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Life events, stressful events and traumatic events: A closer look at their effects on post-traumatic stress symptoms

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keywords: stress, trauma, life event, stressful event, traumatic event, post-traumatic stress disorder

1. Introduction

Several events are experienced by individuals during their life. The conceptualization of the notion of an event has been the subject of many studies and discussion to determine a common definition (Amiel-Leigre, 2004; & Pachoud, 2005). The current scientific literature classifies events into three forms: life events, stressful events and traumatic events. However, it is difficult to distinguish between them as traumatic events are a subset of stressful events, which are themselves a subset of life events (Boudoukha, 2012).

Life events are most common in an individual's life (Boudoukha, 2012). They are classified according to their degree of severity and impact on the individual's life (Bourgeois, 2007; Quintard, 2001; Pachoud, 2005; & Ogden, 2014). They can thus be considered as negative (ie. undesirable events) such as the death of a spouse, the imprisonment of a family member, and the loss of employment, or as positive (i.e. desirable events) such as the professional success, the birth of a child (Boudoukha, 2012; Bourgeois, 2007; Pachoud, 2005; & Ogden, 2014). Some of these life events may have psychopathological repercussions (Bourgeois, 2007; Mannoni, 2008; & Pachoud, 2005). In addition, according to their type, severity and duration, life events will have a differing impact on the development of physical and/or mental disorders (Burns & Machin, 2013; Quintard, 2001; & Mannoni, 2008). Indeed, these events can be upstream or downstream of psychological disorders, or they may provoke the onset of mental disorders (Pachoud, 2005).

Secondly, stressful events, also called stressors, are situations experienced by a subject as a problem that is beyond their abilities to manage them and which hinders their well-being (Boudoukha, 2012). These are anticipated or sudden, controllable or unpredictable events, causing changes in the subject's physical and psychological state (Boudoukha, 2012; & Quintard, 2001). In fact, the evaluation of a stressful event and its impact depend on the adaptive abilities (Bruchon-Schweitzer & Dantzer, 1994) and the behavioral and physiological adjustments of the subject to cope with this event (Quintard, 2001). Moreover, the reaction to the stressful event includes the modification of cognitive and emotional processes (Boudoukha, 2012; & Quintard, 2001). In the last twenty-five years, the

psychological effects of experiencing stressful events on the life of an individual have been widely demonstrated in the scientific literature (Burns & Machin, 2013; Kendler, Karkowski, & Prescott, 1994). Many studies have highlighted significant links between the experience of stressful events and negative consequences on the physical and psychological health of the individual (Amiel-Lebigre, 2004; Boudoukha, 2012; Hyman & Woog, 1982; Isherwood, 1991; & Salleh, 2008). This relationship between the experience of stressful events and the development of psychological and/or somatic disorders is complex, as it varies according to individual vulnerabilities (Salleh, 2008).

Lastly, within the set of stressful events, there are traumatic events, which refer to situations of unusual, sudden, violent and brutal exposure to a life-threatening or serious threat to one's physical integrity (Boudoukha, 2012; Boudoukha, Ouagazzal, & Goutandier, 2016). It refers to a situation of exposure to "an actual death or a threat of death, serious injury or physical violence" (APA, 2003). In general, there are four categories of traumatic events: disasters (natural and those caused by humans), interpersonal violence (war situations, terrorist acts, physical and/or sexual assaults, armed theft, etc.), accidents and the sudden death of a family member and/or close friend (APA, 2015). The fifth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) brought a significant modification compared to the fourth version (APA, 1996). On one hand, the intense emotional reaction (criterion A2) has been removed on the basis of studies showing the weakness of this subjective reaction as a predictor of post-traumatic stress disorder (Friedman, Resick, Bryant, & Brewin, 2010; O'Donnell, Creamer, McFarlane, Silvo, & Bryant, 2010). Criterion A1 (criterion A in the DSM-5), a condition preceding the subsequent development of PTSD has been expanded beyond (a) direct exposure and (b) indirect exposure, and now includes (c) direct vicarious exposure, and (d) indirect vicarious chronic exposure, which is repeated indirect or extreme exposure to aversive elements or consequences of traumatic events, in a professional context (APA, 2015).

