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Secondary Trauma Self-Efficacy: Concept and Its Measurement

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The Secondary Trauma Self-Efficacy (STSE) Scale was developed and psychometrically evaluated in 2 studies targeting populations indirectly exposed to traumatic events through work with traumatized clients. Study 1 enrolled behavioral health professionals ($n = 247$) providing trauma therapy for military clients in the United States. Study 2 investigated characteristics of the STSE Scale among health care and social workers ($n_{T1} = 306$, $n_{T2} = 193$) providing services for trauma victims and survivors in Poland. Rooted in social cognitive theory, the 7-item STSE Scale is used to evaluate perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms. In both studies, exploratory and confirmatory factor analysis showed unidimensionality of the scale. The results indicated good internal consistency of the STSE Scale and its stability over time. STSE correlated highly or moderately with secondary traumatic stress symptoms. Comparatively, associations between STSE and perceived social support, secondary traumatic growth, and negative beliefs about the world and self were either moderate or low. The STSE factor structure and pattern of correlations with the validity measures were invariant across the 2 studies, which indicated that the STSE Scale may be a culturally unbiased instrument.

Keywords: secondary traumatic stress, self-efficacy, measurement validity, measurement reliability

Secondary exposure to trauma refers to the widespread phenomenon of indirect exposure to different types of traumatic material, such as contacts with people who have experienced traumatic events, exposure to graphic trauma content (e.g., reported by the survivor), exposure to people's cruelty to one another, and observation of and participation in traumatic reenactments (Pearlman & Saakvitne, 1995). Indirect exposure may be an inherent characteristic of occupations such as mental health, health care, and social work, which involve providing clinical services to traumatized populations (Elwood, Mott, Lohr, & Galovski, 2011). Although indirect (also referred to as *secondary* or *vicarious*) exposure to trauma through work might have a positive effect on service providers' posttraumatic growth (Brockhouse, Msetfi, Cohen, & Joseph, 2011), research suggests that indirect exposure is related to

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higher levels of distress (Pearlman & MacIan, 1995), negative cognitions or low levels of self-trust (Pearlman & MacIan, 1995), and secondary traumatic stress (Elwood et al., 2011).

Secondary traumatic stress is one of the most often investigated negative consequences of indirect exposure to trauma. Although there are many definitions of *secondary traumatic stress*, in this article it is defined as reactions resembling posttraumatic stress, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers, and emotions and increased arousal, all resulting from indirect exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004). Prevalence of secondary traumatic stress varies from 15.2% among social workers (Bride, 2007), 16.3% in oncology staff (Quinal, Harford, & Rutledge, 2009), 19% in substance abuse counselors (Bride, Hatcher, & Humble, 2009), 32.8% in emergency nurses (Dominguez-Gomez & Rutledge, 2009), 34% in child protective services workers (Bride, Jones, & MacMaster, 2007), to 39% in juvenile justice education workers (Hatcher, Bride, Oh, King, & Catrett, 2011).

Self-Efficacy as a Protective Factor

In response to the common secondary traumatization exposure and its consequences among several occupational groups, researchers and professionals have advocated for testing protective factors (Elwood et al., 2011; Tyson, 2007). Some individual protective characteristics, such as years of experience as a clinician (Voss Horrell, Holohan, Didion, & Vance, 2011), may be hard to modify. The effectiveness of self-care activities (e.g., leisure time) in reduction or prevention of distress and secondary traumatic stress symptoms is limited (Bober & Regehr, 2006). In contrast, trauma-related cognitions, such as self-efficacy, are modifiable factors that may contribute to posttraumatic adaptation (Ehlers & Clark, 2000).

Self-efficacy is among the cognitions that may be seen as a proximal determinant of health-related outcomes after a traumatic event (Benight & Bandura, 2004). According to social cognitive theory (SCT), self-efficacy mirrors a sense of control over environment and refers to the perceived ability to master challenging demands (such as major stressful events and their aftermath) by means of adaptive actions (Bandura, 1997). Self-efficacy makes a difference in how people feel, think, and act (Bandura, 1997). Recent SCT developments suggest that beliefs about one's own abilities to cope help in overcoming difficulties arising after exposure to a traumatic event (Benight & Bandura, 2004). A systematic review confirmed large significant negative associations between self-efficacy and negative consequences of traumatization, such as posttraumatic stress disorder (PTSD; Luszczynska, Benight, & Cieslak, 2009).

Secondary Trauma Self-Efficacy

Although multiple studies have shown that self-efficacy explains posttraumatic adaptation (cf. Luszczynska et al., 2009) and several measures to assess self-efficacy among trauma survivors have been developed (e.g., Hyre et al., 2008; Lambert, Benight, Harrison, & Cieslak, 2012), we found very few studies investigating self-efficacy or other positive cognitions in the context of secondary exposure to trauma and its consequences. We identified only three studies testing for self-efficacy and health outcomes of secondary trauma exposure.

Among professionals who are at risk for vicarious exposure, self-efficacy is associated with better quality of life (Prati, Pietrantoni, & Cicognani, 2010), less compassion fatigue (Ortlepp & Friedman, 2002) and lower levels of secondary traumatic stress (Bonach & Heckert, 2012). It is important to note that those studies assessed work-related self-efficacy, referring to perceptions of training efficiency and perceptions of personal effectiveness at work (Bonach & Heckert, 2012; Ortlepp & Friedman, 2002), or assessed general perceptions of the capability to face various challenges at work (Prati et al., 2010). This work-related approach to measure self-efficacy may be an optimal choice to investigate associations between aggravated job stress levels among workers and global consequences of stress (e.g., quality of life, general distress). In contrast, exploring the role of self-efficacy beliefs in the context of secondary trauma exposure and its potential consequences requires evaluating beliefs about the capability to cope with thoughts and feelings related to secondary trauma exposure. As SCT suggests, contexts of self-efficacy should match the specificity of the environment (e.g., types of stressors) and the outcomes. Such an approach is also in line with the optimal matching hypothesis (Cutrona, 1990), indicating the need for testing the role of social cognitive mediators that match the type of stressor and stress outcomes. Therefore, *secondary trauma self-efficacy* (STSE) is defined in this article as perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms.

