology and the cognitive vulnerabilities. The only difference observed between the two groups of participants was the total score of the CAQ ($t(412) = 3.43$, $p<.001$). The anglophone participants presented a higher level of cognitive avoidance than the francophone participants. All of the subsequent analyses involving the variable Cognitive avoidance were done with or without using the language of the participant as a covariate. As the use of the covariate did not result in any differences in the effects observed, only the results of the analyses done without using the covariate are reported in order to simplify the text.

Overall Indicator of the Sample

Analyses of the information obtained from the TEQ enhanced our understanding of the participants' previous exposure to a PTE. To begin with, as an overall indicator of our sample, the presence or absence of previous exposure to a PTE was verified among the participants. According to our results, 79.5% of the sample (n = 333 participants) reported previous exposure to at least one PTE. These participants had answered affirmatively to at least one of the 11 questions in the self-report measure, for example, whether they had experienced a natural disaster such as a tornado, hurricane, flood, or major earthquake.

Variables

Exposure to a PTE. Several variables of interest were obtained following the exhaustive analyses of the information obtained from the TEQ which required more thorough descriptions. The presence or absence of previous exposure to a PTE described above was further verified by applying two requirements. Firstly, the trauma exposure as described by the participant needed to fulfill the DSM-IV criteria for a PTE. We measured the fulfilment of the DSM-IV criteria by assessing the following information obtained by the TEQ: the participants' perception of threat to their personal integrity or that of others ("Did you feel your life, or someone else's life, was threatened?"), their impression of helplessness ("Did you feel helpless at the time?") and the intensity of their reactions of fear during the exposure ("How traumatic or fearful was this for you at that time?"). Secondly, an intensity requirement was applied to the participants' scores using a conventional cutoff value for Likert measures. This cutoff value has been previously used, for example, to determine the fulfillement of criteria for GAD on self-report measures. For an event to be determined as a sufficiently intense PTE, the participant must have rated their perception of threat and the intensity of their reactions to be at least 4 or more on the Likert scale ranging from 1 (*not at all*) to 7 (*severely* or *extremely*) thereby indicating a moderate to severe or extreme reaction. Using the above requirements, our analysis showed that 50.1% of the sample (n = 210) reported having experienced at least one PTE during which they felt a significant perception of threat to their, or another person's, personal integrity as well as significantly intense reactions of fearfulness and helplessness. Accordingly, in our subsequent analyses and discussion,

the presence or absence of previous exposure to a PTE will refer exclusively to this variable, *Exposure to a PTE.*

Current distress on TEQ/Exposure to a PTE. We then verified the percentage of participants who were currently experiencing a perceived distress and fearfulness associated with previous exposure to a PTE using the measures obtained in the TEQ. Our analysis showed that 37% of the sample (155 participants; N = 419) reported currently experiencing a sufficiently intense perceived distress and fearfulness associated with a past PTE. We used the same intensity requirement, a cut-off value of 4 or more on the Likert scale, for responses to the following question: "How traumatic or fearful for you is this now?" This dichotomous variable is labelled *Current distress on TEQ/Exposure to a PTE* in our analyses and our discussion.

Number of PTEs. We also chose to take into account the number of PTEs to which the participants in the sample were exposed, including only those events endorsing the DSM criteria and meeting our intensity requirement. An adjustment was made to take into account any particular event that was referred to more than once. Continuous events that could have occurred repeatedly over time (such as physical or sexual abuse) were counted as one event. According to our results, participants in the sample had experienced an average of .90 (SD = 1.22) traumatic events. Among our participants, 50% had not previously experienced a PTE, 28% had previously experienced a single PTE, 11% had previously experienced two PTEs, 7% had

experienced three PTEs and 4% had experienced from four to eight PTEs. This variable is referred to as the *Number of PTEs.*

Current distress on TEQ/Number of PTEs. A related variable measured the number of PTEs experienced in which the participant reported a sufficiently intense level of current distress, as indicated on the TEQ ("How traumatic or fearful for you is this now?"). This variable is named *Current distress on TEQ/Number of PTEs.*

Most traumatic event. Analysis of the participants' reactions to the most traumatic event experienced, amongst those that they reported in the TEQ, led to the identification of a continuous variable entitled *Most traumatic event.* This variable denotes the intensity of the reaction during exposure to a PTE. The participants who had reported past exposure to more than one PTE were asked to identify the event they deemed was the most traumatic. If participants reported having experienced only one PTE, we considered it as their most traumatic event. We applied the same two requirements previously explained and totaled the participants' ratings to the following questions: "Did you feel your life, or someone else's life, was threatened?"; "Did you feel helpless at the time?"; "How traumatic or fearful was this for you at that time?"

Current distress on TEQ/Most traumatic event. This continuous variable, related to the Most traumatic event, targeted a participant's current reaction to the most traumatic event reported. We used the same intensity requirement, a cut-off value of 4 or

more on the Likert scale, for responses to the following question on the TEQ pertaining to the most traumatic event: "How traumatic or fearful for you is this now?"

Currentt distress on IES-R /Most traumatic event. Furthermore, the results obtained using the IES-R allowed the creation of an analogous variable, *Current distress on IES-R/Most traumatic event*. This continuous variable takes into account the participant's assessment of their subjective distress during the past seven days pertaining to the most traumatic event previously reported on the TEQ. Current distress includes associated intrusion, avoidance, and hyperarousal symptoms. Participants who did not report the experience of a PTE yet mentioned a stressful life experience were not included in the results.

It is noteworthy to mention that the IES-R was used in our study as an indicator of the general distress reported by the participant rather than as a specific mesure of PTSD. Although the IES-R has been used as to indicate the presence of PTSD in other studies, Creamer, Bell, & Failla (2003) sustain that the items do not clearly measure the DSM-IV criteria of PTSD. Their research suggests that the IES-R is sensitive to a broader construct of traumatic stress in those with lower symptom levels, such as in non-clinical samples as compared to the higher symptom levels found in clinical samples. Notwithstanding our intention mentioned above, it is interesting to observe that 15% of our participants reported a total score of 33 or higher on the IES-R which is deemed sufficient to indicate the presence of PTSD.

Presence of GAD. An analysis of the data verified the number of participants in the sample who obtained a sufficiently high score on the WAQ to fulfill the criteria of GAD symptomology. Our results showed that 24% (n = 99) of the participants fulfilled the criteria for GAD, using a cut-off value of 4 or higher for each item on the WAQ. This variable is labelled as *Presence of GAD* in our study.

Other variables. The *Tendency to worry*, the *Somatic symptoms of GAD*, *Intolerance to uncertainty* and *Cognitive avoidance* are also variables retained for use in our study. They are based on the scores of the corresponding self-report measures previously described.

Table 1

Descriptive Statistics for the Continuous Study Variables

Variable	*N*	Minimum	Maximum	Mean	*SD*
GAD symptoms :					
Tendency to worry	419	19	80	46.86	12.51
Somatic symptoms	416	0	46	24.02	10.29
Cognitive vulnerabilities :					
Intolerance to uncertainty	415	45	225	107.44	37.52
Cognitive avoidance	414	25	125	55.30	20.47
PTE exposure :					
Number of PTE	419	0	8	0.90	1.22
Current distress TEQ/ Number of PTE	419	0	7	0.64	1.06
Most traumatic event	149	13	21	18.54	2.22
Current distress TEQ/ Most Traumatic Event	121	4	7	5.12	1.01
Current distress IES-R/ Most traumatic event	277*	0	81	19.79	18.47

* Participants referring to events other than those reported on questions 1 to 11 on the TEQ were removed.

