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BASIC RESEARCH ARTICLE

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Development and validation of the Stressful Experiences in Transit Questionnaire (SET-Q) and its Short Form (SET-SF)

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ABSTRACT

Background: Previous studies have demonstrated that traumatic experiences from countries of origin (so-called pre-migratory factors), as well as stressors in countries of destination (so-called post-migratory factors), are related to the extent of mental health difficulties and psychological well-being of refugees. However, numerous risks that this population is exposed to during transit have so far been neglected.

Objective: The aim of this research was to construct and validate a questionnaire for assessing stressful and traumatic experiences in transit as well as its short form, which would at the same time provide information on one's stressful experiences as well as existing risks that refugees are exposed to on their journey.

Method: The study was realized in three phases – item construction, item revision and instrument validation. In the validation phase, a total of 226 refugees completed the Stressful Experiences in Transit Questionnaire (SET-Q), along with Harvard Trauma Questionnaire (HTQ) Parts I and IV, Hopkins Symptom Checklist-25 (HSCL-25) and Beck Depression Inventory – II (BDI-II).

Results: Refugees were exposed to an average of 13 stressful events during transit. SET-Q total score was positively correlated with HTQ Part IV Post-Traumatic Stress Disorder (PTSD) and Self-Perception of Functioning scales (SPFS) while the number of stressful experiences with the local population was positively related to BDI-II depression symptoms. Moreover, SET-Q scores were significant predictors of PTSD and SPFS even after traumatic experiences in the country of origin, assessed by HTQ Part I, were taken into account. A short form of the questionnaire (SET-SF) has also been developed.

Conclusions: SET-Q is a valid instrument for measuring the scope of stressful experiences refugees have been exposed to during transit, targeted for this population specifically. Furthermore, SET-SF has the potential to assess the same extent of stressful experiences with a significantly reduced number of items.

Desarrollo y validación del Cuestionario de Experiencias Estresantes en Tránsito (SET-Q) y su forma abreviada (SET-SF)

Antecedentes: estudios previos han demostrado que las experiencias traumáticas de los países de origen (los llamados factores pre-migratorios), así como los factores estresantes en los países de destino (los llamados factores post-migratorios) están relacionados con el grado de dificultades en salud mental y el bienestar psicológico de los refugiados. Sin embargo, numerosos riesgos a los que esta población está expuesta durante el tránsito han sido hasta ahora desatendidos.

Objetivo: El objetivo de esta investigación fue construir y validar un cuestionario para evaluar las experiencias estresantes y traumáticas del tránsito migratorio, así como una forma abreviada, que pueda proporcionar información sobre las experiencias estresantes, así como los riesgos a los que están expuestos los refugiados en su viaje.

Método: El estudio se realizó en tres fases: construcción de ítems, revisión de ítems y validación del instrumento. En la fase de validación, un total de 226 refugiados completaron el Cuestionario de Experiencias Estresantes en Tránsito (SET-Q), junto con el Cuestionario de Trauma de Harvard (HTQ) partes I y IV, la Lista de Chequeo de Síntomas de Hopkins-25 (HSCL-25) y el Inventario de Depresión de Beck - II (BDI-II).

Resultados: Los refugiados estuvieron expuestos a un promedio de 13 eventos estresantes durante el tránsito. La puntuación total de SET-Q se correlacionó positivamente con la parte IV del HTQ que evalúa el trastorno por estrés postraumático (PTSD) y las escalas de autopercepción del funcionamiento (SPFS), mientras que el número de experiencias estresantes con la población local se relacionó positivamente con los síntomas de depresión evaluados con el BDI-II. Además, las puntuaciones SET-Q fueron predictores significativos de trastorno de estrés postraumático y la autopercepción de funcionamiento, incluso después

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de las experiencias traumáticas en el país de origen, evaluadas por HTQ Parte I, que se tuvo en cuenta. También se ha desarrollado una forma corta del cuestionario (SET-SF).

Conclusiones: SET-Q es un instrumento válido para medir el alcance de las experiencias estresantes a las que los refugiados han estado expuestos durante el tránsito, específicamente para esta población. Además, la forma abreviada tiene el potencial de evaluar el mismo grado de experiencias estresantes con un número significativamente menor de items.

