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Ornella Ouagazzal, A.H. Boudoukha

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Assessing exposure to traumatic events: construction and validation of the Inventory of Traumatic Events (IET)

Titre : Evaluation de l'exposition à des événements traumatiques : Construction et validation de l'Inventaire des Événements Traumatogènes (IET)

Abstract

A significant number of events are experienced throughout one's life whether it is life events, stressful events or traumatic events. Traumatic events refers to a situation of exposure to "an actual death or a threat of death, serious injury or physical violence". They can lead to post-traumatic stress disorder (PTSD). To date, there are many tools in the literature to identify traumatic events. However, these assessment tools show some limitations as some do not take into account all the characteristics of traumatic events such as exposure form, age of exposure while other do not take into account the new criteria of the DMS-5. Thus, our goal is the construction and validation of a tool for assessing exposure to traumatic events, which is based on the latest DSM-5 definition. We carried out a content validation with French-speaking experts in post-traumatic stress, then we carried out a test-retest to check the fidelity. Our tool has good psychometric qualities. This tool can be used in a clinical context and non-clinical allowing identification and early screening of psychological distress following traumatic exposure which is a risk factor to PTSD.

Keywords: traumatic events, trauma, assessment, inventory, post-traumatic stress disorder

Résumé

Introduction : Un nombre important d'événements sont vécus au cours de la vie que ce soit des événements de vie, des événements stressants ou des événements traumatogènes. Les événements traumatogènes sont ceux qui ont des répercussions psychologiques les plus importantes chez les individus. Il existe à ce jour de nombreux outils de mesure des événements traumatogènes mais qui ne font pas l'objet d'une validation française.

Objectif : Notre objectif est la construction et la validation d'un outil de mesure (l'Inventaire des Événements Traumatogènes, IET) pour évaluer l'exposition à des événements traumatogènes, qui se base sur la dernière définition du DSM-5.

Construction de l'Inventaire des Événements Traumatogènes : Tout d'abord, nous avons réalisé une revue de littérature des outils de mesure internationaux des événements traumatogènes afin de relever les points forts et faibles de chacun de ses outils. Ensuite, nous avons procédé à la rédaction du contenu de l'outil et à la sélection des items. Enfin, la dernière étape a consisté à la réalisation de plusieurs pré-test auprès de plusieurs échantillons d'une vingtaine d'étudiants et non-étudiants afin de tester notre outil.

Matériel : l'Inventaire des Événements Traumatogènes (IET) est un outil de mesure auto-administré comportant une consigne, une liste de vingt-sept événements traumatogènes répartis en cinq catégories d'événements et différenciés selon quatre formes d'exposition spécifiant le nombre de fois vécu, la ou les date(s) de l'événement, ainsi qu'une échelle de l'intensité de la détresse ressentie (échelle de Likert allant de 0 à 10). Pour chaque événement traumatogène, le répondant doit indiquer le nombre d'exposition correspondant à la forme d'exposition, puis préciser la ou les date (s) approximative(s) de l'événement et enfin entourer sur le nombre sur l'échelle de Likert de 0 à 10 pour évaluer le niveau d'intensité actuelle de la détresse ressentie.

Validation de l'Inventaire des Événements Traumatogènes : D'une part, nous avons effectué une validation de contenu auprès d'un groupe d'experts francophones (français et belges) en stress post-traumatique. Les résultats obtenus sont les suivants : (a) un CVI de représentativité de .67 à 1.00 (cf. figure 1) et (b) un CVI de compréhension de .83 à 1.00. Au regard de ces résultats, nous avons révisé certains items et l'IET a donc une bonne validité inter-juge. Ce qui nous a amené à la version actuelle et définitive de l'IET.

