

Rationale For Separating PTSD, Depressive And Anxiety Disorders: A Belgian Study Based On The Terrorist Attacks Of March 22th 2016

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Abstract

The DSM-V separates posttraumatic stress disorders (PTSD) from anxiety disorders. The authors conducted a prospective study aiming to observe the evolution of Post-traumatic Stress Disorder (PTSD); depressive and anxiety disorders symptoms (DAD); and the protective role of Sense of Coherence (SOC) after the Brussels March 2016 terrorist attacks. They collected data in a non-clinical sample of 464 participants two days (time 1) and three months (time 2) after the attacks. They measured the level of PTSD, DAD and SOC at time 1 and 2. They observed a negative relationship between SOC and both DAD (effect size of .40) and PTSD symptoms (effect size of .10). A high level of SOC enables subjects to overcome DAD symptoms (Effect size .02) faster than subjects with lower level of SOC. This effect is not present regarding the evolution of PTSD symptoms. This study presents some limitations. All scales are self-reported measures. Second, there might be a selection bias since among 2017 participants at time 1 only 464 completed the follow up questionnaire at time 2. Third, the considered trauma is a Secondary Traumatic Stress since participants were not direct victims of the attacks. However, results confirm the relevance of the current separation of PTSD from anxiety disorders. Authors propose an interpretation of this relevance taking into account the cognitive distortion observed in PTSD. At a clinical level, PTSD and DAD should benefit from different therapeutic interventions after trauma exposure.

Keywords— Depressive and Anxiety Disorders, PTSD, Sense of Coherence, Terrorism.

I. INTRODUCTION

On Tuesday March 22, 2016, three suicide bombings occurred in Brussels, Belgium: two at the Brussels International Airport and one in Maalbeek subway station. Thirty-two civilians were killed and more than 300 people were injured. Islamic State of Iraq claimed responsibility for the attacks. Two days following these attacks, our research team started a prospective study about the psychological consequences of this collective trauma.

The lifetime prevalence of exposure to traumatic events is high (70.4% of the population in the study of assessing a sample of 68.894 participants [1]) and trauma is associated with an increased prevalence of several psychiatric disorders, e.g. Acute Stress Disorder (ASD, an acute reaction to trauma occurring during the first month after the exposure), Post-Traumatic Stress Disorder (PTSD, a syndrome occurring at least one month after the exposure to trauma), depression and generalized anxiety disorders [2].

DAD are a major public health problem in Western countries [3]. In the USA, the lifetime prevalence of depressive and anxiety disorders are 28.8% and 20.8%, respectively. In Europe, DAD result in 6% of the burden of all diseases with respect to disability-adjusted life years (DALYs).

PTSD is also a major public health problem, overall lifetime prevalence rates ranging from 8.8% in US sample population [4] to 1.3% in European sample population [5]. Moreover, the emotional, societal, interpersonal and psychosocial costs of PTSD are substantial [6]. Following DSM-IV-TR three symptom clusters define PTSD: intrusion, avoidance and hyper-arousal [7].

The DSM-V introduces several changes in the PTSD criteria. First, DSM-V maintains the three criteria of (a) re-experiencing the trauma, (b) avoidance and (c) hyper arousal but adds the criterion of negative thoughts or feelings that begin or worsen after the

trauma. Second, the DSM-V separates PTSD from anxiety disorders and includes it in a new section: Trauma and stressor-related disorders.

Two rationales underlie this major change. First, PTSD is necessarily caused by traumatic stressors, becoming one of the few syndromes of the DSM-V with a known etiology. On the contrary, other disorders, such as depression and anxiety, may just be exacerbated by such stressors but do not call for specific etiology [8][9]. Second, patients with PTSD suffer from more important cognitive impairment than patients with anxiety disorders [10]. Indeed, cognitive theories of PTSD emphasizes that information-processing resources are preferentially devoted to threat detection to the detriment of other cognitive activities [11]. This cognitive distortion could be specific to PTSD when compared to anxiety disorders. The DSM-V criteria reflect this by specifically attributing dissociative amnesia and distorted cognitions to PTSD.

Although trauma exposure can have several clinical consequences, many people overcome these events without suffering from these consequences [12][13]. Several theoretical perspectives address the way people cope with trauma [14][15]. Among them, one important concept of adaptation to stress or trauma emerges from the literature: Sense of Coherence (SOC, Antonovsky, 1987).