迁移过程问卷（SET-Q）及其简版（SET-SF）中应激体验的开发和验证

背景：以前的研究表明，来自原籍国的创伤经历（迁移前因素）以及目的国的应激因素（迁移后因素）与难民心理问题和心理健康的程度有关。然而，迄今为止这一人群在迁移过程中面临的诸多风险是被忽视的。

目标：本研究的目的是构建和验证调查问卷，以评估迁移时的应激和创伤经历，并开发其简版形式，以用于了解难民旅途中的应激经历和暴露的现有风险。

方法：该研究分三个阶段实现：题目构建，题目修订和工具验证。在验证阶段，共有226名难民完成了'过渡中问卷调查表'（SET-Q），以及哈佛创伤问卷（HTQ）第一部分和第四部分，霍普金斯症状检查表-25（HSCL-25）和贝克抑郁量表 - Ⅱ（BDI-Ⅱ）。

结果：难民在迁移过程中平均受到13次应激事件的影响。 SET-Q总分与HTQ第四部分创伤后应激障碍（PTSD）和自我感知功能量表（SPFS）呈正相关，而当地人群接触的应激经历数与BDI-II抑郁症状呈正相关。此外，SET-Q评分是创伤后应激障碍和SPFS的重要预测因素，即使在HTQ第一部分评估的原籍国的创伤经历被控制后也是如此。我们还开发了一种简短形式的问卷（SET-SF）。

结论：SET-Q是衡量难民在迁移期间遭受的应激体验范围的有效工具。此外，SET-SF有可能通过显著减少的题目来评估相同程度的应激体验。

1. Background

From the beginning of 2015, a large number of displaced people have been forced to flee their country of origin due to war, armed conflicts, fear of persecutions and poverty. This refugee flow, often called the *refugee crises*, is one of the biggest in the last decades. According to United Nations High Commissioner for Refugees (UNHCR) reports, the number of people who were forcibly displaced reached 65.6 million by the end of 2016 (UNHCR, 2017).

1.1. Pre-migration and post-migration factors

Numerous studies have shown that refugees, asylum seekers and migrants[1] worldwide experience high rates of traumatic experiences before fleeing their countries, often called pre-migration factors or pre-migration traumatic experiences (Priebe, Giacco, & El-Nagib, 2016). These experiences, among others, usually include physical, sexual and psychological violence, being exposed to life treating circumstances, not having access to basic living conditions, human right violations and torture, forced mobilization, death of loved ones, and many others (Carswell, Blackburn, & Barker, 2009; Keller et al., 2003; Steel et al., 2009; Vukčević Marković, Gašić, & Bjekić, 2017). The impact of traumatic events experienced in the country of origin on refugees' physical and mental health and well-being has been demonstrated in numerous studies, indicating that both the number and the type of pre-migration traumatic events are associated with mental health problems (Bogic et al., 2012; Cantekin & Gençöz, 2017; Gerritsen et al.,

2006; Steel et al., 2009; Vukčević, Momirović, & Purić, 2016).

Recently, the scope of studies exploring refugees' exposure to traumatic experiences has put additional focus on exploring post-migration factors (Priebe et al., 2016), i.e. stressors that refugees are exposed to upon their arrival to destination countries. These studies indicate that post-migration living difficulties are usually grouped in a few clusters, such as family issues, discrimination, asylum procedure, socio-economic living conditions, socio-religious aspects, and work-related issues (Laban, Gernaat, Komproe, Van Der Tweel, & De Jong, 2005). Many studies indicated a negative impact that these stressors have on refugees' physical and mental health (Alemi et al., 2016; Hallas, Hansen, Stæhr, Munk-Andersen, & Jorgensen, 2007; Laban, Komproe, Gernaat, & de Jong, 2008; Li, Liddell, & Nickerson, 2016; Schweitzer, Melville, Steel, & Lacherez, 2006; Steel, Silove, Bird, & McGorry, 1999).

1.2. Experiences from transit and their impact on mental health

After fleeing their home countries in search for safety, before managing to reach their countries of destinations, a vast majority of refugees spend from several months up to a few years in a so-called 'transit period' or migration. For a majority of them, migration towards European countries means a long and dangerous route across the sea. As indicated by UNHCR reports, from 2014 to 2017, more than 15,000 people died or were reported missing in the Mediterranean Sea (UNHCR, 2018). On the other

hand, of those travelling by land, many were detained, exposed to illegal deportation, physical and psychological violence by smugglers or life-threatening situations such as being left in the cold, without food or water and with no way of reaching help (Vukčević, Dobrić, & Purić, 2014). In addition, transit itself often involves abuse and trafficking, including forced labour and sexual exploitation (Hebebrand et al., 2016).