Table 2

Frequency of Types of Potentially Traumatic Events for Women and Men

Type of PTE	Sample (yes/no)		With applied criteria		With current distress	
Accident	33 %	W=30 % M=39 %	17 %	W=17% M=18%	8 %	W=8% M=9%
Natural disaster	17 %	W=15% M=21%	4 %	W=4% M=4%	2 %	W=1% M=3%
Violent interpersonal crime	16 %	W=16% M=15%	6 %	W=7% M=4%	5%	W=7% M=1%
Sexual/physical abuse as a child	14 %	W=15% M=13%	5 %	W=7% M=2%	6 %	W=8% M=1%
Forced sexual experiences as an adult	6 %	W=8% M=2%	1 %	W=1% M=1%	2 %	W=3% M=1%
Sexual/physical/other abuse as an adult	11 %	W=12% M=4%	5 %	W=6% M=1%	3 %	W=4% M=1%
Witness of violence towards others	12 %	W=10% M=21%	7 %	W=7% M=7%	3 %	W=3% M=3%
Threat to one's life or threat of serious injury	12 %	W=22% M=36%	16 %	W=15% M=19%	10 %	W=11% M=8%
News of mutilation, serious injury/violent or unexpected death of someone close to you	37 %	W=40% M=32%	15 %	W=16% M=14%	11 %	W=12% M=9%
Other very traumatic event	17 %	W=14% M=12%	9 %	W=9% M=8%	8 %	W=8% M=7%
Confidential PTE	10 %	W=10% M=9%	5 %	W=6% M=4%	6 %	W=7% M=4%

W = Women; M = Men

Table 3

Frequency of Types of Potentially Traumatic Events and Age

Type of PTE	Age of PTE 0 to 5 years	Age of PTE 6 to 11	Age of PTE 12 to 17	Age of PTE 18 +
Accident	1.9 %	5 %	11 %	14.3 %
Natural disaster	0.5 %	7.2 %	6.2 %	2.1 %
Violent interpersonal crime	0.7 %	3.1 %	5.3 %	6.7 %
Sexual/physical abuse as a child	5.5 %	7.6 %	1 %	-
Forced sexual experiences as an adult	-	-	2.6 %	3.3 %
Sexual/physical/other abuse as an adult	-	-	3.1 %	7.2 %
Witness of violence towards others	0.5 %	1.9 %	5.5 %	3.8 %
Threat to one's life or threat of serious injury	3.3 %	4.8 %	8 %	9.5 %
News of mutilation, serious injury/violent or unexpected death of someone close to you	0.7 %	4.5 %	13.6 %	17.4 %
Other very traumatic event	0.5 %	2.4 %	4.8 %	6 %
Confidential PTE	1.2 %	1.7 %	3.6 %	2.9 %

Main Analyses

Correlations

As the goal of the present study was to verify the relationship between the exposure to a PTE, the presence of GAD symptomology, and the cognitive vulnerabilities involved in the development and maintenance of the symptoms of GAD, various analyses were performed in order to better comprehend this link. Spearman correlations were calculated in order to validate the relationship between the study variables. The correlation coefficients obtained, as presented in Table 2, confirmed that the variables related to exposure to a PTE were all positively correlated at a significant level to the variables related to the symptoms of GAD as well as to the cognitive vulnerabilties associated with GAD. More precisely, with regards to the Tendency to worry (PSWQ), the variables Current distress on TEQ/Exposure to a PTE, Current distress on TEQ/Number of PTEs, Most traumatic event, Current distress on TEQ/Most traumatic event and Current distress on IES-R/Most traumatic event were moderately correlated whereas the variables Exposure to a PTE and Number of PTEs were modestly correlated.

Pertaining to the Somatic symptoms of GAD (WAQ), the variables Current distress on TEQ/Exposure to a PTE, Current distress on TEQ/Number of PTEs, Most traumatic event, Current distress on TEQ/Most traumatic event and Current distress on IES-R/Most traumatic event were all moderately correlated while Exposure to a PTE and Number of PTEs were modestly correlated.

Regarding the propensity to be intolerant of uncertainty (III), the variables Current distress on TEQ/Exposure to a PTE, Current distress on TEQ/Number of PTEs, Current distress on TEQ/Most traumatic event and Current distress on IES-R/Most traumatic event were all moderately correlated while Exposure to a PTE, Number of PTEs and Most traumatic event were modestly correlated.

Lastly, in relation to the tendency to use cognitive avoidance (CAQ), the variables Current distress on TEQ/Exposure to a PTE, Current distress on TEQ/Number of PTEs and Current distress on IES-R/Most traumatic event were moderately correlated. Exposure to a PTE, Number of PTEs, Most traumatic event and Current distress on TEQ/Most traumatic event were modestly correlated. In summary, our results showed that participants with past trauma exposure and participants manifesting current distress (on the TEQ and IES-R) also reported experiencing increased GAD symptomology as well as an increased tendency to be intolerant of uncertainty and to use cognitive avoidance.

Furthermore, the variable Presence of GAD (WAQ) was significantly correlated at a moderate level with Current distress on TEQ/Exposure to PTE, Current distress on TEQ/Number of PTEs, Current distress on TEQ/Most traumatic event and Current distress on IES-R/Most traumatic event. It was not however significantly correlated with the variables Exposure to PTE, Number of PTEs and Most traumatic event.

Table 4

Intercorrelations Between the Variables

Variable	2	3	4	5	6	7	8	9	10	11	12
1. Exposure to a PTE	.46**	.94**	.47**	.	.14	.21**	.10*	.13**	.06	.12*	.14**
2. Current Distress TEQ/Exposure PTE		.52**	.97**	.44**	.	.44**	.26**	.27**	.20**	.25**	.27**
3. Number of PTEs			.56**	.38**	.26**	.31**	.13*	.16**	.09	.15**	.18**
4. Current distress TEQ/Number of PTEs				.43**	.29**	.48**	.26**	.28**	.20**	.26**	.28**
5. Most traumatic event					.13	.30**	.22**	.27**	.16	.19*	.12*
6. Current distress TEQ/Most traumatic event						.45**	.30**	.26**	.22*	.27**	.18*
7. Current distress IES-R/Most traumatic event							.30**	.34**	.27**	.31**	.38**
8. Tendency to worry								.68**	.	.70**	.50**
9. Somatic symptoms of GAD									.	.57**	.47**
10. Presence of GAD										.	.
11. Intolerance to uncertainty											.59**
12. Cognitive avoidance											

*p < .05. **p < .01.

Regression Analyses

Subsequently, simple regressions were carried out in order to verify if the exposure to a PTE and the distress due to this exposure allowed the prediction of GAD symptomology (the tendency to worry and the somatic symptoms of GAD) and the cognitive vulnerabilities (intolerance to uncertainty and cognitive avoidance). It is important to note that for all the simple regressions carried out, the variables were entered as predictors in separate analyses, in order to avoid the effects associated with multicollinearity. To begin with, variables associated with exposure to a PTE (Number of PTEs, Current distress on TEQ/Number of PTEs, Most traumatic event, Current distress on TEQ/Most traumatic event and Current distress on IES-R/Most traumatic event) were entered as predictors of the dependent variable, the Tendency to worry. Our results, as shown in Table 3, indicated that the variables associated with trauma exposure significantly predicted the Tendency to worry. More specifically, the following variables are listed in order of the percentage of the variance they explained: Current distress on IES-R/Most traumatic event (9%), Current distress on TEQ/Most traumatic event (7%), Current distress on TEQ/Number of PTEs (4%), Most traumatic event (4%) and Number of PTEs (2%).

These same variables associated with exposure to a PTE were then entered as predictors of the dependent variable, the Somatic symptoms of GAD. As was the case with the Tendency to worry, the variables associated with exposure to a PTE significantly predicted the presence of somatic symptoms. The variables are listed in

order of the percentage of variance predicted: Current distress on IES-R/Most traumatic event (12%), Current distress on TEQ/Most traumatic event (7%), Current distress on TEQ/Number of PTEs (7%), Most traumatic event (7%) and Number of PTEs (3%).