Exposure to traumatic events induce specific (i.e. intrusive symptoms, avoidance symptoms, and negatively impaired cognition) and nonspecific (i.e. dissociation) post-traumatic symptoms (APA, 2015; Boudoukha, Ouagazzal, & Goutandier, 2016; & Carlson, Dalenberg, & McDade-Montez, 2012). Traumatic events may change one's vision of oneself, of others or of the world. However, the manifestation of these symptoms does not systematically occur following a traumatic event (Ozer & Weiss, 2004). Several studies have

highlighted the importance of the nature of the traumatic event to better understand their psychological impact (Cameron, Palm, & Folette, 2010). Intrapersonal (e.g. sex, age, family history and psychiatric history) and interpersonal (e.g. severity of traumatic event, perceived social support) characteristics have different predictive effects on the development of post-traumatic symptoms (Brewin, Andrews and Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003).

This conceptual classification of three types of events provides a better understanding of the psychological impact of experiencing these events. This constitutes an important field in the current literature, but little research has focused on the study of the nature of events and their differing impacts on post-traumatic symptomatology in a young adult population sample. Research conducted among the student population has shown a high risk of exposure to a traumatic event in their lifetime (Frazier, Anders, Tomich, Tennen, Park and Tashiro, 2009). In fact, there has been a rate of exposure to a traumatic event ranging from 75.60% to 85% among students during their lifetime (Frazier et al, 2009, Lis-Turlejska, 2008, Vrana and Lauterbach, 1994). This high frequency of exposure to traumatic events in this population is explained by the fact that students are in the age group (16-20 years) most at risk of experiencing a traumatic event (Breslau et al, 1998 ; Frans et al, 2005). In addition, the prevalence of exposure to traumatic events decreases significantly with advancing age (Breslau et al., 1998, Dorrington et al., 2014).

2. Objective

The aim of this study is to investigate the relationship of the nature of events experienced (life events, stressful events, traumatic events) and post-traumatic symptomatology (intrusion, avoidance, negative alteration of cognitions) in a young adult population sample.

We formulate two hypotheses :

1. We think that the nature of event experienced is a predictor of post-traumatic symptoms (intrusion, avoidance and negative alteration).
2. We also think that the type of event experienced has a differentiated impact on post-traumatic symptoms.

3. Method

1.1. Participants

One hundred and seventy-three university students enrolled in the departments of Sciences and Techniques, and Sciences and Techniques of Physical and Sports Activities (STAPS) agreed to participate in the study. The sample included 104 men and 69 women with an average age of 20.07 years ($SD = 2.25$ years). Students were divided according to their course of study ($n = 119$ students enrolled in STAPS and $n=54$ in Sciences and Techniques); their level of study ($n = 159$ undergraduates and $n = 14$ Master students); their emotional situation ($n = 123$ were single, $n=48$ were in a couple, and $n=2$ were married); and their lifestyle ($n= 86$ lived with their parents or family, 24 lived on the university campus, 37 lived in an apartment, 17 lived in shared accommodation, and 9 lived with their partner).

1.2. Material

Our study was based on standardized and self-administered questionnaires. These included standardized psychopathological measures, the collection of sociodemographic data and an informed consent form.

We have chosen to use both the Impact of Event Scale-Revised (IES-R) and the Post-Traumatic Check List Scale (PCL-S) as measurement tools to assess PTSD. these are the two measurement tools that have been the subject of a French version and validation. Also, they are complementary tools with slightly different subscales to assess the symptomatological dimensions of PTSD. PCL-S is a more sensitive tool than IES-R as a tool for diagnosing PTSD.

Impact of Event Scale-Revised

Post-traumatic stress symptoms were assessed with the French version of the Impact of Event Scale-Revised (IES-R) (Brunet, St-Hilaire, Jehel, & King, 2003). The IES-R measures the severity of post-traumatic symptoms. It consists of twenty-two items assessing symptoms of intrusion, avoidance, and hyperarousal regarding a dangerous and threatening event. Answers are rated on a Likert-type scale from 0 (none) to 4 (extremely). Three subscales correspond to intrusion, avoidance and hyperarousal. The total score range from 0 to 88 and a threshold score was set at 33.

The French version of the IES-R has good internal consistency with consistency coefficients ranging from 0.81 to 0.93 for the 3 subscales and total score, and satisfactory test-retest reliability with Cronbach's alpha coefficients ranging from 0.71 to 0.76 for the 3 subscales and total score (Brunet, St-Hilaire, Jehel, & King, 2003).