In addition to being exposed to numerous traumas and life threats, while spending prolonged periods of time in transit countries, refugees are often faced with rejection and discrimination from the local community, degradation of living conditions, poor housing, etc. These variables have been shown to negatively influence emotional and mental health problems, causing depression and anxiety, poorer educational attainment, alcohol and drug problems and increased engagement in violence (Bøe et al., 2017; Coley, Sims, Dearing, & Spielvogel, 2018; Li, Yin, & Jiang, 2017; Murray, 1974; Pevalin, Reeves, Baker, & Bentley, 2017; Pevalin, Taylor, & Todd, 2008; Rudge & Nicol, 2000). Another factor that has been demonstrated to negatively influence mental health is the long, risky and unpredictable transit, which often causes separation from family and close friends, leads to a prolonged period of time with no information about close ones, lack of social support, social isolation and loneliness (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Matthews et al., 2015; Turner & Brown, 2010).

1.3. Current study

Even though there is growing evidence on numerous risks and traumas refugees are faced with during their transit, a vast majority of studies exploring refugees' previous traumatic experiences were only focused on experiences from their countries of origin. Thus, numerous instruments assessing traumatic experiences from the country of origin were developed, culturally adapted and validated. One of the most widely used is the Harvard Trauma Questionnaire (Mollica, McDonald, Massagli, & Silove, 2004), which was adapted for working with refugees from different counties of origin, ethical backgrounds, and employed in different countries of destination (Fouchier et al., 2012; Lhewa, Banu, Rosenfeld, & Keller, 2007; Mollica et al., 2004; Shoeb, Weinstein, & Mollica, 2007; Vukčević et al., 2016). However, no such instrument assessing specifically the traumatic and stressful experiences refugees are exposed to in transit countries has yet been developed and validated. By transit countries, we mean the countries that refugees have travelled through since leaving their country of origin until reaching their final

destination, and we define transit as the period of time spent on this journey.

Understanding the impact of traumatic and stressful experiences from transit on refugees' mental health is essential for clinical interventions and advocacy work in this field. However, lack of proper assessment and studies exploring stressful experiences from transit hinder comprehensive understanding of the impact that traumas and stressors in both country of origin and transit have on refugees' mental health. Thus, the main aim of this study was the development and validation of a comprehensive instrument assessing stressful experiences refugees are faced with in different contexts during transit. Working with refugees is often done in conditions of limited time available for assessment. Therefore, it is important to have short, yet valid instruments which provide information on stressful experiences. With this intention, as part of our primary aim, we also sought to construct a short form of the questionnaire, which would be a brief and easily administrable tool for assessing stressful experiences in transit. The secondary goal of this research was to explore the number and type of stressful experiences refugees are exposed to during transit in order to identify the most prominent sources of protection risks. Finally, as a way of testing instrument validity, we aimed to explore correlations between stressful experiences from the transit and mental health problems, expecting positive correlations. Moreover, in order to evaluate the importance of stressful experiences in transit, we aimed to assess their incremental contribution to predicting measures of symptomatology, when traumatic experiences from the country of origin have already been taken into account.

2. Method

The study was conducted from February to August 2014 in asylum centres in Serbia in three phases – identification of stressful experiences in transit, revision of items for the final version of the instrument and assessment of psychometric properties of the instrument. No participants took part in more than one phase of the study.

2.1. General procedure

All participants were approached in asylum centres where they had been accommodated (Banja Koviljača, Bogovađa, Obrenovac, Sjenica and Tutin), and asked to participate in the research. We did not have predetermined inclusion and exclusion criteria for selecting participants for the study, other than being at least 18 years old and either being fluent in English or another language for which a translator was available, namely Farsi and Arabic. No more than

5% of the refugees refused to take part in the study and no more than 10% of those interested were excluded based on these criteria. Therefore, we did not expect any bias resulting from no translator available for specific languages (for example, only a few participants from Afghanistan speaking only Pashtu were excluded). For a large majority of participants (82%) the research was conducted in their mother tongue, with the services of trained interpreters. All participants were informed about the objective of the study and gave written informed consent for participation. The interviews took place in rooms allowing for privacy within asylum centres. All phases of the study were conducted by trained and experienced psychologists. All procedures were in accordance with the Declaration of Helsinki standards. After participating in the study, all participants were debriefed. Free psychological counselling, as well as additional psychiatric examination and treatment, was offered to all participants who scored higher than recommended cut-off values on any of the used symptomatology instruments (mean score ≥2 for HTQ Part IV, mean score ≥1.75 for HSCL – 25 and summary score ≥14 for BDI-II). Eighty-four per cent of the participants met at least one of these criteria.