Aim of the Study

A lack of knowledge about the relationships between self-efficacy and outcomes of secondary trauma exposure among clinical service providers may be due to the fact that no existing measure of self-efficacy is available to assess these relationships. To fill this void, we evaluated the psychometric properties of a newly developed measure of secondary trauma self-efficacy. It was hypothesized that the STSE Scale would have a unidimensional structure, similar to other measures of self-efficacy (e.g., Hyre et al., 2008; Schwarzer & Jerusalem, 1995). In evaluating the congruent validity of the STSE Scale, we expected that STSE would be moderately or strongly associated with secondary traumatic stress symptoms. As for the discriminant validity, we hypothesized that there would be low to moderate correlations between STSE and other secondary trauma-related cognitions, such as (a) perceived social support, (b) negative cognitions about self and the world, and (c) secondary traumatic growth.

Theory and research suggest that self-efficacy relates to other cognitions and social resources that predict health-related outcomes (Benight & Bandura, 2004). Self-efficacy may be enhanced by social support, or it may affect social support seeking, thus, indirectly predicting health-related outcomes (cf. enabling and cultivation hypotheses; Schwarzer & Knoll, 2007). Therefore, the association between STSE and perceived social support would be expected.

Further, most prominent theoretical frameworks explaining PTSD symptoms (e.g., emotional processing theory; Foa & Rothbaum, 1998) assume that negative cognitions about self and the world are key cognitive determinants of the outcomes of the exposure to traumatic stress. However, research has indi-

cated that these negative cognitions operate through other trauma-specific cognitions, such as self-efficacy (Cieslak, Benight, & Lehman, 2008). Therefore, secondary trauma self-efficacy might also be correlated with negative cognitions about self and the world resulting from the indirect exposure to trauma.

Social cognitive theory also implies that strong self-efficacy may enable individuals to identify important opportunities to promote individual growth (Bandura, 1997; Benight & Bandura, 2004). Perceiving positive changes resulting from a struggle with traumatic events and their consequences (Calhoun & Tedeschi, 2006) may represent a positive outcome of posttraumatic adaptation. Perceived posttraumatic growth may be influenced by self-efficacy. In particular, functional outcomes such as perceived growth may develop if survivors start to actively deal with posttraumatic adversities (Zoellner & Maercker, 2006). Such changes and individual growth may occur after secondary trauma (Arnold, Calhoun, Tedeschi, & Cann, 2005). Therefore, it was hypothesized that secondary traumatic growth would be associated with STSE.

Study 1

Method

Participants. The study was part of a larger project investigating secondary trauma, work-related demands, and resources among mental health care providers working with returning soldiers in the United States. Inclusion criteria for the present study were (a) working at least 1 year as a clinical psychologist, counselor, or social worker; (b) providing services for a military population; and (c) being indirectly exposed to trauma through interaction with patients. Of 312 individuals who responded to any of the items on the STSE Scale, 247 participants (82 men, 33.2%) were qualified for the present study based on the previously described inclusion criteria.

Table 1 displays demographic information of the sample. On average, participants were 48.59 years old (SD = 13.02). The sample consisted of clinical psychologists (47.0%), counselors or psychotherapists (29.6%), and social workers (23.5%). Participants experienced indirect exposure to different types of traumatic

Table 1
Descriptive Statistics for Study 1 and Study 2: Demographics, Means, and Standard Deviations

Variable	Study 1 (n = 247)		Study 2, T1 (n = 306)		Study 2, T2 (n = 193)	
	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)
Demographic characteristics						
Age (years)	48.59 (13.02)		35.41 (8.59)		35.05 (8.10)	
Gender						
Female		66.8 (165)		75.8 (232)		79.3 (153)
Male		33.2 (82)		23.2 (71)		19.2 (37)
Intimate relationship						
Long-term relationship		75.7 (187)		73.9 (226)		77.2 (149)
Not in a relationship		22.3 (55)		25.5 (78)		22.3 (43)
Highest academic degree						
High school		—		20.6 (63)		18.1 (35)
Associate's degree		4.0 (1)		—		—
Bachelor's degree		4.0 (1)		21.2 (65)		19.7 (38)
Master's degree		44.5 (110)		56.5 (173)		60.6 (147)
Doctorate degree		54.7 (135)		1.0 (3)		0.58 (1)
Profession						
Clinical psychologists		47.0 (116)		—		—
Health care providers		—		48.4 (148)		45.6 (88)
Social workers		23.5 (58)		37.6 (115)		40.9 (79)
Counselors		29.6 (73)		—		—
Other		—		12.3 (38)		11.9 (23)
Measures						
Perceived social support						
Total	5.78 (1.04)		5.01 (1.50)		—	
From family	5.63 (1.30)		4.86 (1.71)		—	
From friend	5.70 (1.20)		4.94 (1.57)		—	
From significant other	6.02 (1.27)		5.23 (1.67)		—	
Negative cognitions						
About world	3.08 (1.24)		—		—	
About self	1.50 (0.68)		—		—	
Secondary traumatic growth	2.36 (1.28)		2.88 (1.08)		—	
Secondary trauma self-efficacy	6.15 (0.72)		5.21 (0.93)		5.28 (0.93)	
Secondary traumatic stress						
Total	1.86 (0.61)		2.31 (0.64)		—	
Intrusion	1.77 (0.58)		2.55 (0.74)		—	
Avoidance	1.89 (0.71)		2.14 (0.65)		—	
Arousal	1.92 (0.71)		2.33 (0.81)		—	

Note. Percentages may not add up to 100% due to missing data. T1/T2 = Time 1/Time 2.

events, including, for example, military combat (89.1%), physical assaults (83.6%), motor vehicle accidents (82.6%), and natural disasters (68.0%). Additionally, all participants were also directly exposed to a traumatic event, with the average number of three traumatic events reported per person ($M = 3.26$, $SD = 1.84$).

Measures. Participants completed a set of questionnaires evaluating secondary trauma self-efficacy, secondary exposure to trauma, and measures used for the validity assessment.