SOC refers to a global perception of the world and the individual environment as comprehensible (cognitive component), manageable (behavioral component) and meaningful (emotional component) [16]. Following the above description, it appears that SOC has an important cognitive component. Therefore, if the cognitive distortion specific to PTSD, that we described previously, holds true, it could be hypothesized that the protective role of SOC will be weaker for PTSD than for DAD.

The link between SOC and DAD is well known [17]. Eriksson and Lindström emphasized a negative correlation between SOC and DAD; more specifically, in the case of stressful life events, high level of SOC predicts a lower level of DAD and conversely [18]. Braun-Lewensohn and Sagy show a negative relationship between SOC, anger, psychological distress, and anxiety among a population exposed to missiles attacks [19]. Braun-Lewensohn, Sagy, & Roth emphasized that SOC was a mediator between trauma and DAD [20]. In a prospective study, Chumblor, Rittman, and Wu show that people with a high level of SOC are more efficient than those with a low level of SOC to reduce their level of DAD on a two years' time period after a stroke [21]. Regarding PTSD, SOC total score also correlates negatively with the development of PTSD in traffic accident victims [22].

Consistently with the hypothesis that SOC will be less efficient to protect against PTSD than against DAD, Engelhard, van den Hout, and Vlaeyen studied in a prospective study, the sense of coherence, depression and post-traumatic stress among 118 women, after pregnancy loss [23]. They showed that SOC is negatively correlated to Depression and PTSD. However, the link was weaker for PTSD than for Depression: 42% of explained variance for Depression against 14% of explained variance for PTSD. Lastly, Mehnert, & Koch measured both PTSD and DAD in a prospective study of 127 breast cancer patients [24]. Here again, whereas the number of subjects diagnosed with PTSD decreased by 2% (from 18.5% to 16.3% of the total sample, N = 108 at time 1 and 98 at time 2), the number of subjects diagnosed with DAD decreased by 9% (55% to 46% of the total sample).

At this time of our introduction, we have defined trauma, ASD, DAD, PTSD, SOC and emphasized the debate about the differences and similarities between PTSD and DAD. This paper reports the first results of a study aiming at better understanding the specificities of the evolution of PTSD and DAD after a trauma exposure and the ways people cope with psychological distress. We investigate a non-clinical Belgian population exposed to terrorist attacks (see method section for more details about this population) with the purpose to validate four hypotheses (two "cross-sectional" and two "dynamic") that emerge from our theoretical approach.

Cross-sectional hypotheses:

(1) According to Lindström and Eriksson [25] and to Fossion et al. [17] subjects with a higher level of SOC at time 1 will have less DAD symptoms than subjects with lower level of SOC at time 1 (see method section) after terrorist attacks.

(2) According to Frommberger et al. [22], subjects with a higher level of SOC will have less PTSD symptoms than subjects with lower level of SOC at the time 1 (see method section) after terrorists attacks.

Dynamic hypotheses

(3) In a prospective design, the level of SOC will predict differently the evolution of DAD and PTSD symptoms between time 1 and time 2 after terrorist attacks. More specifically: (3a) consistently with Chumbler et al. [21] SOC will predict a strong decrease of DAD between time 1 and time 2 whereas (3b) consistently with Mehnert and Koch [24] and Engelhard et al. [23] results, and following Qureshi et al. [10], the level of SOC will predict a weak decrease of PTSD symptoms between time 1 and time 2.

II. METHOD

A. Participants and Procedure

Two days after the attacks, 2017 non-clinical Belgian citizens were recruited through social networks and were asked to fill a structured questionnaire. These citizens were not directly exposed to the trauma but through media and, therefore, presented a Secondary Traumatic Stress (STS) that refers to a set of psychological symptoms that mimic post-traumatic stress disorder, but is acquired through exposure to persons suffering the effects of trauma. In the beginning of the questionnaire, participants found all information concerning the aim of the study. The first click of the questionnaire allowed the participants to give their informed consent. Three months after the attacks, we sent the same questionnaire to the respondents who agreed to communicate their e-mail address. Four hundred sixty-four participants (360 women, Mage = 43.31, SD = 5.66) responded to the second submission. An academic ethical review committee approved all procedures involved with the study.

B. Measures

All instruments were written and validated in French. All participants were either native French speakers or had spoken French since childhood.

13-Item SOC scale (SOC-13). The SOC scale is an abbreviated 13-item version of the SOC-29 self-report questionnaire, which measures the SOC construct [26]. This questionnaire uses a 7-point, semantic and differential scale with a positive attribute at one endpoint and a negative attribute at the other endpoint. This scale has been used in numerous countries and is reliable ($\alpha = .82$). The French version of the SOC scale has satisfactory reliability as well as convergent and discriminant validity [27].