Once more, the variables related to PTE exposure were entered, this time as predictors of Intolerance of uncertainty. All significantly predicted the presence of Intolerance of uncertainty in order of the percentage of variance explained: Current distress on IES-R/Most traumatic event (10%), Current distress on TEQ/Most traumatic event (7%), Current distress on TEQ/Number of PTEs (5%), Most traumatic event (4%) and Number of PTEs (2%).

Lastly, the variables associated with PTE exposure were entered as predictors of Cognitive avoidance and all significantly predicted the variance except for the Most traumatic event. The variables are listed in order of the percentage of variance explained: Current distress on IES-R/Most traumatic event (18%), Current distress on TEQ/Number of PTEs (8%), Number of PTEs (5%) and Current distress on TEQ/Most traumatic event (3%).

In summary, the results of the regression analyses confirmed that all of the variables related to the exposure to a PTE, with one exception, predicted the tendency to worry, the presence of the somatic symptoms of GAD, intolerance of uncertainty and

cognitive avoidance. The sole exception was that the Most traumatic event did not predict the use of cognitive avoidance.

Table 5

Summary of Regression Analyses for PTE Variables

Predicting Scores of GAD Symptomology and Cognitive Vulnerabilities

Independent variable	β	R^2	df1	df2	F
		Tendency to worry			
Number of PTEs	.13	.02	1	417	6.81**
Current distress TEQ/Number of PTEs	.21	.04	1	417	19.24**
Most traumatic event	.20	.04	1	147	6.13*
Current distress TEQ/Most traumatic event	.27	.07	1	119	9.45**
Current distress IES-R/Most traumatic event	.29	.09	1	275	25.90**
		Somatic symptoms of GAD			
Number of PTEs	.18	.03	1	414	14.16**
Current distress TEQ/Number of PTEs	.26	.07	1	414	30.87**
Most traumatic event	.26	.07	1	416	10.88**
Current distress TEQ/Most traumatic event	.26	.07	1	119	8.58**
Current distress IES-R/Most traumatic event	.34	.12	1	273	35.48**
		Intolerance to uncertainty			
Number of PTEs	.14	.02	1	413	8.48**

Current distress TEQ/Number of PTEs	.23	.05	1	413	22.42**
Most traumatic event	.19	.04	1	146	5.53*
Current distress TEQ/Most traumatic event	.27	.07	1	117	9.36**
Current distress IES-R/Most traumatic event	.32	.10	1	274	30.81**
		Cognitive avoidance			
Number of PTEs	.22	.05	1	412	21.80**
Current distress TEQ/Number of PTEs	.28	.08	1	413	33.77**
Most traumatic event	.13	.02	1	147	2.48
Current distress TEQ/Most traumatic event	.18	.03	1	118	4.11*
Current distress IES-R/Most traumatic event	.42	.18	1	274	59.11**

*$p < .05$. **$p < .01$.

Analyses of Variance

In order to verify the presence of a significant difference between the participants exposed or not to a PTE in terms of their tendency to worry, somatic symtoms of GAD, intolerance of uncertainty and cognitive avoidance, analyses of variance (ANOVA) were carried out. The independent variable (IV) was the exposure, or lack of exposure, to a PTE. The dependent variables were the measures of the symptoms of GAD and the

associated cognitive vulnerabilities. As shown in Table 4, the results obtained enabled us to observe a significant difference between the two groups of participants regarding Somatic symptoms of GAD, Intolerance of uncertainty, and Cognitive avoidance. More precisely, the means of each group showed the participants who had been previously exposed to a PTE presented more somatic symptoms of GAD, higher levels of intolerance of uncertainty and cognitive avoidance strategies. No significant difference between the two groups was observed for the Tendency to worry.

ANOVA were equally carried out with the aim of verifying the presence of a significant difference between the participants experiencing, or not, current distress on the TEQ associated with past exposure to a PTE in terms of their tendency to worry, somatic symptoms of GAD, intolerance of uncertainty and cognitive avoidance. The results obtained enabled us to observe a significant difference between the two groups of participants regarding the tendency to worry, somatic symptoms of GAD, intolerance of uncertainty, and cognitive avoidance. The means of the two groups (Table 4) showed that those participants experiencing current distress on the TEQ due to a previous trauma exposure presented more worry, somatic symptoms associated with GAD, intolerance of uncertainty, and cognitive avoidance than the participants exposed to a previous trauma who did not report experiencing any current distress.

Table 6

Analysis of Variance of Means of Participants' Exposure to a PTE and Current Distress on TEQ

Variable	Mean	SD	Mean	SD	df	F
	Without exposure		With exposure			
Symptoms of GAD :						
Tendency to worry	45.72	12.09	48	12.85	1, 417	3.51
Somatic symptoms	22.72	10.39	25.31	10.06	1, 414	6.68*
Cognitive Vulnerabilities :						
Intolerance to Uncertainty	103.3	37.56	111.6	37.11	1, 413	5.13*
Cognitive Avoidance	52.28	18.98	58.34	21.48	1, 412	9.25**
	Without current distress		With current distress			
Symptoms of GAD :						
Tendency to worry	44.57	12.39	50.76	11.77	1, 417	25.30***
Somatic symptoms	21.9	10.17	27.59	9.51	1, 414	31.84***
Cognitive Vulnerabilities :						
Intolerance to Uncertainty	100.8	36.68	118.92	36.28	1, 413	23.67***
Cognitive Avoidance	51.1	18.75	62.56	21.33	1, 412	32.43***

*$p < .05$. **$p < .01$. ***$p < .001$.

ANOVA were similarly carried out in order to verify the presence of a significant difference between the participants fulfilling GAD criteria and those reporting insufficient symptomology to fulfill GAD criteria as assessed by the WAQ, and the variables implicated in the exposure to a PTE (Number of PTEs, Current distress on TEQ/Number of PTEs, Most traumatic event, Current distress on TEQ/Most traumatic event and Current distress on IES-R/Most tramatic event). The results obtained (Table 5) enabled us to observe a significant difference between the two groups of participants regarding the current distress on the TEQ associated with the number of PTEs, the current distress on the TEQ associated with the most traumatic event reported and the current distress on the IES-R associated with the most traumatic event reported. The means of the two groups showed that the participants in our study fulfilling GAD criteria presented higher levels of current distress on the TEQ and IES-R due to a previous trauma exposure as compared those not meeting GAD criteria.

Table 7

Analysis of Variance of Means of Participants' GAD Symptomology

Trauma Exposure	Mean	SD	Mean	SD	df	F
	Without GAD		With GAD			
Number of PTEs	0.84	1.22	1.08	1.24	1, 410	2.82
Current distress TEQ/Number of PTEs	0.54	0.99	0.98	1.12	1, 410	13.14**
Most traumatic event	18.23	2.27	19.04	2.09	1, 144	3.53
Current distress TEQ/Most traumatic event	4.95	0.98	5.39	0.99	1, 118	5.55*
Current distress IES-R/Most traumatic event	16.68	17.12	28.29	19.03	1, 270	21.53**

*p < .05. **p < .01.

Chi-square Analyses

Lastly, a Pearson's chi-square analysis was conducted comparing whether or not a person had experienced current distress on the TEQ and whether or not they were assessed as fulfilling the criteria related to GAD symptomology. The results of this analysis indicated that the participants who experienced current distress on the TEQ associated with a past PTE were significantly more likely to be assessed as fulfilling the criteria for GAD ($\chi^2 = 16.41$, $p < .001$) than those who did not experience current distress. Additionally, the participants who had not experienced current distress on the TEQ due to previous exposure to a PTE were not more likely to be assessed as fulfilling

the criteria for GAD than those whom had not been exposed to a PTE ($\chi^2 = 1.61$, $p = .12$).