2.2. Item construction

The aim of the item construction phase was to collect information on traumatic and stressful events refugees are faced with during transit. It consisted of eight focus groups that lasted from 60 up to 90 min. There were two to nine refugees per group, a total of 41 participants (71% males). In addition, three individual interviews were conducted with refugees who preferred individual over group discussions. Based on the country of origin, the respondents were placed in three groups: refugees from Syria, refugees from Afghanistan, Iran and Pakistan and refugees from other Arabic-speaking countries: Eritrea, Somalia, Sudan, Algiers and Tunisia. Males and females were assigned into separate groups.

Participants were asked to speak about traumatic events and problems they experienced themselves or saw/heard someone else experience during transit. All traumatic events that participants spoke about during focus groups and individual interviews were transcribed and afterwards grouped into similar categories and analysed by the authors of the study. We identified six categories related to types of situations in which refugees are usually met with stressful experiences and constructed appropriate items. (1) General stressful experiences – SET General covers a wide range of stressful experiences, such as no access to food and water, no access to shelter, being lost and includes five items; (2) Stressful experiences related to smugglers – SET Smugglers include 10 items such as smugglers asking for additional money for their services, forcing one to sexual favours, psychological abuse (insulting, humiliating, threats); (3) Stressful experiences with the police – SET Police refer to illegal seizure of personal property and/or money, physical abuse, etc., and include five items; (4) Stressors related to detention – SET Detention, with a total of 12 items, – include stressors such as not having information on how long one would be in detention, not having basic life conditions, not having access to medical care; (5) Stressful events related to deportation – SET Deportation comprises of seven items such as not having information on where one would be deported, separation from family, being in life-threatening situations (left in the cold/without food/without water, etc., with no way of reaching help); (6) Stressful experiences with the local population – SET Local population – are related to discrimination, physical violence, psychological violence (insulting, humiliating, threats), etc., experienced with the local population, and include five items.

It should be noted that DSM-5 requires 'actual or threatened death, serious injury, or sexual violence' in order to define an event as traumatic (American Psychiatric Association, 2013). The list of events that we have compiled is more inclusive in this respect. The majority of the items do meet the DSM-5 criteria for traumatic events; however, we decided to include others as well because participants in focus groups identified some events that do not meet these criteria as highly stressful. For example, a smuggler asking for additional money for their services is in a position to leave an entire family of refugees in an uninhabited area without access to shelter, food, water, etc.

Despite them coming from different countries of origin, entailing substantial variability in exposure to traumatic events before transit, no relevant differences in stressful experiences from transit were observed between refugees from different countries, nor between men and women. Therefore, we developed an integrated list of 50 traumatic events from transit. Out of these, two items represent filter items and are not scored ('Did you use the services of smugglers?' and 'Did you come in contact with the police?'). The final item in the questionnaire is an open-ended question where participants can indicate any additional stressful experiences they were exposed to during transit.

2.3. Item revision

The item revision phase, aiming to check the meaning and phrasing of the established list of traumatic events from transit included eight focus groups with a total of 37 participants (73% males). Participants

were asked to comment on whether they can clearly understand the meaning of the items and whether there are any items whose phrasing should be changed or improved. As a result of the second phase, we created the final version of Stressful Experiences in Transit (SET-Q), consisting of 47 binary questions on traumatic and stressful events that the respondents could have experienced in countries of transit, one open-ended question and two filter questions. We selected the binary format of items following the format of HTQ Part I (Mollica et al., 2004).

2.4. Instrument validation

2.4.1. Sample

A total of 226 refugees took part in the instrument validation phase of the study. The sample was predominantly male (88%), with an average age of about 27 years old ($M = 27.35$, $SD = 8.45$). Almost half of the participants were Syrian (45%), and there were over 15% of Afghans and Somalis (15% and 17%, respectively). Other nationalities (Algerian, Sudanese, Iraqi, Iranian, Palestinian, etc.) were represented by less than 5% of the participants each. Participants had on average completed 11 years of education ($SD = 4.4$). The most frequent duration of transit was 3 months; however, half of the refugees in our sample had spent more than a Median of 13 months (IQR = 6–38) in transit up to the point of taking part in the study.

2.4.2. Instruments

Apart from the final version of SET-Q, participants completed a number of additional instruments, which were used for instrument validation. The nature of our instrument is formative, i.e. the latent construct (traumatization and exposure to stress) does not cause participants' responses to items, but is rather their consequence, making it unsuitable for traditional reliability and factorial validity assessment (Coltman, Devinney, Midgley, & Venaik, 2008; Diamantopoulos, Riefler, & Roth, 2008), which is why we omitted these analyses.

A **profiling questionnaire** assessing basic information about the respondents, such as gender, age, country of origin, religion, education and date of leaving the country of origin was designed for the purposes of this study.