D'autre part, nous avons réalisé un test-retest pour évaluer la fidélité de l'IET auprès d'un échantillon valide après les deux phases de 148 étudiants. L'échantillon comporte 15 hommes et 133 femmes dont la moyenne d'âge est de 19,84 ans (SD= 1,94). Nous avons ensuite calculé un coefficient de stabilité entre les deux ensembles de scores liés au niveau de la détresse par le biais d'une corrélation de Pearson (r) (Fortin, 1994). Nous avons obtenu des coefficients de stabilité élevés et significatifs allant 0.67 à 0.87 pour l'ensemble des niveaux de détresse des cinq catégories d'événements traumatogènes.

Discussion : De nombreux outils de mesure internationaux existent aujourd'hui pour évaluer les événements traumatogènes. Malgré leurs bonnes qualités psychométriques, ces instruments de mesure présentent plusieurs limites telles que la non prise en compte des caractéristiques de la définition du DSM-5 (APA, 2013), la durée de la passation. L'Inventaire des Événements Traumatogène est un outil de repérage auto-administré comportant une liste de vingt-sept traumatogènes répartie en cinq catégories d'événements et différenciée selon quatre formes

d'exposition. D'après les résultats obtenus, l'IET présentent de bonnes qualités psychométriques. Un meilleur repérage des événements traumatogènes incite un dépistage plus précoce d'un éventuel trouble de stress post-traumatique. Ceci amène donc à une orientation plus précoce et plus adaptée pour une prise en charge psychothérapeutique future. En effet, un contexte d'utilisation de l'Inventaire des Événements Traumatogènes dans le domaine clinique est actuellement en cours.

Mots clés : événements traumatogènes, trauma, repérage, inventaire, stress post-traumatique

1. Introduction

A large number of events are experienced during life, such as stressful or traumatic events. Traumatic events are the most painful events due to their unpredictability. It refers to a situation of exposure to “an actual death or a threat of death, serious injury or physical violence” [1]. There are four categories of traumatic event: disasters (natural disasters and those caused by humans), interpersonal violence (war situations, barbaric acts, physical and/or sexual assaults, fights with weapons, etc.), serious accidents, and the sudden death of a relative and/or close friend. The fifth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) brought a significant modification comparing to the fourth version [1]. 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 [2] [3]. 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 [1].

Research estimate that 28.6% to 82.70% of individuals have been exposed to one or more traumatic events during their lifetime [4]. In France, the lifetime frequency of exposure to traumatic events is 72.7% [5]. This very high rate raises the central issue of potential, real psychopathological consequences. Indeed, exposure to a traumatic event can cause specific psychopathological repercussions (eg. posttraumatic stress disorder, acute stress disorder) and non specific (eg. psychological distress, dissociation) in the adult. Hence the importance of assessing exposure to traumatic events.

The literature review of tools for assessing traumatic events has highlighted the existence of a large number of international measurement tools for assessing exposure to traumatic events. These are mostly self-administered measurement tools validated in the general population. In addition, these current measurement tools have the following limitations :

- They rely on the DSM-IV criteria or even earlier versions of the DSM for measurement tools, this highlights the lack of measuring instruments based on the DSM-5 criteria [1].

- The current structure of assessing instruments in the form of questions or interviews. Indeed, this current form may raise questions about the recovery of autobiographical memories of the traumatic event when there has been manifestation of peri-traumatic dissociative symptoms at the time of exposure to the traumatic event.
 - Focus on the evaluation of a specific category and / or type of traumatic events, this measure can prevent posttraumatic effects of exposure to various traumatic events.
 - Measurement tools don't take into account all the characteristics of traumatic events such as age of exposure.
 - Long-term award procedure (average 15 minutes).
 - the absence of a tool for measuring traumatic events in French.
- So, the objective of our current study to construct and validate a tool for French identification of traumatic events in a French sample.

Include here Table 1

2. Study 1 : IET's Construction

2.1. 1st stage: Literature review

A state of the art of current assessments instruments for traumatic events was carried out (see. Table 1). For this, we used the Psycinfo database through the following keywords: trauma assessments, traumatic events, measure. We included the instruments for assessing traumatic events based solely on the DSM-5 or earlier DSM criteria, as well as those that have been validated in English or French version. Regarding the exclusion criteria, we excluded measurement tools traumatic events in children and /or adolescents and those assessing post-traumatic stress disorder.