Hopkins Symptom Check List-25 (HSC). To assess the prevalence of DAD, we used the HSC [28], which is a brief, 25-item version of the Symptom Check List [29]. This self-report questionnaire rates the presence of depression and anxiety symptoms using a 4-point scale that ranges from 1 ("not at all") to 4 ("very much"). This scale contains 15 depression items ($\alpha = .92$) and 10 anxiety items ($\alpha = .89$). The global score of HSC is reliable ($\alpha = .94$) and is a valid diagnostic screening tool even across cultures. The French version of the HSC has been validated by previous studies [30].

Impact of Event Scale-R (IES-R). The IES-R is the revised version of the IES developed by Horowitz, Wilner, and Alvarez [31]. Weiss and Marmar proposed this revised 22-item version to accommodate the DSM-IV criteria by adding items on hyper-arousal symptoms and flashback experiences [32]. This scale is reliable, for intrusion ($\alpha = .88$), avoidance (α

= .75) and hyper-arousal ($\alpha = .82$) as well as for the global score ($\alpha = .91$). IES-R is also among the most widely used instrument to assess PTSD, partly because of its reliability, construct's validity and use of administration [33]. IES-R is a self-report measure that assesses the current, subjective distress associated with specific life events (e.g., in the present study, the March 22th 2016 attacks). Participants use a 5-point Likert scale (0 to 5) to rate the extent to which each item describes their experiences over the preceding 7 days. The IES-R was validated in French [34]. The test-retest reliability of this French version of the scale is valid with correlation coefficients ranging from .71 to .76 for its three subscales and total score.

C. Data Analysis

All analyses were performed using SPSS v25. Tests were two-tailed.

III. RESULTS

Table 1 shows descriptive statistics for all measures. Table 2 reports correlations between variables.

H1 is confirmed since the correlation between SOC and DAD (global score) at time 1 is significant (see Table 2) showing that participants with a high level of SOC will have less DAD than participants with a lower level of SOC just after being confronted with the 22 March terrorist attack in Brussels. The effect size (r-square) is of .40.

TABLE 1: DESCRIPTIVE STATISTICS AND PAIRED SAMPLE T-TEST

Variable	Time 1 (day 1)	Time 2 (3 months)	t (463)
SOC	4.52 (.88)	N/A	
ES – Avoidance	2.16 (.70)	2.09 (.76)	2.15*
IES – Intrusion	2.45 (.87)	2.03 (.74)	12.62***
IES – Hyper-arousal	2.04 (.88)	1.77 (.77)	8.80***
IES – Total	2.23 (.69)	1.98 (.65)	10.13***
HSC – Anxiety	1.86 (.61)	1.80 (.58)	3.16**
HSC – Depression	1.86 (.62)	1.78 (.62)	3.73***
HSC – Total	1.86 (.58)	1.78 (.57)	3.97***

Note: N = 464 – Mean (SD); * $p < .05$; ** $p < .01$; *** $p < .001$

TABLE 2: CORRELATIONS BETWEEN VARIABLES.

	SOC	iesA1	iesI1	iesH1	iesT1	hscA1	hscD1	hscT1	iesA2	iesI2	iesH2	iesT2	hscA2	hscD2
iesA1	-.31													
iesI1	-.20	.42												
iesH1	-.30	.51	.79											
iesT1	-.31	.74	.89	.90										
hscA1	-.52	.40	.48	.62	.59									
hscD1	-.64	.40	.45	.53	.54	.73								
hscT1	-.63	.43	.49	.61	.60	.90	.96							
iesA2	-.31	.59	.35	.47	.55	.40	.36	.40						
iesI2	-.20	.35	.62	.60	.62	.46	.39	.45	.53					
iesH2	-.30	.40	.50	.68	.61	.53	.49	.54	.56	.77				
iesT2	-.32	.52	.57	.67	.69	.53	.47	.53	.82	.89	.89			
hscA2	-.47	.26	.33	.45	.41	.73	.60	.70	.36	.46	.58	.53		
hscD2	-.53	.25	.28	.39	.36	.57	.68	.68	.35	.40	.53	.48	.75	
hscT2	-.54	.27	.32	.44	.40	.67	.69	.73	.38	.45	.58	.53	.90	.96

Note: All p-values are < .001; iesA = ies – Avoidance; iesI = ies – Intrusion; iesH = ies – Hyper-arousal; iest = ies – total; hscA = hsc – Anxiety; hscD = hsc – Depression; hscT = hsc – total; 1 = time 1; 2 = time 2.