Secondary trauma self-efficacy. The items of Secondary Trauma Self-Efficacy (STSE) Scale were developed in three steps. First, three experimenters (licensed psychologists specializing in secondary trauma issues) conducted structured interviews with 30 behavioral health providers exposed to secondary traumatic stress. The interviews aimed at investigating the beliefs about the ability to deal with work-related secondary exposure. Later, the experimenters screened the measures originally designed to assess perceived ability to cope with demands resulting from the exposure to trauma and perceived ability to deal with PTSD symptoms (Cieslak et al., 2008; Hyre et al., 2008; Lambert et al., 2012). They independently selected up to 12 items, reflecting the self-efficacy statements elicited in the interviews. Seven items were selected by all three experimenters and included in the STSE Scale. The respective items were modified to measure self-efficacy cognitions in the context of indirect exposure to trauma through work with traumatized individuals. In the next step, the experimenters independently screened the interview records for recurring self-efficacy statements that were not covered by the seven items selected in the previous step. Two additional self-efficacy statements were identified using the consensus method and were added to the STSE Scale.

The preliminary version of the STSE Scale consisted of nine items beginning with the same stem phrase "How capable am I to . . ." followed by the nine items. Participants were asked to relate these items to their "work with people experiencing extreme or traumatic events." The content of the scale is presented in Figure 1. The responses were given on a 7-point Likert-like scale, ranging from 1 (*very incapable*) to 7 (*very capable*).

Secondary trauma exposure. The Secondary Trauma Exposure Scale was developed for the present study to measure indirect exposure to traumatic events (Cieslak et al., in press). It consists of a list of 10 potentially traumatic events, including natural disasters, motor vehicle accidents, other serious accidents, physical assaults, sexual assaults, other life-threatening crimes, military combat or exposure to a warzone, life-threatening illness or injury, sudden

Secondary Trauma Self-Efficacy Scale

For each situation described below, please rate how capable you are to deal with thoughts or feelings that occur (or may occur) as the result of your work with people experiencing extreme or traumatic events.

Please rate each situation as you CURRENTLY believe.

Very incapable	Incapable	Somewhat incapable	Neither incapable nor capable	Somewhat capable	Capable	Very capable
1	2	3	4	5	6	7

"How capable am I to …"

_____Deal with my emotions (anger, sadness, depression, anxiety) about working with these people.

_____Find some meaning in what had happened to these people.

_____Control recurring distressing thoughts or images about these people.

_____Deal with thoughts that similar things may happen to me.

_____Be supportive to others after my experiences with these people.

_____Cope with thoughts that I can't handle working these with people anymore.

_____Get help from others to better handle working with these people.

Figure 1. Secondary Trauma Self-Efficacy Scale. Original item numbers were 1, 3, 4, 5, 7, 8, and 9. Two excluded items were "Deal with the impact these people have had on my life" (Item 2) and "Keep emotional balance after realizing what had happened to these people" (Item 6).

death of someone close, and other. Participants indicated whether they had been exposed to each traumatic event with a *Yes*-or-*No* format. Additionally, they indicated how many of these potentially traumatic events they had personally experienced.

Secondary traumatic stress. The Secondary Traumatic Stress Scale (STSS; Bride, et al., 2004) is a 17-item questionnaire that measures frequency of secondary traumatic stress symptoms in the previous month. It consists of five items for the Intrusion subscale, seven items for the Avoidance subscale, and five items for the Arousal subscale. Participants were instructed to evaluate the frequency of each symptom in the relation to their work with trauma-exposed clients. A 5-point Likert-like scale was used, ranging from 1 (*never*) to 5 (*very often*). Cronbach's alphas for the present study were .94 for the total score, .81 for the Intrusion subscale, .87 for the Avoidance subscale, and .85 for the Arousal subscale.

Perceived social support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) measures the availability of social support with 12 items. The instruction was adjusted to refer to difficulties occurring at work. The MSPSS consists of four items for the Family subscale, four items for the Friend subscale, and four items for the Significant Other subscale. Participants rated the degree of agreement for each item on a 7-point Likert-like scale, ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Cronbach's alphas for the present study were .94 for the total score, .92 for the Family subscale, .95 for the Friend subscale, and .95 for the Significant Other subscale.

Negative cognitions. Posttraumatic Cognition Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) measures negative cognitions after traumatic events and consists of the Negative Cognitions About the World, Negative Cognitions About Self, and Self-Blame subscales. Based on the original psychometric data (Foa et al., 1999), we used seven items measuring Negative Cognitions About the World and seven items assessing Negative Cognitions About Self. In the modified instruction, respondents were asked to refer to cognitions occurring after the indirect exposure to trauma. The Self-Blame subscale was not used because of ongoing discussion related to its validity and reliability (Startup, Makgekgenene, & Webster, 2007). Participants rated the degree of agreement to each item on a 7-point Likert-like scale, ranging from 1 (*totally disagree*) to 7 (*totally agree*). Cronbach's alphas for the present study were .89 for the total score, .88 for the Negative Cognitions About the World, and .85 for the Negative Cognitions About Self.

Secondary traumatic growth. Posttraumatic Growth Inventory–Short Form (PTGI–SF, Cann, et al., 2010) was used to measure positive life changes resulting from indirect exposure to trauma. The original PTGI–SF was a 10-item questionnaire measuring experience of positive change after a particular traumatic event. We modified the instruction asking participants to rate the degree of change as a result of their work with patients who were exposed to traumatic events. A 6-point Likert-like response scale was used, ranging from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). Although there are five subscales in the PTGI–SF measuring different types of changes, a total score index is used the most often measure (Cann et al., 2010). Cronbach's alpha in the present study for the total score was .92.

Demographics. Demographic questions included the year participants were born, their gender, whether they were in an intimate relationship, their profession, and their highest academic degree (Table 1).

Procedure. Potential respondents were contacted via an e-mail containing information about the study and the link to the online survey. Off-post providers, who were located in the civilian community, received the e-mail through an online newsletter sent by TriWest Healthcare Alliance, an organization managing health benefits for military patients and their families. On-post providers, who were located at military installations, received the e-mail from the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, Colorado, and from the Psychology Consultant to the U.S. Army Surgeon General. Respective agencies sent out standard invitation e-mails to all employees who were potential participants and advertised the study in their internal newsletters. The response rate was not available. Informed consents were obtained. The study was approved by the institutional review board (IRB) at the University of Colorado.

Analytical procedures. Missing data for all variables were replaced with hot deck imputation (Myers, 2011). The hot deck imputation replaces a missing value with an existing value of another participant in the same group (deck) as the participant with a missing value. The deck is composed of combinations of levels of categorical variables. The use of the hot deck imputation is optimal even if missing values are not completely at random when missing values are less than 10% of all values (Myers, 2011). In total, 0.61% of values were replaced. All of the further analyses were performed on 247 participants.