Harvard Trauma Questionnaire (HTQ; Mollica et al., 2004), is a multi-part instrument aimed at assessing the extent and severity of traumatic experiences. For the purposes of this research, we used HTQ Part I, which was adapted for use with refugees in Serbia (Vukčević et al., 2016) and assesses traumatic experiences from countries of origin. The adapted version of Part I comprises 64 binary items where participants indicate whether they were

exposed to a certain traumatic event or not. In addition, we used Part IV, which includes 40 items and assesses symptoms of Post-Traumatic Stress Disorder (PTSD, 16 items) and Self-Perception of Functioning (SPFS, 24 items). Responses are given on a 4-point Likert scale and apart from the PTSD and SPFS scores, a total score can also be calculated.

Hopkins Symptom Checklist-25 (HSCL-25; Mollica et al., 2004), consists of 25 items assessing symptoms of anxiety (10 items) and depression (15 items). The answers are given on a 4-point Likert scale.

Beck Depression Inventory – II (BDI-II; Beck, Steer, & Brown, 1996) contains 21 statements that assess the symptoms of depression. Responses are given on a scale from 0 (absent or mild) to 3 (severe), with each number representing a statement that describes the severity of depressive symptoms in the past 2 weeks. The total score represents the sum of all items' scores (range 0–63).

3. Results

3.1. Descriptive statistics

Out of the listed 47 stressful events, refugees in our sample experienced a maximum of 34 stressful events in transit (one participant), while the minimum was 0 (only two participants). On average, refugees experienced 13 stressful events ($SD = 6.79$) while attempting to reach their destination country. Altogether, these results indicate that even after leaving their country of origin, refugees continue to be exposed to a substantial number of stressful events.

Looking at stressful experiences by categories (Table 1), we see that the highest number of stressful events was experienced within the categories of SET Detention, SET General and SET Smugglers. However, it is also important to note that the average refugee experienced some stressful events in contact with the police, both related and unrelated to deportation, as well as in contact with the local population.

In order to get a better understanding of the nature of subjects' stressful experiences, we examined the properties of single items (provided in Supplement

Table 1. Proportion and distribution of stressful experiences by categories.

Measure	k	M	SD	Mdn	Min	Max
SET-Q total score	47	13.38	6.79	13	0	34
SET general	5	2.74	1.11	3	0	5
SET smugglers	10	2.16	1.66	2	0	7
SET police	5	1.77	1.43	1	0	5
SET detention	14	3.75	3.67	3	0	13
SET deportation	8	1.48	1.81	1	0	8
SET local population	5	1.47	1.46	1	0	5
SET-SF	18	9.10	3.41	9	0	16

k – number of items, Mdn – Median value, SET-Q – Stressful Events in Transit Questionnaire, SET-SF – Stressful Events in Transit Questionnaire – Short Form.

1). The frequency of stressful events varied considerably – more than two-thirds of participants have, at some point during their transit, experienced having no access to food/water or shelter, being withheld of relevant information by the police and being lost, while more than a half experienced smugglers changing the initial agreement and being deported. On the other hand, stressful events such as sexual violence, smuggling illegal substances or children across the border, being separated from family during deportation and forced labour had been experienced by no more than 5% of the sample.

3.2. Instrument validity

In order to test instrument validity, we correlated both the total score on SET-Q and scores for categories with indicators of psychological symptomatology: HTQ Part IV PTSD and SPFS scales, HSCL Anxiety and Depression scales and BDI-II (Table 2). Significant correlations emerged between the SET-Q total score and SET General with symptoms of PTSD and SPFS. Additionally, SET Detention and SET Deportation were correlated with PTSD and SET local population to BDI-II depression score. Only SET Smugglers and SET Police were unrelated to any symptomatology indicators. Although the intensity of correlations is low, this finding still indicates the importance of stressful experiences in transit for the psychological well-being of refugees.

We were also interested in establishing whether stressful experiences in transit have an incremental contribution to measures of symptomatology, after the number of traumatic experiences in the country of origin has already been taken into account. In order to evaluate this assumption, we performed five hierarchical linear regressions, with five measures of symptomatology – HTQ Part IV PTSD, HTQ Part IV SPFS, HSCL Anxiety, HSCL Depression and BDI-II – taken as criterion variables. HTQ Part I scores were entered in the first step of each regression and SET-Q scores in the second. All variables were normally distributed (as indicated by the Kolmogorov–Smirnov test, the lowest p value was $p = .11$, for HSCL Depression).