The Post-Traumatic Check List Scale

The French version of The Post-Traumatic Check List Scale (PCL-S) is a self-administered questionnaire measuring 3 sets of symptoms of post-traumatic stress disorder and their severity (Yao, Cottraux, Note, de Mey-Guillard, & Ventureyra, 2003). Answers on 17-item questionnaire are rated on a Likert scale from 1 (not at all) to 5 (very often). Participants have to evaluate the intensity of the traumatic event described in the last month. Three subscales were put forward corresponding to the three components of post-traumatic stress disorder according to DSM-IV (A.P.A., 1996): (1) repetition, (2) avoidance, and (3) autonomic hyperactivity. A threshold score of 44 was identified to diagnose the presence of post-traumatic stress disorder. The French validation study was carried out with a sample comprised of a group of patients presenting post-traumatic stress disorder and having undergone cognitive behavioral therapy (CBT), a group with anxiety disorders other than post-traumatic stress disorder, and a non-clinical group. First, the results showed that the total score and the three sub-scores of the PCL-S were all significantly higher in the group of post-traumatic stress disorder patients than in the two control groups, confirming the good empirical and discriminant validity of the PCL-S. Secondly, the results showed a good test-retest reliability ($r = 0.75$). Lastly, they confirmed good sensitivity to a change in therapy, as the total score of the PCL-S fell from 60.80 on average before CBT to 47.70 on average after CBT, and the average gain of the PCL-S score was significant.

1.3. Procedure

The study followed the ethical guidelines of the Helsinki declaration. The ethical guidelines set out by the University of Nantes for the conduct of research on human subjects does not require to be approved by an Institutional Review Board. Nevertheless, the ethical aspects are carefully considered by the faculty and the students prior to the beginning of the study.

They all participated voluntarily and were not paid for this study. Written informed consent was obtained from all participants.

Students were approached in their academic departments and the material was provided (a) in their study rooms following the agreement of the directors of both departments and (b) during a lecture. The duration of the test was estimated at 15 minutes and two investigators signed the questionnaire record. Anonymity of the students was guaranteed.

The questionnaires completed by the students were examined and all the information was entered in a data table. Statistical analyses were performed with SPSS Statistics Version 22 (IBM software). Descriptive statistics were initially performed and then, multiple linear regressions were conducted according to our objective. The significance level was set at 0.05 (two-tailed).

1.4. Operationalization of variables

Our research includes two sets of independent variables:

- variables related to the nature of event experienced, such as the absence of events, life events, stressful events and traumatic events.
- classic sociodemographic variables, such as sex, age, course of study, level of study, emotional situation and lifestyle.

We investigated which of these are predictive of post-traumatic symptoms (intrusion, avoidance and negative alteration).

4. Results

1.5. Characteristics of events experienced and post-traumatic symptomatology

The descriptive analyses showed a wide range of nature of events experienced in our population (see Table 1). The most common were life events (48%, $n = 83$) and traumatic events (30.1%, $n = 52$) (see Table 1).

Regarding post-traumatic symptoms, our participants reported levels below the threshold scores for the two measures used (see Table 2). Moreover, women reported higher levels than men (see Table 2).

1.6. Impact of events experienced on post-traumatic symptomatology

We postulated that the nature of event would be a predictor of post-traumatic symptoms (intrusion, avoidance and negative alteration in cognitions). The multiple regression analyses carried out did not confirm our hypothesis (see Table 3). In fact, some sociodemographic characteristics (age and emotional situation) were also revealed as predictors of post-traumatic symptoms.

1.7. Differentiation of predictors of post-traumatic symptoms

A multiple regression analysis was performed, differentiated according to gender (see Table 3). A different impact of the nature of event on post-traumatic symptoms (intrusion, avoidance, and negative alteration in cognitions) was observed. Thus, the model subset “men” presented four predictors that explained 11 to 17% of the variance of post-traumatic symptoms. The absence of an event (no exposure to an event), stressful events and traumatic events were predictors of the intensity of post traumatic symptoms. Among the predictors were sociodemographic characteristics such as age.

The model subset “women” presented two predictors that explained 12 to 20% of the variance of post-traumatic symptoms (see Table 3). The absence of an event (no exposure to an event) was a predictor of the nature of event experienced. Among the predictors were sociodemographic characteristics such as emotional (being single).

These results indicate that the absence of an event ($\beta = -0.35^*$ to -0.36^*) is the significant predictor with the highest explanatory weight on post-traumatic symptoms.

5. Discussion

The aim of our study was to investigate the psychological impact of events experienced according to their nature. Contradicting our first hypothesis, the nature of event was not the only predictive variable of post-traumatic symptoms (intrusion, avoidance, negative alteration in cognitions). Classic sociodemographic characteristics (age and emotional situation) also contributed to explaining this variance. These results agree with some other research studies (Guillet, 2012; Hyman & Woog, 1982; & Isherwood, 1981). Individual characteristics (for example sex, age, and occupation) have an important influence on the degree of the psychological impact of the experience of the event by the subject (Guillet, 2012).