With gender, intimate relationship status, and profession as categories, Little's missing completely at random (MCAR) tests showed that items were missing completely at random for the following scales: the STSE, $\chi^2(39) = 19.87$, $p = .99$, Secondary Traumatic Growth, $\chi^2(40) = 40.81$, $p = .31$, and the STSS, $\chi^2(94) = 77.78$, $p = .89$. The items of the MSPSS and PTCI were not missing completely at random, $\chi^2(33) = 55.74$, $p = .01$, and $\chi^2(115) = 178.17$, $p < .001$, respectively.

Using the SPSS Statistics (Version 20), the following statistical procedures were applied: (a) interitem correlations to analyze relationships among the STSE Scale items to eliminate items whose correlations with each other were too high or too low; (b) a principal component analysis to explore possible dimensions of the STSE Scale; (c) Cronbach's alpha to assess internal consistency reliability; (d) confirmatory factor analysis to test hypothesized unidimensionality of the scale; (e) corrected item-total correlations and Pearson's correlations to test the relationships among STSE and the measures selected to establish validity of the new instrument; and (f) a principal components analysis to examine discriminant validity (Clark & Watson, 1995) of the STSE.

The confirmatory factor analysis was performed with AMOS (Version 20). The maximum likelihood was used as an estimation method. Because univariate nonnormality and multivariate nonnormality were diagnosed, a bootstrap procedure was performed with 1,000 bootstrap samples (Byrne, 2009). Three conventional goodness-of-fit indices (Byrne, 2009) were used to evaluate global model fit: root-mean-square error of approximation (RMSEA), comparative fit index (CFI), and standardized root-mean residual (SRMR).

Results

Preliminary analyses. Corrected item-total correlations were high (Item 1: $r = .75$, Item 2: $r = .77$, Item 3: $r = .61$, Item 4: $r = .75$, Item 5: $r = .66$, Item 6: $r = .74$, Item 7: $r = .68$, Item 8: $r = .58$, and Item 9: $r = .65$; all $ps < .001$). Pearson's correlations were computed among nine items of the STSE Scale. Results of the correlations revealed that the correlation between Item 1 and Item 2 was high, $r(245) = .82$. This high correlation indicated that these two items may have measured the same aspect of secondary trauma self-efficacy. Therefore, Item 2, "Deal with the impact these people have had on my life," was dropped from further analyses because it was a more general statement than Item 1. After Item 2 was removed from the STSE Scale, Item 6, "Keep emotional balance after realizing what had happened to these people," had high correlations with Items 4, 5, and 7, all $rs > .65$ ($ps < .001$), in addition to a relatively higher corrected item-total correlations with remaining items. These high correlations indicated that Item 6 shared a high percentage of the variance with these three items specifically. Therefore, Item 6 was dropped from further analyses, resulting in seven items on the STSE Scale. The final version of the instrument is presented in Figure 1. Corrected item-total correlations for the seven-item version ranged from .53 to .79. Sample distribution analyses showed that the data were negatively skewed for all items, with the distribution differing significantly from normal ($ps < .001$).

Exploratory and confirmatory analysis. A principal components analysis was performed to explore the component structure of the seven items included in the STSE Scale. The analysis extracted one component accounting for 56.89% of the variance (eigenvalue = 3.98) on a basis of the eigenvalue greater than 1 for inclusion of a component. Factor loadings of the items ranged between .71 and .83.

A confirmatory factor analysis for a one-factor unconstrained model showed relatively poor model-data fit, RMSEA = .116, 90% lower and upper confidence limits [.087, .147]; CFI = .936; and SRMR = .047. Modification indices showed that error variances of Items 4 and 5 should covary. The modified model presented good fit with RMSEA of .071, 90% lower and upper confidence limits [037, .106]; CFI of .978; and SRMR of .036. In sum, the results indicated that the seven-item STSE Scale consisted of one component.

A confirmatory factor analysis conducted with the bootstrapping yielded similar fit indices and factor loadings, and therefore suggested good model-data fit. Additional analyses showed that model-data fit was poor (with RMSEA values above .10) when confirmatory factor analyses were conducted for eight-item and nine-item versions of the STSE Scale, with two previously excluded items (2 and 6) taken into account.

Reliability and validity analyses. Internal consistency of the seven-item STSE Scale was $\alpha = .87$, which suggests good reliability. To examine validity of the STSE scale, we computed Pearson's correlations among STSE and theoretically relevant constructs (i.e., secondary traumatic stress, social support, secondary traumatic growth, negative cognitions). As expected, STSE was negatively correlated with secondary traumatic stress and negative cognitions (cf. Table 2), with 29.2% shared variance. Consistent with our expectation, STSE was positively correlated with social support. There was a small significant positive correlation between STSE and secondary traumatic growth. Results of partial correlation analyses (with the number of direct trauma exposures controlled) indicated that the associations between STSE and the other study variables remained significant and similar in size (Table 2).

Table 2
Pearson's Correlations Among the Study Variables

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. STSE		.23***	.24***	.26***	.20***	−.64***	−.49***	−.60***	−.61***	.13*			.04	
2. Support: Total	.32***		.89***	.90***	.93***	−.17**	−.07	−.22***	−.15*	.13*			.04	.25***
3. Support: Family	.27***	.87***		.67***	.75***	−.17**	−.03	−.23***	−.16**	.14*			.02	.24***
4. Support: Friends	.32***	.80***	.54***		.79***	−.17**	−.10	−.20**	−.15*	.10			.04	.26***
5. Support: Others	.23***	.85***	.63***	.49***		−.12**	−.06	−.16**	−.10	.10			.06	.20**
6. STSS: Total	−.54***	−.33***	−.30***	−.29***	−.24***		.83***	.89***	.95***	−.05			.07	−.65***
7. STSS: Intrusion	−.43***	−.21**	−.18**	−.22***	−.13*	.87***		.52***	.73***	.07			.07	−.49***
8. STSS: Avoidance	−.54***	−.39***	−.36***	−.33***	−.28***	.94***	.71***		.79***	−.16**			.08	−.61***
9. STSS: Arousal	−.51***	−.28***	−.23***	−.24***	−.23***	.94***	.77***	.83***		−.03			.04	−.61***
10. Secondary traumatic growth	.14*	.14*	.13*	.12*	.10	.10	.13*	.06	.12*				.05	.13*
11. Negative cognitions: World	−.32***	−.30***	−.29***	−.28***	−.20***	.47***	.34***	.49***	.45***	−.08				
12. Negative cognitions: Self	−.51***	−.39***	−.37***	−.33***	−.30***	.56***	.40***	.57***	.53***	−.10	.52***			
13. Direct trauma exposure	.05	−.11	−.12	−.01	−.13*	.19**	.05	.21***	.22***	.10	.16*	.04		
14. STSE[a]		.38***	.30***	.35***	.30***	−.55***	−.40***	−.54***	−.52***	.16*	−.32***	−.49***		