As can be seen in Table 3, traumatic experiences from the country of origin were a significant positive predictor of all measures of symptomatology. Stressful experiences in transit, however, had an incremental contribution in predicting PTSD and SPFS indicating that SET-Q provides additional information which can be relevant for working with this vulnerable population. Traumatic and stressful experiences in both countries of origin and transit explained a low percentage of the variance of symptomatology measures, which is not to say their importance should be neglected.

Table 2. Means and standard deviations of measures of psychological symptomatology and correlations with SET-Q.

Measure	HTQ Part IV PTSD	HTQ Part IV SPFS	HLCL Anxiety	HSCL Depression	BDI-II
SET-Q total score	.19**	.16*	.12	.12	.12
SET General	.14*	.14*	.10	.12	.12
SET Smugglers	.09	.09	.05	.07	.11
SET Police	.05	.02	.09	.03	−.01
SET Detention	.13*	.11	.05	.05	.04
SET Deportation	.18**	.12	.11	.11	.09
SET Local communities	.06	.10	.07	.09	.14*
SET-SF	.16**	.17**	.11	.11	.13†
M	2.52	2.25	2.19	2.40	1.11
SD	.60	.58	.79	.69	.60

* $p < .05$, ** $p < .01$, † $p = .051$.
SET-Q – Stressful Events in Transit Questionnaire, SET-SF – Stressful Events in Transit Questionnaire – Short Form, HTQ Part IV PTSD – HTQ Part IV Post-Traumatic Stress Disorder, HTQ Part IV SPFS – Self-Perception of Functioning scales, HLCL Anxiety – Hopkins Symptom Checklist-25 Anxiety, HLCL Depression – Hopkins Symptom Checklist-25 Depression, BDI-II – Beck Depression Inventory – II.

Table 3. Results of hierarchical regressions predicting symptomatology with HTQ Part I and SET-Q.

	Standardized regression coefficients				
Variable	HTQ Part IV PTSD	HTQ Part IV SPFS	HLCL Anxiety	HSCL Depression	BDI-II
Step 1					
HTQ Part I	.24***	.17**	.21**	.25***	.25***
F	13.75***	6.81**	10.04**	14.78***	14.36***
R^2	.06***	.03**	.04**	.06***	.06***
Step 2					
HTQ Part I	.22***	.16*	.20**	.24***	.24***
SET-Q	.16**	.15*	.10	.10	.10
F	10.28***	6.01**	6.13**	8.53***	8.19***
ΔR^2	.03**	.02*	.01	.01	.01

* $p < .05$, ** $p < .01$, *** $p < .001$.
SET-Q – Stressful Events in Transit Questionnaire, SET-SF – Stressful Events in Transit Questionnaire – Short Form, HTQ Part IV PTSD – HTQ Part IV Post-Traumatic Stress Disorder, HTQ Part IV SPFS – Self-Perception of Functioning scales, HLCL Anxiety – Hopkins Symptom Checklist-25 Anxiety, HLCL Depression – Hopkins Symptom Checklist-25 Depression, BDI-II – Beck Depression Inventory – II.

3.3. Developing the SET-SF

In order to keep the instrument as informative as possible while reducing the number of items, we started by merging items based on their content. For example, all items relating to physical violence, regardless of the context in which it occurred, were aggregated into a single item 'Were you a victim of physical violence?'. One item was excluded due to conceptual overlap with general stressful experiences, some were reformulated so as to be more inclusive, while others remained in their original form. The Stressful Experiences in Transit Questionnaire – Short Form (SET-SF) contains 20 binary items, 1 open-ended item and 1 filter item not included in calculating the total score. Supplement 2 lists all the differences between the original instrument and the short form. The full SET-SF can be found in Supplement 3.

For the purpose of SET-SF evaluation, we calculated the estimated score values for all new items. This was done by joining the participants' responses for all items which were merged. .For example, if a participant responded positively to at least one question related to physical violence – their score on the newly formed physical violence item was 1; if the participant had been exposed to physical violence in several contexts – they would also get a score of 1 on this item; only if the participant responded negatively to all of the merged items, they would get a score of 0 on the new item. For items which were retained in their original form or reformulated – participants' scores were copied. We believe this merging procedure provides a very good estimate of how participants would have responded to the short form of the questionnaire, had they initially been presented with it. However, the following results should be treated as an approximation only.

Participants reported experiencing an average of nine traumatic events (SD = 3.41) on the short form of the instrument (see Table 1). This value is smaller than the full-scale score (13) because, after merging, some items of the full instrument became redundant in the short form. Therefore, this value should be interpreted in light of the number and generality of items in the short form. Considering the maximum theoretical number of stressful experiences on the SET-SF, the mean value indicates that for a majority of refugees in our sample the number of experienced traumatic events is not negligible.