Discussion

The hypotheses of our study are initially discussed in light of the results obtained by our experimentation. Current knowledge of exposure to a PTE and GAD are also considered in relation to our findings. Afterwards, the principal limitations of the study are examined. Lastly, possible outcomes of our study, potential clinical applications as well as orientations for future research are provided.

Confirmation of the Hypotheses

The primary purpose of our study was to verify the relationship between the exposure to a PTE, the presence of GAD symptomology and the cognitive vulnerabilities involved in the development and maintenance of the symptoms of GAD. Before proceding to discuss our hypotheses, a summary of the salient preliminary results is called for. Our preliminary results revealed that 79.5 % of the sample reported experiencing a previous exposure to a PTE. It is interesting to note that the percentage we obtained is consistent with the percentages reported in previous studies of non-clinical populations (Gold, Marx, Baillo, & Sloan, 2004; Lauterbach & Vrana, 2001; Norris, 1992; Resnick, Kilpatrick, Dansky, Saunders, and Best, 1993; Vrana & Lauterbach, 1994) thus indicating the representativity of our sample. Following the application of the DSM-IV criteria as well as an intensity criterion necessitating sufficiently intense reactions to the PTEs reported, this percentage decreased to 50.1% of our sample previously exposed to at least one PTE that respected these

criteria. To our knowledge, no previous studies have applied an intensity requirement to the participants' ratings of a PTE, such as the one used in the present study. Other studies consulted (e.g., Evans, Patt, Giosan, Spielman, & Difede, 2009) used a dichotomous variable (yes/no) without further criteria to measure or quantify the traumatic history, similar to our first overall measure of reported exposure or lack of exposure to a traumatic event. It is interesting to note that 37% the sample (155 participants; N = 419) reported on the TEQ that they were currently experiencing a sufficiently intense perceived distress and fearfulness associated with a past traumatic event. Equally of interest is the preliminary result indicating that 24% (n = 99 participants) of our sample fulfilled the criteria for GAD, using a cut-off value of 4 or higher for each item on the WAQ. This percentage is consistent with the percentages found in previous non-clinical studies using self-report measures (e.g., Belleville, Bélanger, Ladouceur, & Morin, 2007).

Our first hypothesis stipulated that a significant relationship exists between previous exposure to a PTE (presence or absence of exposure to a PTE, intensity of the reaction during the exposure and associated distress) and current manifestations of worry and the somatic symptoms associated with GAD. The results from our various analyses converge to indicate that certain factors related to the previous exposure to a PTE do seem to be implicated. In fact, the current distress associated with a past PTE seems to be one of the factors consistently involved in the manifestations of worry and the

somatic symptoms associated with GAD. The intensity of the reaction also seems to be implicated, although to a lesser degree.

Our results revealed significant positive correlations between the variables related to PTE exposure and the variables related to the symptoms of GAD. Regarding the size of the correlations observed in our analyses, the current distress associated with a previous PTE and the intensity of the reaction presented moderate correlations with the tendency to worry and the current manifestations of the somatic symptoms of GAD whereas the presence or absence of exposure to a PTE and the number of PTEs experienced presented modest correlations. Our results from the regression analyses indicated that the variables pertaining to the current distress associated with a past PTE consistently predicted the highest amounts of variance in the tendency to worry and the somatic symptoms of GAD. The variables related to the intensity of the reaction and number of PTEs experienced also predicted the tendency to worry and the somatic symptoms of GAD, albeit predicting lower amounts of variance. The results from our analyses of variance showed that those individuals experiencing current distress on the TEQ related to past exposure to a PTE were more likely to manifest a heightened tendency to worry as well as increased somatic symptoms of GAD. Those participants fulfilling GAD criteria presented higher levels of current distress associated with past trauma on both the TEQ and the IES-R than those reporting insufficient GAD criteria. Taken together, these results indicate that a person having been exposed to a PTE and experiencing current distress associated with that exposure is more likely to manifest

GAD symptomology and fulfill the criteria of GAD than those not having been previously exposed or not experiencing current distress.

In summary, our first hypothesis was confirmed and interesting information has resulted from our analyses. Overall, the current distress associated with previous exposure to a PTE seems to play a particularly important role in the manifestations of the tendency to worry and the somatic symptoms of GAD as well as in the fulfillment of the criteria of GAD. To a lesser extent, the intensity of the reaction to exposure to a PTE also seems to be an important element to consider.

Our above findings, which draw attention to the role of the current distress as well as the intensity of the reaction during exposure, are endorsed by previous trauma-related studies of PTSD (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Boals & Schuettler, 2009; Brewin et al., 2000; Ozer et al., 2003). These studies examined the risk and predictive factors related to the development of posttraumatic psychopathology. They suggested that it is not solely exposure to a PTE per say, nor the history of prior trauma, nor the intensity of the event so much as the individual reaction to the event(s) in terms of the peritraumatic emotional responses, both during and afterwards, which in turn are predictive of existing distress and psychopathology. Ozer and colleagues stressed that more attention needs to be paid to the sequelae of exposure to a PTE rather than the preexisting conditions prior to exposure or the aspects of the exposure itself. Maes and colleagues (2000) studied victims of man-made accidents and the subsequent

posttraumatic psychopathlogy, including GAD. They found that one of the best predictors for GAD was a victim's impression of losing control during the traumatic event, thus underscoring the importance of the peritraumatic responses in the development of GAD. These studies implicating the peritraumatic emotional responses to a past PTE coupled with the fndings in our study implicating the current distress associated with a past PTE as well as the intensity of the reaction help to shed light on some of the factors possibly linked to GAD symptomology after exposure to a PTE. However, the correlational nature of our study implies that caution should be exercised when drawing conclusions with regards to the relationships observed.

As mentioned previously, our results suggest that the intensity of the reaction to the exposure to a PTE also seems to be an important element to consider in posttraumatic psychopathology. These results are supported by a recent study (Crawford, Lang, & Laffaye, 2008) evaluating the psychometric properties of the TEQ. Their research suggested that although the number of PTEs and the subjective intensity ratings of traumatic events were both correlated with psychopathology, specifically PTSD, the subjective trauma intensity scores produced stronger correlations with PTSD symptomology than the number of traumatic events. The trauma intensity score was also a powerful predictor of PTSD. A study on Vietnamese typhoon victims suggested that GAD was associated with high typhoon exposure; therefore the intensity of the exposure was an important predictive factor (Amstadter et al., 2009).

Based on our results as well as the findings in past studies, we think that it is possible that peritraumatic emotional reactions following exposure to a PTE might lead to the construction of a danger schema. These schemas are possibly activated by real or anticipated threat. Incoming information is then distorted leading to the overestimation of the degree and severity of the threat. These danger schemas guide information processing due to hypervigilance, the elaboration of menacing interpretations and increased memory of threatening stimuli which could lead to fearful thoughts and images. Exaggerated or amplified appraisals of threat-related information could result in fear and anxiety accompanied by a heightened tendency to worry and increased somatic symptoms related to GAD. At the same time, individuals may also underestimate their ability to manage threatening information which could result in the impression of losing control. Another possibility entails the reactivation of a danger schema already in place due to past PTEs or life experiences. As well, an anxious person with a tendency to distort information could develop a hypersensitivity to perceived danger and manifest GAD symptomology despite the absence of past exposure to a PTE.