Note. Correlations in upper diagonal region show values for Polish data (Study 2). Correlations in lower diagonal region show values for U.S. data (Study 1). STSE = Secondary Trauma Self-Efficacy; Support = Perceived Social Support Scale scores; STSS = Secondary Traumatic Stress Scale; Direct trauma exposure in Study 1 represents the number of direct trauma experiences; direct trauma exposure in Study 2 represents whether participants have experienced any of direct traumatic events (with direct exposure dummy coded using 0 = *no* and 1 = *yes*).
[a] Direct exposure partialed out.
* $p < .05$. ** $p < .01$. *** $p < .001$.

To examine discriminant validity of the STSE Scale, we performed a principal components analysis with the seven items of the STSE Scale and the randomly selected seven STSS items. Based on eigenvalue greater than 1 as the inclusion criterion, we identified two components accounting for a total of 55.82% of the variance (eigenvalue = 7.81). One component consisted of the seven items of the STSE Scale (factor loadings ranging from .69 to .80), and the other component consisted of the seven STSS items (factor loadings ranging from .51 to .84).

Study 2

The results of Study 1 provided preliminary support for validity and reliability of the STSE Scale, as well as for its unifactorial structure. As data were collected cross-sectionally, the time stability of the scale was not tested. Moreover, participants worked with a specific population (i.e., traumatized military patients). A longitudinal cross-validation study conducted in a different sample of professionals (i.e., indirectly exposed to civilian-related traumas) was needed. To rectify these limitations, we designed Study 2 to longitudinally evaluate the psychometric properties of the STSE Scale among workers providing services to traumatized civilian population within a different cultural context (in Poland). Extending the findings of Study 1, Study 2 provided a cross-cultural cross-validation study.

Method

Participants. Health care and social workers providing services for civilian survivors of traumatic events participated in the research. The study was a part of a larger investigation focusing on determinants of how job demands and resources contribute to development of secondary traumatic stress. Inclusion criteria for the present study were (a) working at least 1 year as a health care provider (nurse or paramedic) or social worker; (b) providing services for a civilian population suffering from trauma; and (c) being indirectly exposed to trauma through interaction with patients or clients. Of 309 participants, three participants were excluded because they reported having no exposure to potential secondary traumatic events; this resulted in a sample of 306 participants (71 men, 23.2%). Table 1 displays demographic information of the sample. The mean age was 35.41 years old (SD = 8.59) at Time 1. The sample consisted of 148 health care providers (48.4%), 115 social workers (37.6%), and 39 other professionals (12.3%). A lower average education level among Study 2 participants compared with those in Study1 resulted from the differences in the occupations and the national regulations pertaining to the academic degree required for registered practice. In particular, 47% of Study 1 participants were clinical psychologists, who are required to have a doctorate degree in order to practice, whereas the majority of Study 2 participants were nurses and social workers who are required to have a bachelor's or master's degree in order to practice their profession. Participants were indirectly exposed to different types of traumatic events at work, including life-threatening illness or injury (88.9%); physical assault (87.3%); sudden, unexpected death of someone close (82.7%); transportation accident (73.2%); natural disaster (30.1%); or military-related trauma (9.5%). Additionally, 75% of respondents reported that they experienced a direct exposure to traumatic event at least once. The number of direct exposures to trauma was not assessed.

Of those 306 participants who completed the Time 1 assessment, 193 (37 men, 19.2%) took part in Time 2 measurement (see Table 1 for demographics). Attrition analysis showed no significant differences between completers and dropouts in terms of age, items of the STSE Scale, and the STSE Scale total score (ts < 1.47, ns), as well as relationship status and education (χ^2s < 4.78, ns). However, compared with dropouts, completers were more often women and social workers, $\chi^2 > 4.45$, $p < .05$. The mean age for Time 2 was 35.41 years (SD = 8.59). The sample for Time 2 consisted of 88 health care providers (45.6%), 79 social workers (40.9%), 23 others (11.9%), and three respondents who did not provide information about their profession (1.6%).

Measures. Participants completed the same set of measures as in Study 1, such as (a) Secondary Trauma Self-Efficacy Scale (α = .88); (b) Secondary Trauma Exposure Scale; (c) Secondary Traumatic Stress Scale (αs = .93 for a total score and .79 for Intrusion, .85 for Avoidance, and .87 for Arousal Symptoms subscales); (d) Multidimensional Scale of Perceived Social Support (αs = .96 for a total score and .96 for Support From Family, .96 for Support From Friends, and .93 for Support From Significant Others subscales); and the short form of the Posttraumatic Growth Inventory (α = .92). The Secondary Trauma Exposure Scale in Study 2 assessed whether participants have experienced directly any of the 10 traumatic events. The scale measuring the negative cognitions about the world and self was not included. The Polish versions of the scales were prepared using back-translation procedures. As in Study 1, participants were asked to respond to the items in the context of work-related indirect exposure to trauma.

Procedure. Data were collected with a web-based survey. The following recruitment strategies were applied: distribution of leaflets and a public presentation of the study during the annual national meetings of professional organizations, advertisements in specialist journals reaching all registered professionals, and information posted on web sites for specialists and practitioners (mental health professionals, nurses, doctors, and emergency and social services workers) working with traumatized clients. Those who were interested were informed about the study aims; they then provided informed consent and filled out the questionnaires. Six months later, respondents received an e-mail invitation to take part in Time 2 measurement. The mean time elapsed between Time 1 and Time 2 surveys was 162.26 days (SD = 39.35). Personal identification codes were used to secure anonymity. The study was approved by the IRB at the first authors' home institution in Poland.