The correlations with measures of symptomatology were almost the same as those obtained for the full scale (see Table 2), the only difference being that the correlation with BDI-II marginally reached significance for the SET-SF. SET-SF scores were also equally incrementally predictive of symptomatology as the full scale (see Supplement 4 for the results of these hierarchical regressions). This is not surprising, considering that the SET-SF total score was derived from the original SET-Q total score, but does speak to the potential of the short form to be an informative assessment tool.

4. Discussion

In this study, we aimed to develop an instrument for assessing the extent of stressful experiences refugees are faced with during transit. In addition, we wanted to create its abbreviated form in order to enable a brief and easily administrable assessment of these stressful experiences. We also sought to test the validity of these measures by exploring their relations with different measures of psychological symptomatology.

Even though practitioners in this field testify on traumatic and stressful experiences, terrifying human suffering and numerous human right violations that refugees are exposed to during their transit (Giordano, Cipolla, Ragnoli, & Brajda Bruno, 2019), no instrument assessing these traumas and stressors has been developed so far. Previous studies were mainly focused on exploring traumatic experiences from countries of origin and, later, post-migration living difficulties (Schock, Rosner, & Knaevelsrud, 2015; Tinghög et al., 2017), which resulted in a lack of evidence on traumas and stressors during transit, as well as their impact on refugees' mental health and everyday functioning.

Through a comprehensive three-stage approach, we gained deep insight into the stressful experiences refugees are faced with during transit and based on that insight formulated the items of the SET-Q. We further checked the meaning and phrasing of items before administering the questionnaire to a large population of refugees for final evaluation.

Our study has shown that a majority of refugees are facing multiple traumas and stressors on their way to Western Europe. More than two-thirds of participants experienced having no access to food/water or shelter, being withheld of relevant information by the police and being lost, and more than a half experienced smugglers changing the initial agreement and being deported. Among the least frequently experienced traumas and stressors, refugees report sexual violence, smuggling illegal substances and forced labour. However, we believe that we should carefully interpret these results bearing in mind that refugees might hesitate to report experiencing some of these events due to fear of stigmatization from the community or potential legal implications on asylum status determination procedure. Results of our study, thus, support the growing evidence on risky and dangerous transit routes refugees are exposed to.

In addition, our study has shown that general stressful experiences, experiences with deportation and stressors from detention are related to PTSD symptomatology, supporting results of previous studies that indicated the relation between detention and mental health difficulties among asylum seekers (Cleveland & Rousseau, 2013; Steel et al., 2006). Negative self-perception of functioning is related to the number of general stressors, while stressful events experienced in contact with the local population are related to depressive symptomatology. Tinghög et al. (2017) have also shown disrespect by the local community to be related to mental ill health, although not specifically with depression. The lack of correlations of stressors experienced in contact with the smugglers and the police with symptomatology was somewhat unexpected and should be further explored.

Importantly, this study has shown that stressful experiences in transit had an incremental contribution in predicting PTSD and SPFS symptomatology, after the number of traumatic experiences in the country of origin had already been taken into account. Even though the percentage of added variance may seem small, it is important to note that this is a strict test of instrument validity. Numerous traumatic events from countries of origin which led the participants to flee and search for safety, assessed by HTQ Part I, could be assumed to explain the largest part of symptomatology. Therefore, any incremental contribution to prediction should be treated as important. Our results clearly indicate that SET-Q can provide additional information relevant to both clinical practice and advocacy work in the field of refugee protection.

The result that SET-Q was linked to PTSD symptoms does not come as a surprise since it had been shown that refugee-related traumatic events are the strongest predictor of PTSD symptomatology (Tinghög et al., 2017). Moreover, both stressful and traumatic experiences, as well as violence exposure are associated with increased risk for PTSD (Hedtke et al., 2008; Schock, Bo, Rosner, Wenk-Ansohn, & Knaevelsrud, 2016; Tracy, Morgenstern, Zivin, Aiello, & Galea, 2014). In addition, the majority of participants experienced some traumatic events in their countries of origin. Therefore, it could be expected that new stressful or traumatic events experienced during transit could trigger symptoms of PTSD (Schock et al., 2016).

Although the lack of association between exposure to stressful events and increased depression and anxiety symptoms may seem unexpected, this result goes in line with studies indicating that pre-migration traumatic events did not make a unique significant contribution to anxiety and depression symptoms (Schweitzer, Brough, Vromans, & Asic-Kobe, 2011). In addition, new experiences of violence were associated with increases in PTSD and substance abuse, but not in depressive symptomatology (Hedtke et al., 2008). Another explanation could be the prolonged period of time between the occurrence of the traumatic event and assessment. Namely, it was shown that the relation between stressful or traumatic life events and depressive onsets is the strongest in the month of event occurrence (Kendler, Karkowski, & Prescott, 1998).