Based on this literature review, two instruments were selected for the construction and development of the IET: The Trauma History Questionnaire (THQ) [6] and The Life Events Checklist for DSM-5 (LEC-5) [7].

2.2. 2nd stage: Selection of items

This stage consisted of writing the content of the instrument and choosing the items. First, based on our literature review, we compiled a list of traumatic events divided into 5 categories:

- (1) Disasters (floods, storms, tornados, earthquakes, explosions, fires and other disasters),
- (2) Accidents (car accidents, bike/motorbike accidents, other transport accidents, serious accidents at work, serious accidents at home, and other serious accidents),

- (3) Sexual assaults (sexual assaults with penetration, sexual assaults without penetration, and other unwanted or non-consensual sexual experiences),
- (4) physical assaults (serious physical assaults, armed assaults, life-threatening assaults, wars, torture during war, torture, terrorist acts, domestic assaults),
- (5) Death (murder, suicide or attempted suicide, sudden accidental death of a close friend/family member, sudden knowledge about a life-threatening illness, and serious injuries or death that you have caused (unintentionally) to someone else)

Finally, we let a category called “other traumatic events not previously mentioned” for participants to fill in if there was a traumatic event not mentioned above. In each of these categories, an item corresponds to a traumatic event listed above.

Secondly, in order to respond better to the new definition of a traumatic event in the latest version of the DSM, we distinguished four types of exposure depending on the degree of involvement of the person [1] [8]: (1) direct exposure (the person is personally exposed), (2) indirect exposure (the person is personally a witness), (3) direct vicarious exposure (the person learns of one or several traumatic events experienced by a close friend and/or family member), (4) indirect vicarious chronic exposure in a professional context (the person is exposed in a repeated or extreme way to very unpleasant elements of traumatic events).

In addition, in order to verify the characteristics of traumatic events more precisely and overcome the limitations of their current measures, we included in our instrument two variables concerning the number of exposures and the age of exposure.

2.3. 3rd stage: Pre-test of the instrument

Lastly, a set of pre-tests was carried out with several samples of about twenty students and non-students. Following the comments of the respondents, we modified the instrument (addition or deletion of items), refined the content, and improved its form so that the IET became a comprehensible, readable and clear instrument for the respondents. Through these pre-tests, we also estimated the test period of this instrument, which is ten to fifteen minutes.

2.4. Presentation of the instrument: The Inventory of Traumatic Event (IET)

This is a self-administered inventory consisting of instructions, a list of twenty-seven traumatic events divided into five categories (disasters, accidents, sexual violence-aggression, physical

violence-aggression (sexual nature excepted) and death) and differentiated according to four types of exposure (“I experienced it personally”; “I witnessed it”; “A close friend/family member who experienced it told me about it”; “I have to deal with the negative consequences of the event in my job (e.g. firefighters, doctors, psychologists, etc.)”), specifying the number of exposures, the date(s) of the event(s), as well as a scale of the intensity of the distress felt (Likert scale going from 0 to 10). For each traumatic event, the respondent has to indicate the number of exposures corresponding to the type of exposure, and then give the approximate date(s) of the event(s) and lastly circle the number on the Likert scale of 0 to 10 to assess the current level of intensity of the distress felt.

2.5. IET’s procedure validation

According to Fortin (1994) [10], two psychometric properties are mandatory in a measuring instrument namely validity and fidelity. As part of the validation of our measurement tool, the Inventory of Traumatic Events (IET), we proceeded to the evaluation of (1) the validity content, (2) and the reliability by test-retest method.

However, we have chosen not to evaluate the internal consistency of IET as a type of reliability because the shape of our tool doesn’t lend itself to it. Indeed, it’s an inventory and not a scale of measurement.

3. Study 2 : IET’s Validity Content

3.1. Introduction

The content validity refers to the representativeness of the items used in the instrument to evaluate a construct (behavioral domain or a characteristic) in order to verify that the measure and the items used accurately represent the domain to be assessed [9] [10] [11].