Analytical procedures. As in Study 1, missing data were replaced using the hot deck imputation method (Myers, 2011). In total, 1.59% values were replaced. The Little's MCAR tests indicated that items were missing completely at random for the following scales: the STSE Scale at Time 1, $\chi^2(16) = 18.22$, $p = .31$; the STSE Scale at Time 2, $\chi^2(30) = 32.92$, $p = .32$; the MSPSS, $\chi^2(98) = 115.81$, $p = .11$; and the STSS, $\chi^2(193) = 217.20$, $p = .11$. The PTGI items were not missing completely at random, $\chi^2(53) = 80.06$, $p = .01$.

Cronbach's α served as the index of internal consistency reliability. Pearson's correlation was used to assess test–retest reliability by correlating Time 1 and Time 2 STSE scores and to test validity of the scale by correlating STSE with the relevant con-

structs. We performed the exploratory and confirmatory factor analyses using the same procedure, software, and interpretation criteria as in Study 1.

Results

Preliminary analyses. Table 1 displays means and standard deviations of all variables. In line with Study 1, Items 2 and 6 were removed from nine-item version of the STSE Scale, and the seven-item version was used for further analysis. Pearson's correlations among nine items of the STSE Scale (Time 1) showed that the correlation between Items 1 and 2 was high, $r(304) = .81$, $p < .001$, and that Item 6 was highly correlated with Items 4, 5, and 7, rs $> .68$. Sample distribution showed that Items 1, 3, 4, and 7 were normally distributed, and Items 5, 8, and 9 were mildly and negatively skewed, with the distribution differing significantly from normal (ps $< .001$).

Exploratory and confirmatory factor analysis. Using the data obtained from 306 participants, we performed the principal components analysis to explore possible dimensions of the STSE Scale (Time 1). The analysis extracted only one component accounting for 61.87% of the variance (eigenvalue = 4.33). Factor loadings for the seven items ranged between .64 and .87.

The confirmatory factor analysis was performed to further evaluate the parameter estimates and model fit of the one-factor solution of the STSE Scale. In line with Study 1, error variances of Items 4 and 5 were assumed to covary. The analysis, conducted for 306 participants, suggested good model-data fit with RMSEA = .050, 90% lower and upper confidence limits [.008, .083], CFI = .991, and SRMR = .023. These results showed that the STSE Scale consisted of one primary component.

Reliability and validity of the STSE scale. Internal consistency of the STSE Scale was assessed at both time points. Cronbach's alpha values were .89 at Time 1 and .88 at Time 2, indicating good internal consistency. Test–retest reliability was examined on the sample of 193 participants who completed the STSE Scale at both measurement points (165-day period). The association between the STSE scores at Time 1 and Time 2 was high, $r(191) = .65$, $p < .001$.

Table 2 displays correlations among STSE at Time 1 and theoretically relevant constructs. As expected, STSE was negatively correlated with secondary traumatic stress. Consistent with the hypotheses and the results of Study 1, STSE was positively correlated with social support. In line with the results of Study 1, STSE and secondary traumatic growth were positively associated, although the correlation was small. Results of partial correlations (with direct trauma exposure controlled) indicated that associations between STSE and the other study variables remained significant and similar in size (Table 2). Across the study variables, participants exposed to trauma directly did not differ from those without a direct exposure (all Fs < 1.93, ps $> .168$).

Factor model invariance. A two-group model representing the respective samples was tested in order to evaluate if the one-factor structural model tested in Study 1 and Study 2 was invariant across the U.S. ($n = 247$) and Polish ($n = 306$) samples. Because of multivariate nonnormality, the bootstrap procedure was performed (Byrne, 2009). Table 3 displays the goodness-of-fit statistics for the two-group model. Compared with the unconstrained model (see Model 1, Table 3), the model with factor loadings, variances, and the covariance constrained to be equal in both groups (Model 2, Table 3) differed significantly in terms of fit indices, $\Delta\chi^2(15) = 90.02$, $p < .001$. Therefore, Model 2 was rejected. Further, the model with error variances constrained to be equal for two groups (Model 4, Table 3) was also rejected, $\Delta\chi^2(9) = 76.91$, $p < .001$.

Further analyses showed that the nested model with factor loadings constrained to be equal across both groups (Model 3, Table 3) did not differ from the unconstrained model, $\Delta\chi^2(6) = 10.69$, *ns*, and therefore Model 3 should be accepted. Additionally, the model with the covariance constrained to be equal in both groups (Model 5, Table 3) did not differ from the unconstrained model, $\Delta\chi^2(1) = 0.40$, *ns*, and therefore Model 5 should be accepted. Based on these results, the final model with factor loadings and the covariance constrained to be equal across both groups (Model 6; Table 3) was compared with the unconstrained model. The results indicated that the final model did not differ form the unconstrained model, $\Delta\chi^2(7) = 10.72$, *ns*, and therefore Model 6 may be accepted as the final model. Factor loadings of the items in the final model are displayed in Figure 2.

Differences in associations across Study 1 and Study 2. Across both studies, similar Pearson's correlations were found among STSE Scale and the following indices: Perceived Social Support–total score, $z = 1.13$, $p = .26$; Perceived Support From Family, $z = 0.37$, $p = .71$; Perceived Support From Friends, $z = 0.76$, $p = .44$; Perceived Support From Significant Others, $z =$

Table 3
Goodness-of-Fit Statistics for Tests of Invariance of Factor Structure for Study 1 and Study 2

Model Description	χ^2	χ^2/df	RMSEA	CFI	SRMR	GFI	NFI	$\Delta\chi^2$	ΔNFI
1. Hypothesized model (unconstrained)	51.19	2.01	.043	.986	.036	.974	.972	—	—
2. Factor loadings, variances, and covariance constrained to be equal	142.20	3.47	.067	.945	.068	.937	.925	90.02***	.048
3. Factor loadings constrained to be equal	62.87	1.97	.042	.983	.045	.969	.967	10.69	.006
4. Variances constrained to be equal	129.10	3.69	.070	.949	.053	.942	.932	76.91***	.041
5. Covariance constrained to be equal	52.59	1.95	.041	.986	.036	.974	.972	0.40	.000
6. Factor loadings and covariance constrained to be equal (final model)	62.91	1.91	.041	.984	.045	.969	.967	10.72	.006

Note. The $\Delta\chi^2$ indicates a change in a chi-square statistic from the hypothesized model; *df* = degrees of freedom. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; SRMR = standardized root-mean-square residual; GFI = goodness-of-fit index; NFI = normed fit index. *** $p < .001$: A significant $\Delta\chi^2$ value indicates that the model was not a good fit for the hypothesized model.