Moreover, even though depression and anxiety related difficulties are not rare among refugees and asylum seekers (Su, Tekin, Tekin, & Karadag, 2016), the absence of a relation with pre-migration and migration stressors and traumas might point to the importance of post-migration treatment for refugees' well-being. This treatment should create a supportive environment, preventing exposure to prolonged distress, which has been shown to impose additional risks for mental health difficulties (Kartal & Kiropoulos, 2016; Kashyap, Page, & Joscelyne, 2019; Laban, Gernaat, Komproe, Schreuders, & De Jong, 2004; Laban et al., 2005; Raghavan, Rasmussen, Rosenfeld, & Keller, 2012). This is especially so in persons who have survived multiple traumas and are thus under increased risk of mental health problems even 10 years after the initial traumas occurred (Steel, Silove, Phan, & Bauman, 2002).

Due to the fact that working with refugees is often done in field conditions of limited time available for assessment, another goal of this study was the creation of a short and easily administrable form of the instrument for assessing traumatic and stressful experiences in transit. By merging some of the items of the full SET-Q we were able to create a short version which retains the entire scope of different stressful experiences, while significantly reducing the number of items. Most importantly, SET-SF shows an almost identical pattern of results regarding correlations with measures of symptomatology. It should be noted, though, that SET-SF score was derived from participants' responses to the full SET-Q and the instrument itself was not further tested. Should future studies confirm its validity, in situations of limited time for assessment, SET-SF could be readily used as a substitute for SET-Q.

4.1. Study limitations

A potential drawback of item merging for SET-SF is that multiple stressful experiences of the same type will only be taken into account once in calculating the total score. However, the frequency of stressful experiences is not usually assessed in any of the instruments aimed at exploring traumatic events, most prominently HTQ. Therefore, we do not see the item merging procedure as leading to a significant loss of information regarding the extent of traumatization and exposure to stress that the refugees have suffered. However, future studies

could explore the effects of repeated exposure to the same traumatic events, by including information on the frequency of each traumatic event. In addition, as trauma is defined not only as what a person directly experienced, but also witnessed and what a close family member or friend has experienced (American Psychiatric Association, 2013), it could be relevant to include this information as well.

Another limitation of our study is that we did not have a new sample for SET-SF validation but rather used the same sample which was used for its construction. Even though the score merging procedure that we employed was performed in a conservative and logically consistent manner it is still only an approximation of how participants would have responded to the new items. Therefore, further research is warranted to validate SET-SF and explore its psychometric properties.

Since interviews with participants in our sample were conducted in different languages, it should be noted that for a vast majority of these, the services of only two, previously trained interpreters were used. Thus, we do not expect any significant inconsistencies in translations.

It should be noted that using self-report instruments carries the risk of participants either over- or under-reporting stressful experiences and/or symptomatology. However, the risk of over-reporting should have been negligible since the participants were informed that information they provide would not influence their legal status and; moreover, the majority of them did not plan to stay in Serbia at the time. As for under-reporting, it is possible that due to shame or fear of stigmatization some participants might have hesitated to report certain experiences.

Even though the response rate was very high, the sample included in our study was young and predominantly male, which may raise questions on its relevance for assessing the validity of the questionnaire. However, UNHCR statistics show that the age and gender structure of our sample is highly representative of refugees passing through Serbia (UNHCR, 2018).

5. Conclusion

Stressful Experiences in Transit Questionnaire (SET-Q) represents a validated tool, showing sound psychometric properties. It provides information on traumatic and stressful experiences refugees are faced with during transit and enables understanding of the impact these traumas and stressors have on refugees' mental health. The preliminary findings on the short form of the instrument (SET-SF) also demonstrate good metric properties. By including SET-Q and SET-SF in the future research and clinical work, we could gain valuable insights into required systemic changes and advocacy work. Moreover, SET-Q and SET-SF enable a better understanding of a wide scope of risk factors that could contribute to mental health problems, which is of crucial importance for the creation of adjusted clinical interventions and advocacy work.

Note

1. For simplicity and easier readability, as well as the fact that this study does not assess differences between refugees, asylum seekers and migrants, the term *refugee* will be used throughout the text for people who have, due to different reasons, had to flee their home countries, and for all study participants, regardless of their legal status at the time of this research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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