3.2. Method

We chose a group of French-speaking experts in the psychological trauma and post-traumatic stress field based on the quality of their research and the number of their publications [12]. The average H index of our experts is 25. Thus, six experts (French and Belgian) were asked to validate the content of our instrument. The IET was sent by mail with an explanatory letter and an evaluation file related to the form of the instrument, the representativeness and the comprehension of the items.

3.3. Data analysis section

After receiving their responses, we analyzed the data by calculating the content validity index (CVI), which measures the representativeness and the comprehension of items on a scale of 1 to 4 [12]. For each item, the number of experts who gave a score of 3 or 4 was divided by the total number of experts to assess the representativeness and/or the comprehension of the item. Davis (1992) [13] recommends a CVI of .80.

In the context of our study, we adapted the scale for the calculation of the CVI according to the number of traumatic events in the category, as this differed between categories.

3.4. Result

The following results were obtained: (a) a CVI of representativeness of .67 to 1.00 and (b) a CVI of comprehension from .83 to 1.00.

Include here Figure 1

3.5. Discussion

In the light of these results, we revised certain items and the IET thus had a good inter-judge validity. This led to the current definitive version of the IET.

4. Study 3 : IET's Reliability

4.1. Introduction

Stability is “the constancy or stability in the responses when an instrument is applied several times to subjects” [10], which is assessed using the test-retest technique. It is recommended that there should be two weeks between phase 1 (the test) and phase 2 (the retest) with the same sample of subjects and in the same test conditions.

4.2. Method

4.2.1. Participant

The test-retest of the IET was carried out with an initial sample of 300 Psychology students at the University of Nantes. After the two phases, a valid sample of 148 students was obtained. It consisted of 15 men and 133 women with a mean age of 19.84 years (SD = 1.94). The students were also divided according to their family situation and their lifestyle: 64 students (43.20%) were single and 79 (53.40%) were in a couple. 62 students (41.90%) lived alone, 22 (14.90%)

lived with a partner, 52 (35.10%) lived with their parents, 10 (6.80%) lived in shared accommodation and 1 student (0.70%) gave no answer.

They all participated voluntarily and were not remunerated for this study. Written informed consent was obtained from all participants. In the informed consent form, we asked students to indicate an anonymity code (The first letter of their name and first name, and the month and year of birth) to code the data and measure the attrition rate between the two phases of administration. We have an attrition rate of 50% despite the fact that we have met the same conditions of replication of the inventory. This high rate of loss can be explained by the fact that this test-retest was carried out during a non-compulsory lecture at the end of the day and at the end of the week when the students' presence is not controlled. Those that made the student population fluctuated during the lag time (2 weeks) between phases 1 and 2.

4.2.2. Procedure

The study followed the ethical guidelines of the Helsinki declaration [14]. The ethical guidelines set out by the University of Nantes for the conduct of research on human subjects do not require that research on students be approved by an institutional review board. Nevertheless, the ethical aspects of all research on students were carefully considered by the faculty and students prior to the beginning of the study. Students were approached in their academic department, and the questionnaires to complete were provided (a) in their classroom following the agreement of the director, and (b) during a lecture. The questionnaires took 15 min to complete and anonymity of students was guaranteed.

4.2.3. Measure

This is a self-administered inventory consisting of instructions, a list of twenty-seven traumatic events divided into five categories (disasters, accidents, sexual violence-aggression, physical violence-aggression (sexual nature excepted) and death) and differentiated according to four types of exposure (“I experienced it personally”; “I witnessed it”; “A close friend/family member who experienced it told me about it”; “I have to deal with the negative consequences of the event in my job (e.g. firefighters, doctors, psychologists, etc.)”), specifying the number of exposures, the date(s) of the event(s), as well as a scale of the intensity of the distress felt (Likert scale going from 0 to 10). For each traumatic event, the respondent has to indicate the number of exposures corresponding to the type of exposure, and then give the approximate

date(s) of the event(s) and lastly circle the number on the Likert scale of 0 to 10 to assess the current level of intensity of the distress felt.