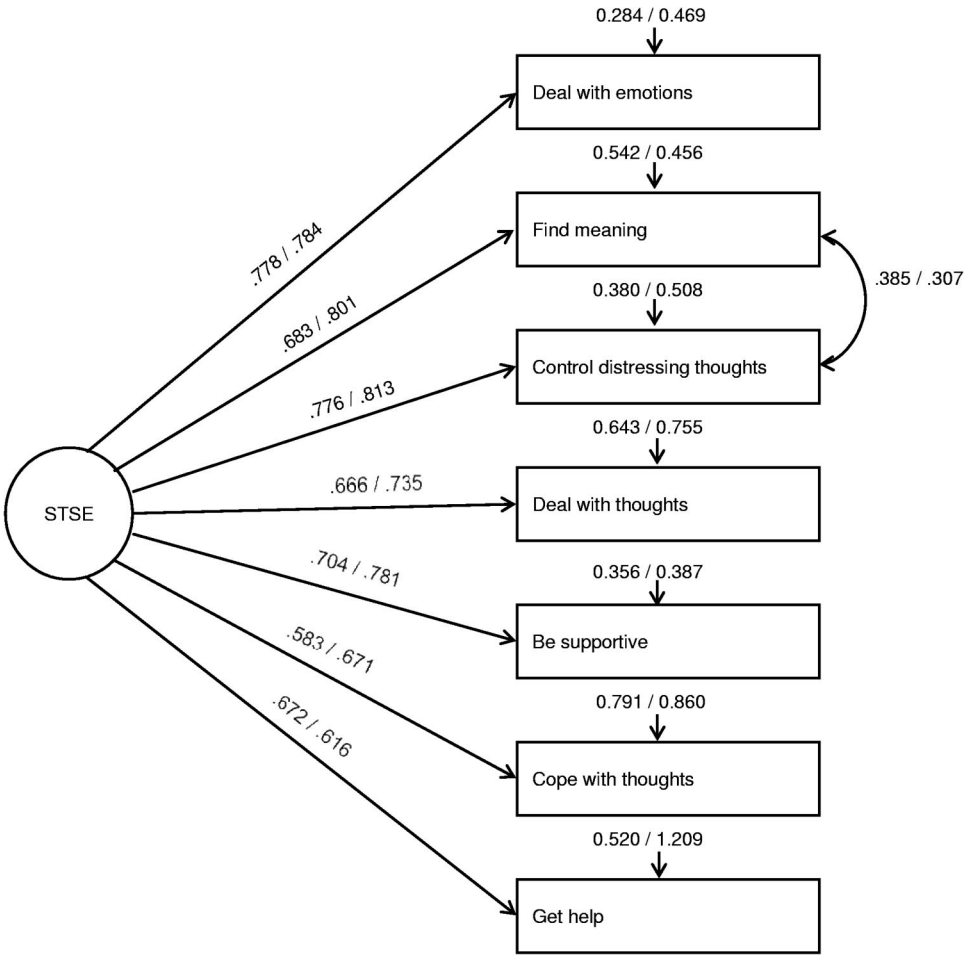

Figure 2. Final two-group confirmatory factor analysis model of the Secondary Trauma Self-Efficacy Scale. Standardized regression weights (i.e., factor loadings), variances, and correlations between error variances are presented. In the final model, factor loadings and covariance are constrained to be equal in Study 1 and Study 2. Numbers before the slash refer to Study 1; numbers after the slash refer to Study 2. STSE = Secondary Trauma Self-Efficacy. Full list of the STSE Scale items presented in Figure 1. All parameters significant at $p < .001$.

0.37, $p = .71$; Secondary Traumatic Stress–total score, $z = 1.79$, $p = .07$; Secondary Traumatic Stress–Intrusion subscale, $z = 0.89$, $p = .38$; Secondary Traumatic Stress–Avoidance subscale, $z = 1.04$, $p = .30$; Secondary Traumatic Stress–Arousal subscale, $z = 1.70$, $p = .08$; and Secondary Traumatic Growth, $z = 0.12$, $p = .91$. In sum, the associations found in the two studies (Table 2) did not differ significantly.

General Discussion

Our studies evaluated the characteristics of the Secondary Trauma Self-Efficacy (STSE) Scale, a measure designed to capture beliefs about the ability to deal with barriers associated with secondary exposure to trauma. This short seven-item scale tackles the barriers of tasks at work (including providing services to trauma survivors), but it also refers to controlling emotional and cognitive reactions related to the indirect exposure. Compared with other measures of self-efficacy that were previously applied in the context of exposure to secondary trauma, the STSE Scale is specific to challenges posed by the indirect exposure to trauma, including environmental (i.e., work-related) and individual (cognitive and emotional) demands. As proposed in SCT, self-efficacy beliefs, which make a difference in specific stressful situations, should closely reflect the demands related to this situation (cf. Bandura, 1997). Further, in line with optimal matching hypothesis (Cutrona, 1990), the scale matching both stressful demands and stress outcomes may offer the best approach to investigating self-efficacy related to secondary exposure.

Results of the present studies supported the one-factor structure of the STSE Scale and its good reliability. Factor analyses comparing the two language versions indicated the invariant structure of the scale. Such structure is in line with SCT, assuming that self-efficacy is a one-dimensional construct (Bandura, 1997). Unifactorial structure of other types of self-efficacy, such as general self-efficacy or self-efficacy referring to coping with one's own

trauma, were also confirmed in studies testing psychometric characteristics of other self-efficacy measures (Hyre et al., 2008; Lambert et al., 2012; Schwarzer & Jerusalem, 1995). Further, self-efficacy referring to secondary trauma, measured with the STSE Scale, showed high stability over 6 months. According to SCT, moderate to high stability may be expected, because self-efficacy may fluctuate over time due to mastery experiences over environmental and intrapersonal challenges (Bandura, 1997). In sum, the results provide evidence for good psychometric properties of the scale and verify its theoretically assumed structure.