TABLE 3A: MIXED ANOVA TESTING THE INFLUENCE OF SOC ON DAD AFTER 1 DAY AND 3 MONTHS (TIME)

Source	SS	df	MS	F	η^2_p
Between-subjects					
SOC	122.59	1	122.59	319.94***	.41
Error	177.02	462	.38		
Within-subject					
Time	1.67	1	1.67	13.57***	.03
Time x SOC	1.12	1	1.12	9.12***	.02
Error	56.98	462	.12		

Note: * p < .05; ** p < .01; *** p < .001.

TABLE 3B: MIXED ANOVA TESTING THE INFLUENCE OF SOC ON PTSD AFTER 1 DAY AND 3 MONTHS (TIME)

Source	SS	df	MS	F	η^2_p
Between-subjects					
SOC	40.79	1	40.79	60.93***	.12
Error	309.30	462	.67		
Within-subject					
Time	.68	1	.68	4.79**	.01
Time x SOC	.01	1	.01	.07 ^{ns}	.00
Error	65.36	462	.14		

Note: * p < .05; ** p < .01; *** p < .001.

H2 is confirmed since the correlation between SOC and PTSD (global score) at time 1 is significant (see Table 2) showing that participants with a high level of SOC will have less PTSD than participants with a lower level of SOC just after being confronted with the 22 March terrorist attack in Brussels. The effect size (r-square) is of .10.

To test H3a and H3b, we computed two repeated measure analyses between time 1 and time 2 for both DAD (Table 3a) and PTSD (Table 3b) symptoms with SOC defined as covariable. The first shows a significant decrease of DAD between time 1 and time 2. Moreover, the interaction between the within factor (DAD t1 vs t2) and the covariable (SOC) is significant showing that people with a high level of SOC will recover from DAD faster than people with a low level of SOC (Table 3a). The second shows a significant decrease of PTSD symptoms between time 1 and time 2. However, the interaction between the within factor (PTSD t1 vs t2) and the covariable (SOC) is not significant showing no sign that people with a high level of SOC would recover faster from PTSD than those with a low level of SOC (Table 3b).

IV. DISCUSSION

Consistently with our hypothesis, people perceiving their environment as comprehensible, manageable and meaningful (i.e. having a high level of SOC) present a lower level of both DAD and PTSD symptoms after being exposed to terrorist attacks than people less able to maintain such a coherent perception. However, this perception

impacts differently the evolution of the two syndromes. As predicted, whereas a high level of SOC enables individuals to overcome DAD symptoms faster than individuals with lower level of SOC, this effect is not observed for PTSD symptoms. Indeed, although we can observe a decrease of PTSD symptoms between time 1 and time 2, the level of SOC does not significantly influence this decrease. This difference in the evolution of the two syndromes is in line with the DSM V current nosological decision to separate PTSD from DAD. It is consistent with the idea that PTSD is more specifically related to cognitive distortions than DAD. Hence, we propose that perceiving one's environment as meaningful, manageable and comprehensible might not be of any help for PTSD distorted uncontrolled cognitions.

V. LIMITATIONS

This study has some limitations worth taking into account. First all scales are self-reported measures, suffering from all usual limitations of such method (e.g. subjectivity, social desirability, low emotional implication, lack of ecological validity). Second, there is a possible selection bias in the sense that among 2017 participants at time 1, only 464 answered the follow up at time 2. Many explanations, besides the most obvious desire to maintain full anonymity and the ability to be joinable (to pursue the study participants had to agree to communicate a valid e-mail address), can account for this bias. For example, one might think that participants unable to overcome the psychological distress or, on the contrary, having totally overcome the psychological distress were unwilling to pursue the study.

Third, the considered trauma is a STS since participants were not direct victims of the attacks. Fourth, following Terr's classification of the trauma, the nature of the trauma investigated in the present study is only a type 1 trauma [35]. Type 1 trauma relates to a sudden unique event, type 2 relates to a repeated trauma such as sexual abuse or domestic violence among family. Fifth, our first series of measures, occurring during the first month before the terrorist attacks, assesses the symptoms of PTSD in subjects that might in fact be suffering from acute stress disorder (i.e. reaction to trauma during the first month after the exposure). However, the two syndromes share the same three symptoms clusters (i.e. avoidance, hyper arousal and intrusive thoughts). Consecutively, the IES-R scale can evaluate them both, allowing us to compare their evolution between time 1 and time 2.