4.2.4. Data analysis section

Statistical analyses were performed with SPSS Version 22 (IBM software). We then calculated the stability coefficient of the IET between the two sets of scores linked to the level of distress by using Pearson's correlation (r) [10]. According to Fortin (1994) [10], when it comes to a new measurement tool, the reliability coefficients must exceed .70.

4.3. Result

Descriptive analyses indicated the range of exposure to traumatic events in our sample. The results of the test-retest show that the average number of exposure per category of traumatic events varies little in the administration between phases 1 and 2. Also, the average level of distress is stable between the two phases of administration of IET.

The stability coefficients for each category of traumatic events are significant and range from .67 (death) to .87 (sexual assaults).

Include here Table 2 and Table 3

4.4. Discussion

According to Fortin (1994) [10], a high stability coefficient indicates that the measure varies little between the two phases of the test-retest (see Table 3). In view of our results, we can say that our inventory evaluates the same phenomenon.

5. Discussion

There are many instruments available for assessing traumatic events. Despite their good psychometric qualities, these instruments have several limitations such as not taking into account the characteristics of the DSM-5 definition [15] and a long test period. In addition, they have not undergone a French validation. This led us to construct and validate a French spoken instrument to identify exposure to traumatic events, the Inventory of traumatic Events (IET), in order to overcome the shortcomings in the French literature.

The Inventory of traumatic Events is a self-administered instrument consisting of a list of twenty-seven traumatic events divided into five categories of events and differentiated into four types of exposure. The IET also takes other characteristics into account like the number of

exposures and the date(s) of exposure(s) to the traumatic event. Moreover, it assesses the intensity of the current distress felt for each event.

Concerning the psychometric properties, the IET has a good inter-judge validity, a good reliability and finally, a good stability. It is a tool that can be easily filled out in a minimum period of time (about 10 minutes) and deal with most of the traumatic events.

Moreover, as part of our validation procedure, we didn't resort to the use of a social desirability scale, because we thought that our inventory is not subject to a social desirability bias in view of the fact that it is not a scale of attitude.

Today, there is a lack of studies in the French literature about the prevalence of traumatic events in the general population. Our instrument will enable epidemiological studies to be carried out, demonstrating the importance of using this inventory of traumatic events in the research context.

It will thus be possible to work with professional teams specializing in psychological trauma. The advantage of using IET in clinical practice is that it can be used as a screening tool for trauma exposure.

Following the modification of the criteria for traumatic events in the DSM-5, several studies have highlighted a possible increase in the prevalence of post-traumatic stress disorder [16]. This can be assessed by using a measuring instrument like the IET to identify the characteristics of traumatic events. The IET could also be used as part of research protocols for assessing the psychopathological impact of exposure to traumatic events.

In addition, a better identification of traumatic events will encourage an earlier screening for potential post-traumatic stress disorders. This will, in turn, lead to earlier and more appropriate guidance regarding future psychotherapeutic care. In fact, the use of the Inventory of Traumatic Events in the clinical field is currently being studied.

6. Conclusion

Exposure to one or more traumatic events during their lifetime is not a rare phenomenon. These are sudden, uncontrollable and unpredictable events. Current literature has shown that exposure to traumatic events causes psychopathological repercussions in the medium or long term in

individuals. To assess traumatic events, there are many validated international measurement tools to date. However, these measurement tools don't rely on the criteria of the fifth version of the Diagnostic and Statistical Manual of Mental [1] and there is a lack of validated measurement tools in French version. So, we have constructed and validated a measurement tool to identify exposure to traumatic events in the French population, The Inventory of Traumatic Events (IET). The IET has good psychometric qualities. The advantage of the IET is that it is a self-administering tool with a short completion time (10 minutes). It can be used in different research contexts as well as in the clinical field in order to better identify exposure to traumatic events in order to propose appropriate clinical and therapeutic recommendations.