Our findings also revealed that exposure to multiple PTEs was positively correlated, although modestly, with higher levels of GAD symptomology. These results corroborate past research by Vrana & Luaterbach (1994) that showed multiple traumatic events having greater impact on psychological distress, including anxiety, than single exposure to PTEs. Conversely, according to a study involving South African adolescents (Suliman et al., 2009), exposure to multiple life-threatening events did not seem to be

associated with more severe anxiety symptoms, as compared to higher rates of PTSD and depression. However, they suggested that nonthreatening events such as past childhood abuse and neglect as well as stressful life events appear to increase the severity of anxiety symptoms. In our study using the TEQ, the presence of continuous events such as childhood abuse were considered as PTEs, thus possibily explaining the discrepancy of the results. Amir & Sol (1999) studied Israeli university students who had previously served in the army. Their findings showed that the experience of multiple traumas was associated with a decrease in the general level of psychological distress as compared to the higher levels of distress associated with the experience of a single type of event. These results were explained by the increased coping abilities in this particular sample of the population having received training on adaptation to stressful events following exposure to a first PTE. However these results were inconsistent with most studies which found that cumulative multiple events made coping more difficult. The development of a danger schema may possibly account for our results, which suggest that exposure to multiple PTEs is associated with GAD symptomology, as well as the findings from the studies mentioned above which identified that coping was more difficult after multiple PTEs. Following an initial exposure to a PTE, the danger schema might then be reactivated after each subsequent exposure. Also, the victim of multiple PTEs may have the impression of losing control and being repeatedly unable to cope with threatening experiences.

Our second hypothesis stipulated that a significant relationship exists between previous exposure to a PTE (presence or absence of exposure to a PTE, intensity of the reaction during the exposure and associated distress) and current manifestations of intolerance of uncertainty and cognitive avoidance. The results from our various analyses once more converge to indicate that certain factors related to the previous exposure to a PTE seem to be implicated. The current distress associated with past PTE exposure on the TEQ and IES-R seems to be one of the factors consistently involved in the current manifestations of intolerance of uncertainty and cognitive avoidance.

Our results revealed significant positive correlations between the variables related to PTE exposure and the cognitive vulnerabilities. Pertaining to the size of the correlations obtained, the variables measuring the current distress associated with previous PTE exposure on the TEQ and the IES-R presented moderate correlations with the propensity to be intolerant of uncertainty whereas the exposure to a PTE, the number of PTEs and the intensity of the reaction during the exposure presented modest correlations. The current distress associated with past PTE exposure also seems to be an important element in the manifestation of cognitive avoidance, along with the number of PTEs experienced. The results of the regression analyses indicate that the current distress associated with a previous PTE seems to play an important role in predicting the current manifestations of intolerance of uncertainty and cognitive avoidance. The participants experiencing current distress on the TEQ and IES-R had higher levels of

intolerance of uncertainty and cognitive avoidance than those previously exposed to a PTE who did not report experiencing current distress.

In summary, our second hypothesis was equally confirmed by our results. Valuable information was discerned in relation to the aspects of exposure to a PTE, specifically, the important role played by the current distress associated with past PTEs. The current distress seems to influence to a greater extent the manifestations of the cognitive vulnerabilities associated with GAD than the other trauma-related variables.

As our study was the first, to our knowledge, to specifically investigate the cognitive vulnerabilities associated with GAD following exposure to PTEs, no past studies are available to compare and/or corroborate our findings. Despite this lack of relevant information, our subsequent speculatations are based on our own results as well as on past research on GAD, on trauma exposure and PTSD, and the theoretical models previously reviewed. We maintain that the disturbing thoughts, emotions, and memories which possibly develop due to the exposure to a PTE could result in various psychological reactions. As previously mentioned, these reactions could include the development of a danger schema, the apprehension of possible future traumatic events, and the rise of uncertainty about the predictablity of future events. This could in turn bring about an increase in intolerance of uncertainty which might lead to intensified worry, or excessive worry. A person could also manifest excessive worry about various issues unrelated to the traumatic experience, which is typical of an individual with GAD.

As worry tends to be used to distract from and/or replace disturbing images of past experiences, it functions as a cognitive avoidance strategy and consequently avoids or reduces the internal distress related to past exposure to PTEs. It is possible that only upon questioning specifically about past PTEs that the person will address directly these disturbing images.

A perception of threat initiates the anxiety process according to Borkovec, Alcaine, & Behar (2004). As threatening images may result in physiological and affective distress, which are elements of the fear response to aversive stimuli, a shift to worrisome thoughts permits a reduction of the fear response. It is known that threat perception results in sympathetic activation, which elicits the fight-or-flight response to enable avoidance behaviours. However, in a GAD sufferer, the threat cues often exist only in the mind and refer to possible harmful events in the future therefore sympathetic activation is not useful or adaptive so it is suppressed. The research of Provencher, Freeston, Dugas, & Ladouceur (2000) on the presence and characteristics of danger or threat schemata in GAD sufferers is pertinent to our understanding of the cognitive vulnerablities involved. The threat schemata stored in the long-term memory of worriers seem to be more intensely imaginable and anxiety provoking than surface level worries. When the threat schemata are stimulated by certain situations or perceptions, threatening information becomes more vivid and disturbing. Through the use of cognitive avoidance, worriers might then substitute surface level worries that are less disturbing and anxiety provoking. High worriers have generally more threatening outcomes to their

worries than low worriers. Cognitive avoidance strategies could also be relied on as compensatory self-protective strategies as individuals might underestimate their ability to manage threatening information or cope with future threats.

A previously mentioned study (Acierno et al, 2007) targeted hurricane victims in Florida who were exposed to repeated hurricanes over an extended time period. The findings from this study corroborate our supposition that a person could manifest increased worry due to real or perceived threat concerning possible upcoming future events (a possible hurricane) based on past traumatic experiences (previous hurricane exposure). These individuals might perceive the world as more threatening and/or doubt their coping abilities in the anticipation of future threat, thus possibly increasing their level of intolerance of uncertainty and worry. In fact, Ehlers & Clark (2000) proposed a cognitive model of PTSD which suggested that PTSD persists when individuals process a traumatic event in a way that results in an impression of serious and current threat. Their cognitive model could possibly be extended to individuals manifesting GAD symptomology following trauma exposure. A study on maladaptive self-appraisals in relation to the development of PTSD after trauma (Bryant & Gutherie, 2005) showed that an individual's self-appraisal about their ability to cope if faced with an upcoming threatening event influenced subsequent stress reactions after trauma exposure. The tendency to engage in negative appraisal about one's coping abilities, either before or after trauma exposure, may predispose individual to more severe posttraumatic stress. In fact, an impression of helplessness during exposure to a traumatic event could impact

one's appraisal of their coping abilities, possibly leading to an increase in their intolerance of uncertainty.

An essential matter to consider before concluding our discussion is the overlap between the symptoms of TAG and PTSD. Comorbidity between these two disorders has been identified in previously-mentioned studies. GAD, PTSD and MDD have been identified in the literature as the most common disorders in the aftermath of trauma exposure. Grant and colleagues (2008) results suggested that GAD, PTSD and MDD were distinguishable, although highly correlated, constructs. Of particular interest is the overlap of symptoms between GAD and PTSD in our study. The self-report measures we used, for example the WAQ and the IES-R, have similar items measuring the following symptoms: sleep disturbance, difficulty concentrating, irritability and agitation or feeling on edge. As well, the IES-R and the CAQ both include items mesuring the tendency to use cognitive avoidance. Accordingly, the higher correlations between the variables in our study could possibly indicate an overlap between the symptoms measured but are not necessarily suggestive of a possible comorbidity between GAD and PTSD or any causal relationship. It is important to underline the presence of excessive and uncontrollable worry in GAD as its defining characteristic which is not, however, a symptom associated with PTSD. As maintained by Grant and his colleagues, GAD consists of a unique collection of symptomology and a distinct reaction to trauma exposure, even in the presence of PTSD.