VI. CONCLUSION

Notwithstanding these limitations, both theoretical and applied implications can be drawn from our results yielding two take-home messages:

(1) At a theoretical level, our results confirm the relevance of separating PTSD from anxiety disorders since the dynamical recovery processes of the two syndromes seem to be different.

(2) At a clinical applied level, our results suggest that it is worth bolstering individuals' perception of their environment manageability; meaningfulness and comprehensibility (i.e. SOC's skills) to treat DAD. For PTSD symptoms, results suggest that it might be more effective to focus on cognitive rehabilitation to restore patients control on their cognitions.

Further study should replicate our results on other types of trauma (e.g. Type 2 trauma) and on samples of victims directly exposed to traumatic events. Other studies could also measure the psychological distress through biological markers, pathological behaviors or other implicit measures (i.e. uncontrollable by the participant) rather than on self-reported measures.

REFERENCES

- [1] R. C. Kessler et al., "Trauma and PTSD in the WHO world mental health surveys," *Eur. J. Psychotraumatol.*, vol. 8, suppl. 5, p. 1353383, 2017.
- [2] C. A. Fullerton and R. J. Urbano, "Psychological and psychopathological consequences of disasters," in *Disasters and Mental Health*, J. J. Lopez-Ibor, G. Christodoulou, M. Maj, N. Sartorius, and A. Okasha, Eds. Chichester, U.K.: Wiley, pp. 13–36, 2005.
- [3] P. Fossion et al., "Depression, anxiety and loss of resilience after multiple traumas: An illustration of a mediated moderation model of sensitization in a group of children who survived the Nazi Holocaust," *J. Affect. Disord.*, vol. 151, no. 3, pp. 973–979, 2013.
- [4] N. Breslau, H. C. Wilcox, C. L. Storr, V. C. Lucia, and J. C. Anthony, "Trauma exposure and posttraumatic stress disorder: A study of youths in urban America," *J. Urban Health*, vol. 81, no. 4, pp. 530–544, 2004.
- [5] A. Perkonig, R. C. Kessler, S. Storz, and H. U. Wittchen, "Traumatic events and post-traumatic stress disorder in the community: Prevalence, risk factors and comorbidity," *Acta Psychiatr. Scand.*, vol. 101, no. 1, pp. 46–59, 2000.
- [6] J. Hunsley and E. J. Mash, Eds., *A Guide to Assessments That Work*. Oxford, U.K.: Oxford Univ. Press, 2008.
- [7] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*. Washington, DC, USA: American Psychiatric Publishing, p. 143, 2013.
- [8] M. J. Friedman, P. A. Resick, R. A. Bryant, and C. R. Brewin, "Considering PTSD for DSM-5," *Depress. Anxiety*, vol. 28, no. 9, pp. 750–769, 2011.
- [9] A. P. Levin, S. B. Kleinman, and J. S. Adler, "DSM-5 and posttraumatic stress disorder," *J. Am. Acad. Psychiatry Law*, vol. 42, no. 2, pp. 146–158, 2014.
- [10] S. U. Qureshi et al., "Does PTSD impair cognition beyond the effect of trauma?" *J. Neuropsychiatry Clin. Neurosci.*, vol. 23, no. 1, pp. 16–28, 2011.
- [11] J. P. Hayes, M. B. VanElzakker, and L. M. Shin, "Emotion and cognition interactions in PTSD: A review of neurocognitive and neuroimaging studies," *Front. Integr. Neurosci.*, vol. 6, p. 89, 2012.
- [12] N. Breslau, G. C. Davis, P. Andreski, and E. Peterson, "Traumatic events and posttraumatic stress disorder in an urban population of young adults," *Arch. Gen. Psychiatry*, vol. 48, no. 3, pp. 216–222, 1991.
- [13] P. Fossion et al., "Beware of multiple traumas in PTSD assessment: The role of reactivation mechanism in intrusive and hyper-arousal symptoms," *Aging Ment. Health*, vol. 19, no. 3, pp. 258–263, 2015.
- [14] P. Fossion et al., "Psychological and socio-demographic data contributing to the resilience of Holocaust survivors," *J. Psychol.*, 2014.
- [15] C. Leys et al., "Perspectives on resilience: Personality trait or skill?" *Eur. J. Trauma Dissociation*, 2018.
- [16] M. Eriksson and B. Lindström, "Validity of Antonovsky's sense of coherence scale: A systematic review," *J. Epidemiol. Community Health*, vol. 59, no. 6, pp. 460–466, 2005.
- [17] P. Fossion et al., "Disentangling sense of coherence and resilience in case of multiple traumas," *J. Affect. Disord.*, vol. 160, pp. 21–26, 2014.
- [18] M. Eriksson and B. Lindström, "Life is more than survival: Exploring links between Antonovsky's salutogenic theory and the concept of resilience," in *Wayfinding Through Life's Challenges: Coping and Survival*, K. W. Gow and M. Celinski, Eds. New York, NY, USA: Nova Science Publishers, pp. 31–46, 2011.
- [19] O. Braun-Lewensohn and S. Sagy, "Community resilience and sense of coherence as protective factors in explaining stress reactions: Comparing cities and rural communities during missile attacks," *Community Ment. Health J.*, vol. 50, no. 2, pp. 229–234, 2014.