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Conflicts of interest : none

Figure 1. Content Validity Index (CVI) – Representativeness

Category	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Number of experts in agreement	CVI (item-CVI)
Disasters	Item 1	7	4	5	7	7	7	6/6	1.00
	Item 2	7	7	4	7	7	7	6/6	1.00
	Item 3	7	5	3	7	7	7	5/6	.83
	Item 4	7	2	2	7	7	7	4/6	.67
	Item 5	7	6	6	7	5	7	6/6	1.00
	Item 6	7	3	7	7	5	7	5/6	.83
	Item 7	7	7	7	7	7	7	6/6	1.00
Accidents	Item 1	5	5	5	5	5	5	6/6	1.00
	Item 2	5	3	1	5	5	5	5/6	.83
	Item 3	5	4	4	5	5	5	6/6	1.00
	Item 4	5	2	3	5	5	5	5/6	.83
	Item 5	5	1	2	5	5	5	4/6	.67
Intentional violence	Item 1	9	9	9	9	9	9	6/6	1.00
	Item 2	9	8	8	9	9	9	6/6	1.00
	Item 3	9	6	4	9	9	9	5/6	.83
	Item 4	9	8	2	9	9	9	5/6	.83
	Item 5	9	7	7	9	9	9	6/6	1.00
	Item 6	9	6	3	9	9	9	5/6	.83
	Item 7	9	9	5	9	9	9	6/6	1.00
	Item 8	9	5	1	9	9	9	5/6	.83
	Item 9	9	2	6	9	9	9	5/6	.83
Death	Item 1	5	4	5	5	5	5	6/6	1.00
	Item 2	5	5	4	5	5	5	6/6	1.00
	Item 3	5	3	3	5	5	5	6/6	1.00
	Item 4	5	2	2	5	5	5	4/6	.67
	Item 5	5	1	1	5	5	5	4/6	.67

Table 1. Characteristics of traumatic events in our sample (N = 148)

Category of traumatogenictrau matic events	Type of exposure								Distress	
	Direct exposure		Indirect exposure		Direct vicarious exposure		Indirect vicarious chronic exposure			
	Phase 1 Average (SD)	Phase 2 Average (SD)	Phase 1 Average (SD)	Phase 2 Average (SD)	Phase 1 Average (SD)	Phase 2 Average (SD)	Phase 1 Average (SD)	Phase 2 Average (SD)	Phase 1 Average (SD)	Phase 2 Average (SD)
DISASTERS	1.76 (0.99)	1.88 (1.41)	1.47 (0.93)	1.31 (0.59)	1.42 (0.73)	1.44 (0.82)	0	0	2.17 (2.16)	2.67 (2.44)
SEXUAL ASSAULTS	1.62 (1.21)	2.15 (2.03)	1.33 (0.58)	0	1.55 (0.99)	1.67 (1.23)	0	0	5.71 (2.81)	5.80 (2.83)
NON-SEXUAL ASSAULTS	2.25 (3.38)	2.15 (2.11)	1.87 (1.25)	1.57 (0.81)	1.97 (1.47)	1.71 (1.05)	0	0	4.63 (2.91)	4.34 (2.55)
ACCIDENTS	1.77 (1.21)	1.76 (1.30)	1.95 (1.93)	1.54 (1.25)	2.74 (3.19)	2.15 (2.52)	1	0	4.04 (2.63)	4.13 (2.87)
DEATH	1.47 (0.80)	1 (0)	1.66 (0.99)	1.98 (1.11)	2.33 (2.50)	2.25 (1.12)	0	0	6.27 (2.49)	5.65 (2.75)

Table 2. Correlation matrix of the level of distress depending on the category of traumatic events

	Disasters (phase 2)	Sexual assaults (phase 2)	Non-sexual assaults (phase 2)	Accidents (phase 2)	Death (phase 2)

Disasters (phase 1)	0.74**				
Sexual assaults (phase 1)		0.87**			
Non-sexual assaults (phase 1)			0.83**		
Accidents (phase 1)				0.70**	
Death (phase 1)					0.67**