The symptom overlap between GAD and PTSD, the results of our study, as well as the results obtained in previous research led us to reflect on possible explanations to account for the development of GAD and/or the development of PTSD following exposure to a PTE. Roemer, Molina, Litz, & Borkovec (1997) have suggested that individuals exposed to a PTE who do not develop the full symptomology of PTSD may begin to use or continue to use worry to avoid the emotional distress as well as to decrease the somatic activation associated with the PTE. This reaction may initially help an individual adapt to the exposure to a PTE yet may lead to the incessant cycle of worry and anxiety associated with GAD. Zlotnick, Bruce, Shea & Keller (2001) studied delayed PTSD in patients with anxiety disorders, including GAD. Their results suggested that the delayed onset of PTSD was more prevalent in adults who were victims of child abuse. These results bring us to question whether victims of child abuse may use worry to adapt to PTEs for a certain length of time before developing PTSD. These results, along with the hypothesis put forth by Roemer and her collegues, may shed light on some possible explanations as to the the development of GAD and/or PTSD following different types of PTEs experienced at different ages.

Limitations

Although interesting findings have emerged from the present study, it is not without limitations. The first limitation concerns the composition of our sample when the age and the sex of the participants are taken into consideration. Our sample included mostly young adults with a majority of women as participants, thus potentially

introducing a methodological bias in our study. As the onset of GAD may be affected by various factors such as life experiences and increased responsabilities, the limited age group of our sample may have had an impact on our results. However, GAD symptomology often develops in the teenage and early adult years (Wittchen and Hoyer, 2001) therefore underscoring the importance of studying a sample of young adults. Concerning the majority of women participants, previous research has shown that women tend to report higher levels of worry (Stavosky & Borkovec, 1987) and have a higher prevalence of GAD, as previously mentionned. Furthermore, some studies (Singer, Anglin, Song, & Lunghofer, 1995; Suliman et al, 2009) have reported that women experience more elevated symptoms of anxiety, PTSD and depression following a traumatic event. Conversely, Vrana & Lauterbach's (1994) study, using a sample comparable to ours, showed mixed results concerning gender-specific prevalence rates. They found that the psychological impact of various types of PTEs was mediated by the gender of the person exposed. For example, men having experienced child abuse reported a greater increase in anxiety than women exposed to a similar PTE. Therefore, the discrepancy in the number of men and women in our sample may have affected the results and should be considered when interpreting our findings. Future studies should strive to include a sample that incorporates an equal distribution of particpants of both sexes and of all ages in order to broaden the generalization of the findings.

The generalizability of our findings also needs to to be considered in light of other characteristics present in the composition of our sample. The participants were

composed of students attending educational establishments, with almost the entire sample being White. Generalizing the results beyond people of the same educational and ethnic backgrounds should be done using great caution. However, our sample included university level students as well as students from a vocational education centre who had various educational backgrounds, thus partially attenuating the effects of a homogeneous sample. One should be equally vigilant when comparing the results of this study with studies using different samples, such as clinical samples. It is important to distinguish our findings based on our participants who fulfilled the GAD diagnostic criteria using self-report measures with those samples in which GAD was diagnosed using a structured diagnostic interview. Nonetheless, according to past research, the use of analogue groups of college students rated as chronic worriers is very similar to clinical populations (Vasey & Borkovec, 1992).

As this study relied on self-report data, there was a possibility of under or over reporting of traumatic events, anxiety symptoms, and cognitive vulnerabilities. On one hand, the anonymity of the questionnaires may have aided to reduce the possibility of underreporting due to embarrassment or social desirability. On the other hand, overreporting may have resulted due to the nature of the self-report measure used. For example, the sensitive nature of the TEQ, which is useful to identify all potentially traumatic events, could result in overreporting, as compared to another instrument or the specificity of an assessment interview (Vrana & Lauterbach, 1994). However, a recent study (Crawford et al., 2008) using the TEQ with a clinical population showed patients'

endorsement of traumatic experience on the TEQ agreed with reports using well-validated structured clinical interviews. Nontheless, this potential limitation should be taken into consideration when interpreting the ratings from the self-report measures.

The retrospective nature of reporting past exposure to PTEs may have possibly affected our results. Identification of past PTEs might have been affected by recall bias, as identified in previous research (Roemer, Litz, Orsillo, Ehlich, & Friedman, 1998). A recent study by Bryant, Sutherland, & Gutherie (2007) found that impaired retrieval of specific autobiographical memories before trauma exposure was associated with the subsequent level of posttraumatic stress after trauma exposure. Therefore, a deficit in retrieving specific memories, resulting in unreliable reporting, could have affected a participant's reponses on the TEQ. Conversely, Vrana and Lauterbach (1994) emphasized the high test-retest reliability found with the TEQ due in part to the intensive nature of a PTE. The vivid nature of the experience might create enhanced memorability thus contrasting with the diminished accuracy of reporting temporally remote life events and the poor test-retest reliability observed in previous research (Thoits, 1983). Also, the listing of possible PTEs in the TEQ may have provided memory cues for past experiences and as well the necessary time to recall events.

A final limitation worthy of mention is the potential effects of depressive symptomology as well as sensitivity to anxiety that are not taken into account in our study. As previously mentionned, MDD often exists in comorbidity with GAD and is

also one of the most common psychopathological outcomes following trauma exposure, along with PTSD and GAD. However, recent research (Grant et al., 2008) supports the growing evidence of the independence of GAD from these other disorders and the unique collection of symptomology despite the presence of overlapping symptoms between the disorders, such as irritability, sleep disturbance and fatigue. Sensitivity to anxiety is also associated wih the development of anxiety disorders. The presence of this sensitivity could have an impact on the development of psychopathology following trauma exposure or indicate the presence of heightened anxiety before exposure to trauma. Undoubtedly, future studies should strive to control for the effects of these variables in order to prevent methodological biases and to clarify the results. Moreover, a structured diagnostic interview would permit the clinical diagnosis of GAD as well as the presence of other psychopathology such as MDD or other anxiety disorders.

Potential Outcomes and Implications

Despite the exploratory nature of the study, our results supplement previous research and indicate potential implications for futher research. First of all, our results extend the understanding of the relationship between exposure to PTEs and current manifestations of GAD symptomology as they are supported by precise, standardized data. This was achieved essentially by applying the DSM-IV criteria A1 and A2 for the PTEs reported by the participants as well as by applying an intensity requirement to the participants' ratings of their experience of past PTEs. The relevance of applying an intensity requirement is endorsed by the research of Borkovec & Rachman (1979). They

underline the enhanced internal validity of an experiment due to presence of sufficiently intense reactions of the participants, as compared to slight or mild reactions. However, in the process of applying the above-mentionned criteria, certain participants who reported exposure to PTEs were excluded thus potentially restricting our observations. Nonetheless, some controversy exists over the functionality of the DSM-IV criteria for PTEs due to the subjective interpretations involved with the A1 criterion. Van Hooff, McFarlane, Baur, Abraham, & Barnes (2009) found that events classified as non-traumatic (life events) were associated with higher rates of PTSD than those events considered traumatic.

Our study also supplements previous research as it is the first, to our knowledge, to specifically investigate the cognitive vulnerabilities associated with GAD following exposure to PTEs. As our results point to a positive significant relationship between exposure to PTEs and the cognitive vulnerabilities of IU and CA, the specific dimensions of these vulnerabilites possibly could be explored, thus further increasing our understanding of this relationship. Future research may be directed at determining if specific cognitive dimensions of intolerance to uncertainty and cognitive avoidance are related to exposure to PTEs by using the subscale scores of the self-report measures (IUI; CAQ) in the place of the total scores used in our research,. For example, it might be worthwhile to explore if exposure to PTEs results in an increase in certain cognitive avoidance strategies, such as thought suppression as compared to distraction, which could in turn have certain clinical applications.