- [20] O. Braun-Lewensohn, S. Sagy, and G. Roth, "Adolescents under missile attacks: Sense of coherence as a mediator between exposure and stress-related reactions," *J. Adolesc.*, vol. 34, no. 1, pp. 195–197, 2011.
- [21] N. R. Chumbler, M. R. Rittman, and S. S. Wu, "Associations in sense of coherence and depression in caregivers of stroke survivors across two years," *J. Behav. Health Serv. Res.*, vol. 35, no. 2, pp. 226–234, 2008.
- [22] U. Frommberger et al., "The concept of sense of coherence and the development of posttraumatic stress disorder in traffic accident victims," *J. Psychosom. Res.*, vol. 46, no. 4, pp. 343–348, 1999.
- [23] I. M. Engelhard, M. A. van den Hout, and J. W. Vlaeyen, "The sense of coherence in early pregnancy and crisis support and posttraumatic stress after pregnancy loss: A prospective study," *Behav. Med.*, vol. 29, no. 2, pp. 80–84, 2003.
- [24] A. Mehnert and U. Koch, "Prevalence of acute and post-traumatic stress disorder and comorbid mental disorders in breast cancer patients during primary cancer care: A prospective study," *Psycho-Oncology*, vol. 16, no. 3, pp. 181–188, 2007.
- [25] B. Lindström and M. Eriksson, "Salutogenesis," *J. Epidemiol. Community Health*, vol. 59, no. 6, pp. 440–442, 2005.
- [26] A. Antonovsky, *Unraveling the Mystery of Health: How People Manage Stress and Stay Well*. San Francisco, CA, USA: Jossey-Bass, p. 189, 1987.
- [27] K. Gana and S. Garnier, "Latent structure of the sense of coherence scale in a French sample," *Pers. Individ. Dif.*, vol. 31, no. 7, pp. 1079–1090, 2001.
- [28] L. R. Derogatis, R. S. Lipman, K. Rickels, E. H. Uhlenhuth, and L. Covi, "The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory," *Syst. Res. Behav. Sci.*, vol. 19, no. 1, pp. 1–15, 1974.
- [29] L. R. Derogatis, R. S. Lipman, and I. Covi, "The SCL-90: An outpatient psychiatric rating scale," *Psychopharmacol. Bull.*, vol. 9, pp. 13–28, 1973.
- [30] T. Bean, I. Derluyn, E. Eurelings-Bontekoe, E. Broekaert, and P. Spinhoven, "Validation of the multiple language versions of the Hopkins Symptom Checklist-37 for refugee adolescents," *Adolescence*, vol. 42, no. 165, pp. 51–67, 2007.
- [31] M. Horowitz, N. Wilner, and W. Alvarez, "Impact of Event Scale: A measure of subjective stress," *Psychosom. Med.*, vol. 41, no. 3, pp. 209–218, 1979.
- [32] D. S. Weiss and C. R. Marmar, "The Impact of Event Scale-Revised," in *Assessing Psychological Trauma and PTSD*, J. P. Wilson and T. M. Keane, Eds. New York, NY, USA: Guilford Press, pp. 399–411, 1997.
- [33] J. P. Wilson and T. M. Keane, Eds., *Assessing Psychological Trauma and PTSD*. New York, NY, USA: Guilford Press.
- [34] A. Brunet, A. St-Hilaire, L. Jehel, and S. King, "Validation of a French version of the Impact of Event Scale-Revised," *Can. J. Psychiatry*, vol. 48, no. 1, pp. 56–61, 2003.
- [35] L. C. Terr, "Childhood traumas: An outline and overview," *Am. J. Psychiatry*, vol. 148, pp. 10–20, 1991.