In addition, regression analyses indicated a differentiation of the psychological impact of the nature of events according to sex. In men, their age, the absence of events experienced, stressful events and traumatic events predicted the intensity of post-traumatic symptoms. In women, their emotional situation and the absence of events experienced predicted the intensity of these symptoms. Our results also show a differentiating effect between men and women concerning the nature and the form of traumatic events. These differences between on the nature and the number of exposures are consistent with some studies in the current literature (Hatch, & Dohrenwend, 2007; & Sledjeski, Speisman, & Dierker, 2008). For example, men reported more experiences of critical events and were more likely to be exposed to traumatic events than women (Hatch, & Dohrenwend, 2007).

Differences related to gender according to the type of the event, particularly with regard to the type of traumatic events, have been highlighted in the Anglo-Saxon literature (Brewin et al, 2000 ; Ozer et al, 2003). However, it appears that we can not compare our results with those of the literature because we have not been able to define the characteristics of traumatic events. This is because we did not control the criteria for the traumatic event in this study. Hence the importance of using a viable measurement tool to evaluate the objective and subjective criteria of the event.

Nevertheless, this study presents several limitations, which may explain these results: our sample is composed only of student volunteers, which reduces the generalization of the results to the general population. Moreover, we recoded the events on the basis of the statements of participants and we did not control the type of events experienced, which may explain the low level of explained variance of post-traumatic symptoms in our models.

6. Conclusion

This study has highlighted the relationship of the nature of events experienced and post-traumatic symptomatology. Little research has focused on the links between the nature of events and the post-traumatic symptomatology. Our results show that certain forms of events (the absence of an event, stressful events and traumatic events) seem to be the predictors with the most explanatory weight in the variance of post-traumatic symptomatology. We therefore hypothesize that the nature of event is the most important explanatory variable in the

development of post-traumatic symptomatology. We also observed a differing impact of the nature of event experienced in men and women, which may explain the inter-individual differences according to sex. It appears to be necessary to continue work in this field of research field by more precisely controlling the characteristics of the events experienced using an adapted measurement tool.

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Table 1 : Distribution of the type of events experienced by all the participants ($n = 173$)

	Type of events			
	Absence of an event	Life event	Stressful event	Traumatic event
Men	6 (3.5%)	54 (31.2%)	11 (6.4%)	33 (19.1%)
Women	3 (1.7%)	29 (16.8%)	18 (10.4%)	19 (11.0%)
N	9 (5.2%)	83 (48%)	29 (16.8%)	52 (30.1%)

Table 2: Descriptive statistics of the characteristics of the symptomatology (N = 173)

	Variable	Mean and standard deviation (σ)	Minimum to maximum (threshold score)	Men Mean and standard deviation (σ)	Women Mean and standard deviation (σ)	F	P
Post-traumatic symptoms measured with the IES-R	Intrusion	9.58 (6.30)	0 to 24	8.40 (6.15)	11.30 (6.15)	9.16	0.003*
	Avoidance	7.51 (5.79)	0 to 22	5.94 (5.12)	9.81 (5.97)	20.46	0.000*
	Hyperarousal	4.98 (4.76)	0 to 20	3.96 (4.14)	6.46 (5.22)	12.09	0.001*
	IES-R total score	22.07 (15.26)	0 to 59 (33)	18.30 (13.69)	27.58 (15.85)	16.56	0.000*
Post-traumatic symptoms measured with the PCL-S	Repetition	9.42 (4.75)	5 to 25	8.78 (4.84)	10.37 (4.50)	4.61	0.031*
	Avoidance	11.93 (5.75)	7 to 32	10.98 (5.43)	13.32 (5.96)	6.96	0.009*
	Hyperactivity	8.99 (4.53)	5 to 25	8.40 (4.23)	9.87 (4.84)	4.34	0.039*
	PCL-S total score	30.35 (13.90)	17 to 77 (44)	28.16 (13.54)	33.56 (13.92)	6.29	0.013*

*p<0.05

Table 3: Results of multiple linear regression analyses predicting the intensity of post-traumatic symptoms according to gender

Men		Women	
<i>Predictors</i>	<i>Bêta (β)</i>	<i>Predictors</i>	<i>Bêta (β)</i>
Age	0.20*	Family situation	0.23*
Absence of an event	-0.36*	Absence of an event	-0.35*
Stressful event	-0.23*		
Traumatic event	0.33*		

* $p < 0.05$