Similarly, exposure to different types of PTEs may possibly result in the development of distinct cognitive vulnerabilites. Exposure to a certain type of PTE, such as a natural disaster, may possibly be found to be a contributing element in the development and maintenance of a specific cognitive dimension of intolerance of uncertainty, for example, the overestimation of the probability that a negative event will occur. Clinical intervention could be aimed at reducing this specific cognitive dimension in those having been exposed to a natural disaster.

Our research on the cognitive vulnerabilities associated with exposure to PTEs and GAD symptomology may be further extended with regards to the recent research on stressful life events. This research explored the possible relationship between the experience of stressful life events and post-traumatic psychopathology. Lancaster, Melka, and Rodriquez (2009) have emphasized the possibility of nontraumatic life stresses having an even greater impact on psychopathology than traumatic experiences. This might be possibly due to the emotional content and distress potentially associated with life stresses such as the death of a loved one or a divorce. More research would be necessary to better understand the role of different categories of traumatic events, other than those fulfilling the DSM-IV criteria for a PTE, on the development and maintenance of GAD symptomology as well as on the role of the cognitive vulnerabilities involved.

Lancanster and colleagues (2009) also suggested that traumatic events of an interpersonal nature, such as sexual assault or armed robbery, seemed to have a greater impact on subsequent psychopathology than traumatic events of a noninterpersonal nature, such as a car accident. This corroborates past research (Brawman-Mintzer et al., 2005; Roemer et al., 1997b) which found that exposure to trauma, particularly assaultive trauma, is associated with GAD. Unfortunately, exploration of these research questions was outside of the scope of the present study. Further research into the cognitive vulnerabilities associated with the interpersonal nature of specific types of PTEs may be of interest and value in clinical treatment.

An important extension of our study would be to replicate the findings using a clinical sample of anxious individuals. A structured diagnostic interview confirming the presence of GAD may augment valuable information thus potentially supporting and supplementing our findings. Also, longitudinal studies tracking the effects of early life stress, exposure to PTEs and the cumulative impact on GAD symptomology would be crucial towards a better understanding and promising in future clinical work. Assessing the presence of GAD symptomology before and after exposure to PTEs would be more feasible in a longitudinal study.

In summary, our findings confirm the presence of a positive significant relationship between past exposure to a PTE and current manifestations of the tendency to worry, the somatic symptoms associated with GAD, intolerance to uncertainty and

cognitive avoidance. Despite the preliminary nature of our results, our findings add to the current understanding of the various factors implicated in the development and maintenance of GAD symptomology following exposure to PTEs and point to future research and clinical implications.

Conclusion

In conclusion, findings from our preliminary study brought to light interesting information. We observed that previous exposure to a potentially traumatic event was a common occurrence in our sample. In fact, 79.5% reported experiencing at least one PTE whereas 50.1% reported experiencing at least one PTE respecting Criterion A1 and A2 of the DSM-IV for PTSD as well as an intensity criterion. Notably, as indicated on the TEQ, 37% of our sample reported currently experiencing a sufficiently intense perceived distress and fearfulness associated with a past PTE. Participants fulfilling GAD criteria comprised 24% of our sample.

Our results confirmed that a positive significant relationship exists between previous exposure to a PTE (presence or absence of exposure to a PTE, intensity of the reaction during the exposure and associated distress) and current manifestations of GAD symptomology and the cognitive vulnerabilities associated with GAD: intolerance of uncertainty and cognitive avoidance. Furthermore, our results suggest that the current distress associated with previous exposure to PTEs seems to be a one of the factors implicated in the manifestations of the tendency to worry and the somatic symptoms of GAD, intolerance of uncertainty, cognitive avoidance as well as in the fulfillment of the criteria of GAD. Also of importance, yet to a lesser degree, the intensity of the reaction during exposure to a PTE also seems to be an element to consider.

The findings from our study may have interesting future clinical applications. Recently, more studies have identified the presence of GAD as one of the possible psychological sequelae following exposure to a PTE. Accordingly, a better understanding of the factors involved is fundamental to effective treatment. Addressing the possibility of past PTEs and providing treatment for the emotional processing of exposure to past PTEs may be of benefit to certain individuals presenting GAD symptomology. As well, attending to specific cognitive dimensions of intolerance of uncertainty and cognitive avoidance in these individuals may lead to promising treatment plans.

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Appendix A
Summary of variables

Summary of Variables

Variable	Description	Measure
Exposure to a PTE	Measures the presence or absence of exposure to PTEs fulfilling the DSM-IV and intensity criteria. Score of 4 or more on following items: "Did you feel your life, or someone else's life, was threatened?", "Did you feel helpless at the time?", "How traumatic or fearful was this for you at that time?"	TEQ
Current distress TEQ/ Exposure to a PTE	Measures the currently perceived distress and fearfulness associated with past PTE exposure. Score of 4 or more on following item: "How traumatic or fearful for you is this now?"	TEQ
Number of PTEs	Measures the number of PTEs experienced fulfilling the DSM-IV and intensity criteria. Score of 4 or more on following items: "Did you feel your life, or someone else's life, was threatened?", "Did you feel helpless at the time?", "How traumatic or fearful was this for you at that time?"	TEQ
Current distress TEQ/ Number of PTEs	Measures the number of PTEs experienced in which current distress was reported. Score of 4 or more on following item: "How traumatic or fearful for you is this now?"	TEQ
Most traumatic event	Measures the intensity of the reaction during exposure to the most traumatic PTE experienced Score of 4 or more on following items: "Did you feel your life, or someone else's life, was threatened?", "Did you feel helpless at the time?", "How traumatic or fearful was this for you at that time?"	TEQ

Current distress TEQ/ Most traumatic event	Measures the current distress related to the most traumatic event reported. Score of 4 or more on following item: "How traumatic or fearful for you is this now?"	TEQ
Current distress IES-R/ Most traumatic event	Measures the current distress related to the most traumatic event reported.	IES-R Total score
Presence of GAD	Measures the presence or absence of GAD. Score of 4 or more on each item	WAQ Total score
Tendency to worry	Measures the tendency to worry	PSWQ Total score
Somatic symptoms of GAD	Measures the somatic symptoms of GAD Score of 4 or more on each item	WAQ Question 5
Intolerance of uncertainty	Measures the propensity to be intolerant of uncertainty.	IUI Total score
Cognitive avoidance	Measures the use of cognitive avoidance	CAQ Total score

Appendix B
Socio-demographic forms

GENERAL INFORMATION

1. SEX

❑ Female ❑ Male

2. AGE

_____ years

3. CIVIL STATUS

❑ Married
❑ Common-law union
❑ Single
❑ Divorced/Separated
❑ Widowed

4. PLACE OF BIRTH

_____

5. LEVEL OF EDUCATION COMPLETED

❑ Primary
❑ High School
❑ College/CEGEP
❑ University
❑ Other, specify : _____

INFORMATIONS GÉNÉRALES

1. SEXE

❑ Femme ❑ Homme

2. AGE

_____ ans

3. ÉTAT CIVIL

❑ Marié(e)
❑ Union de fait
❑ Célibataire
❑ Divorcé(e)/séparé(e)
❑ Veuf/veuve

4. LIEU DE NAISSANCE :

_____

5. DERNIER NIVEAU DE SCOLARITÉ COMPLÉTÉ

❑ Primaire
❑ Secondaire
❑ Collégiale
❑ Universitaire
❑ Autre, précisez : _____

Appendix C
Consent forms

CONSENT FORM

Title of project and persons responsible for the project

Towards a better understanding of the link between Potentially Traumatic Events, Generalized Anxiety Disorder symptoms, and cognitive processes: A preliminary study.