In both studies, secondary trauma self-efficacy was related to the selected constructs, as hypothesized. The negative associations between STSE and secondary traumatic stress were significant and moderate, indicating that beliefs about ability to deal with challenges related to secondary trauma exposure are important in predicting lower levels of secondary traumatic stress. The size of correlation coefficients corresponds to associations between self-efficacy and health outcomes reported in meta-analyses dealing with survivors of primary trauma (Luszczynska et al., 2009). In the only other study testing for associations between secondary traumatic stress and self-efficacy (Bonach & Heckert, 2012), researchers applying a measure of efficacy that referred to respondents' own role and efficiency at work found weak associations, and only 1% of secondary traumatic stress variance was explained. In contrast, self-efficacy measured with STSE Scale explains 23%–39% of variance in secondary traumatic stress. In conclusion, the STSE Scale showed a potential to help explain the psychological distress process among workers exposed to secondary trauma.

The correlations between secondary trauma self-efficacy and other trauma-related cognitions such as negative cognitions about self and about the world (Foa & Rothbaum, 1998) and secondary traumatic growth were significant (higher self-efficacy was associated with less negative cognitions and with higher growth) and in the low to moderate range. Therefore, the amount of variance shared between these variables was not high, confirming that STSE and other constructs are distinct aspects of cognitive functioning after secondary exposure to trauma. Similar strength of associations between self-efficacy and cognitions about self and the world was found in research dealing with victims of primary exposure to trauma (Cieslak et al., 2008). We have identified no other study showing associations between self-efficacy and cognitions about self and the world in the context of secondary trauma exposure; therefore, our findings provide a preliminary novel evidence for the interplay between positive and negative cognitions among professionals exposed to secondary trauma. Future research should investigate if these general negative cognitions operate through trauma-specific cognitions, such as STSE.

Finally, secondary trauma self-efficacy measured with the STSE Scale was moderately related to higher levels of social support from family, friends, and other significant sources. The findings are in line with posttraumatic adaptation model assuming that social resources should foster self-efficacy beliefs (Benight & Bandura, 2004) as well as in line with models explaining associations between social support and cognitions (Schwarzer & Knoll, 2007). Further, models explaining factors affecting practitioners working with clients exposed to trauma focused solely on support from work-related sources (cf. Voss Horrell et al., 2011). Our findings suggest that support from sources outside work may also play a relevant role. As two previous studies accounting for self-efficacy and social support among professionals exposed to secondary trauma did not test for the associations between these constructs (Bonach & Heckert, 2012; Ortlepp & Friedman, 2002), no comparison between our results and previous research can be made. Our findings, therefore, provide novel preliminary evidence for the relationship between self-efficacy and support from sources outside work.

In sum, the present research provides evidence for the validity of the STSE Scale. All hypothesized associations of secondary trauma self-efficacy with the secondary traumatic stress, negative cognitions, secondary traumatic growth, and perceived social support were confirmed. The sizes of correlation coefficients were similar in both language versions of the STSE Scale. Future studies are needed to further evaluate whether the STSE Scale is a superior predictor of adaptation after secondary exposure to trauma, compared with other measures of self-efficacy, such as general self-efficacy (Schwarzer & Jerusalem, 1995) or work-related efficacy (Bonach & Heckert, 2012).

The strength of our research lies in testing the STSE Scale properties in two different contexts. Similar patterns of associations emerged from data collected in the United States and Poland, and the two language versions showed similar psychometric properties. The findings were similar for workers exposed to civilian-related secondary trauma and those who were exposed to secondary trauma through providing services to military personnel. These results indicate that the STSE Scale is a robust measure and allow for a preliminary conclusion that secondary trauma self-efficacy may have similar properties and operate similarly across different cultural contexts. Further research is needed to investigate individuals in different types of occupations, such as oncology nurses or juvenile justice education workers, who may suffer from relatively high levels of secondary traumatic stress (Bride et al., 2007; Dominguez-Gomez & Rutledge, 2009; Hatcher et al., 2011).

The utility of the STSE Scale in secondary trauma experiences that are unrelated to work, such as secondary trauma exposure reported by partners of cancer patients or spouses of military service members, may be low. Three items of the STSE Scale refer to barriers experienced due to working with traumatized individuals. Further, a reference to interaction with other people at work may not be ideal in case of some professionals exposed to secondary trauma, such as clergy members (Hendron, Irving, & Taylor, 2012). The phrase "working with these people" could be replaced with "interacting with these people," but other versions of the STSE Scale with language adjustments would require additional psychometric evaluations.

Our research has some limitations. Data were collected among relatively heterogeneous samples, but several occupational groups that may suffer from relatively high secondary traumatic stress were not included (e.g., emergency nurses or juvenile justice system workers; Dominguez-Gomez & Rutledge, 2009; Hatcher et al., 2011). Although both studies applied multiple recruitment strategies in order to reach diverse target populations, these are both convenience samples. Future research needs to account for the representativeness of the samples.

The utility of the STSE Scale was not compared with the utility of other measures of self-efficacy. The instructions in the original measures assessing social support, growth, and negative cognitions were modified in order to tackle participants' functioning in the context of work-related secondary exposure. Changing more gen-

eral measures (i.e., referring to any type of trauma exposure or any type of stressful event) into specific measures by means of narrowing down the instructions might inflate the observed associations between the constructs. The number of situations of direct exposure to traumatic events was not evaluated in Study 2. Future research needs to account for other occupational groups, different types of self-efficacy, and other stress outcomes, such as job burnout or diminished quality of life. Studies aiming at further psychometric evaluation of the STSE Scale may consider including additional items to assure that the STSE concept is covered in a sufficiently broad way. On the other hand, short versions of the STSE Scale may be needed for multivariate investigations. Future studies need to clarify how the secondary trauma self-efficacy construct may operate and whether it influences practitioners' well-being and their effectiveness at work. Developing a psychometrically sound measure of the secondary trauma self-efficacy was an essential step preceding research on evaluating mechanisms and the effects of secondary trauma self-efficacy.

The present study investigated the properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences. The data collected among professionals working with civilians and military trauma victims indicated good psychometric characteristics of the STSE Scale and its invariance for two language versions. The interest in research on secondary traumatic stress is growing as organizations and practitioners call for identifying protective factors (Elwood et al., 2011; Tyson, 2007; Voss Horrell et al., 2011). Secondary trauma self-efficacy may constitute one of the key protective individual resources, promoting well-being and operating in concert with other individual and environmental resources (Luszczynska et al., 2009). Our research proposes a new measure to assess this personal resource.

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