Margaret McCulloch, psychology student at the University of Sherbrooke, and Patrick Gosselin, thesis director, are responsible for this project. It is being carried out to fulfill the requirements for a doctoral degree in psychology. For additional information or to discuss any problems related to the research, Margaret McCulloch may be contacted at 819-868-7230 or by e-mail : margaret.mcculloch@usherbrooke.ca. You may also contact Mr. Gosselin at 819-821-8000 ext. 63811.

Research goals, reason and nature of my participation

The goal of this study is to verify the relationship between exposure to a potentially traumatic event, anxiety symptoms, and the implication of intrusive thoughts.

It is understood that my participation in this project will take approximately 30 minutes. A series of questionnaires will be completed in class with the professor's permission. I will be asked to answer nine questionnaires: the first one requesting general information (age, sex), two concerning the possible experience of a potentially traumatic event, three evaluating anxiety, and three concerning psychological processes related to anxiety.

Potential benefits, possible disadvantages and risks resulting from my participation

No direct personal benfits will result from my participation in this project. However, my participation will possibly help mental health professionals to better understand the factors involved in the development of anxiety symptoms following exposure to a potentially traumatic event. A disadvantage will be the use of my time needed to complete the self-report instruments. It is possible that I could feel tired during the completion of the instruments. If need be, it will be possible for me to take a break before continuing. It is possible that the completion of the instruments might lead me to experience disturbing emotions. At my request, the name of a professional apt to help me will be provided by the persons responsible for the study.

The right to withdraw my participation without negative consequences

It is understood that my participation in the this research project is totally voluntary. I am free to withdraw my participation at any time without having to give a reason for my decision, nor to suffer any negative consequences of any kind.

Future research

It is possible that this project's results will give rise to another research project. With respect to this eventuality, I authorize the persons responsible for this project to recontact me to verify my interest in participating in a new research project:

Yes *No* If yes, please provide your telephone number and/or e-mail address : _____

Confidentiality of the data, results of the research and publication

The data obtained will be kept under lock and key for a maximum 5 year period. After this time, the data will be destroyed. No information allowing the identification of the participants will appear in any documentation. If so desired, I could be informed of the results obtained by contacting the person responsible for the research project. The information collected may be used for the purpose of scientific and professionnel communication. No identification of the participants involved in the research project will be possible.

Free and informed consent

I, _____, have read the present consent form. I understand the nature and reason for my participation in this research project. I accept freely to participate in the project.

Signature of the participant: _____ Signed in _____, on _____2008.

Declaration of the person responsable for the project

I, Margaret McCulloch, certify to have explained the terms of the present consent form to the participant, to have answered any related questions asked by the participant and to have clearly indicated to the participant that he or she is free, at all times, to withdraw his or her participation from the above-described research project. I guarantee to respect the goals of the project and to respect the confidentiality of the participants.

Signature of the researcher : Margaret McCulloch Signed in Sherbrooke, on October 10 2008.

This project is approved by the Research Ethics Board of the University of Sherbooke (Lettres et sciences humaines). For any problem ou ethical question, please contact Dominique Lorrain at (819)821-8000, #62644 or at Cer_lsh@Usherbrooke.ca.

FORMULAIRE DE CONSENTEMENT

Titre du projet et responsables

Vers une meilleure compréhension du lien entre les événements potentiellement traumatiques, les symptômes du Trouble d'Anxiété Généralisée et les processus cognitifs: une étude préliminaire.

Margaret McCulloch, étudiante en psychologie à l'Université de Sherbrooke, et Patrick Gosselin, directeur de thèse, sont responsables de ce projet. Il est réalisé dans le cadre du doctorat en psychologie. Pour toute information supplémentaire ou tout problème relié au projet de recherche, vous pouvez rejoindre Margaret McCulloch, au 819-868-7230, ou par courriel : Margaret.Mcculloch@usherbrooke.ca. Vous pouvez également rejoindre M. Gosselin au 819-821-8000, poste 63811.

Objectif, buts du projet, raison et nature de ma participation

Le but du présent projet consiste à vérifier les liens entre différents indicateurs associés à un événement potentiellement traumatique, des symptômes anxieux et l'implication de pensées intrusives.

Il est entendu que ma participation à ce projet sera requise pour environ 30 minutes. Les questionnaires vont être complétés en classe avec la permission du professeur. J'aurai à répondre à neuf questionnaires : un premier portant sur des informations générales (âge, sexe), deux se rapportant à l'expérience possible d'un événement traumatique, trois se rapportant à l'anxiété, trois se rapportant à des variables psychologiques reliées à l'anxiété.

Avantages, inconvénients et risques pouvant découler de la participation

Ma participation à ce projet ne m'apportera aucun avantage direct. Elle permettra aux professionnels de la santé de mieux connaître les facteurs impliqués dans le développement des symptômes anxieux suite à une expérience potentiellement traumatisante. Comme inconvénients, j'aurai à donner de mon temps pour la durée de la complétion des questionnaires. Il se pourrait que pendant la complétion je ressente de la fatigue. Si c'est le cas, il me sera possible de prendre une pause avant de continuer. Il se pourrait aussi que le fait de penser à mon expérience m'amène à vivre des émotions dérangeantes. À ma demande, les coordonnées d'un professionnel apte à m'aider pourront m'être fournies par l'expérimentatrice.

Droit de retrait de participation sans préjudice

Il est entendu que ma participation au projet décrit ci-dessus est tout à fait volontaire et que je reste, à tout moment, libre de mettre fin à ma participation sans avoir à motiver ma décision, ni à subir de préjudice de quelque nature que ce soit.

Études ultérieures

Il se peut que les résultats obtenus donnent lieu à une autre recherche. Dans cette éventualité, j'autorise les responsables de ce projet à me contacter à nouveau et à me demander si je serais intéressé(e) à participer à cette nouvelle recherche :

Oui *Non* Si oui, s.v.p. fournir votre # de téléphone ou courriel : _____

Confidentialité des données, résultats de la recherche et publication

Les données recueillies seront conservées, sous clé, pour une période n'excédant pas 5 ans. Après cette période, les données seront détruites. Aucun renseignement permettant d'identifier les personnes qui ont participé à l'étude n'apparaîtra dans aucune documentation. Si vous le désirez, vous pourrez être informé(e) des résultats obtenus en contactant la chercheure responsable. L'information recueillie pourra être utilisée pour fins de communication scientifique et professionnelle. Dans ces cas, rien ne permettra d'identifier les personnes ayant participé à la recherche.

Consentement libre et éclairé

Je, _____, déclare avoir lu le présent formulaire. Je comprends la nature et le motif de ma participation. Par la présente, j'accepte librement de participer au projet.

Signature du participant(e): _____ Fait à _____, le _____2008.

Déclaration du responsable

Je, Margaret McCulloch, certifie avoir expliqué au participant(e) intéressé(e) les termes du présent formulaire, avoir répondu aux questions qu'il m'a posées à cet égard et avoir clairement indiqué à la personne qu'elle reste, à tout moment, libre de mettre un terme à sa participation au projet de recherche décrit ci-dessus. Je m'engage à garantir le respect des objectifs de l'étude et à respecter la confidentialité.

Signature du chercheur: Margaret McCulloch Fait à Sherbrooke, le 10 octobre 2008.

Ce projet est approuvé par le Comité d'Éthique de la recherche des Lettres et sciences humaines de l'Université de Sherbrooke. Pour tout problème ou question éthique, contactez Dominique Lorrain au (819)821-8000, #62644 ou au Cer_lsh@Usherbrooke.ca.